

CHANGING OF PARADIGM: DEVELOPING
A CONTEMPORARY STRATEGY FOR
TECHNOLOGICAL EDUCATION
IN BRAZIL

By

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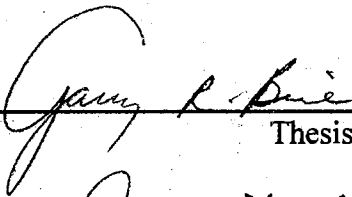
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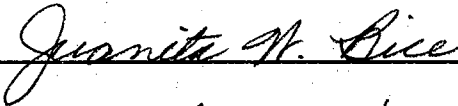
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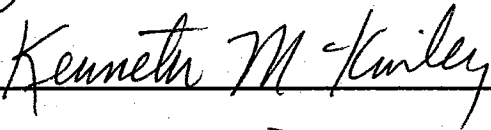
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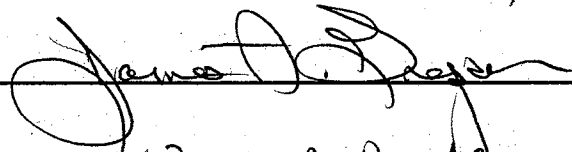
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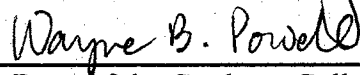


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CHAPTER I

INTRODUCTION

Background of the Problem

The third article of the Brazilian Federal Constitution states that the fundamental goals of the Federative Republic of Brazil are:

- I. - to build a free, just, and solidary society;
- II. - to guarantee the national development;
- III. - to eradicate the poverty and marginality and reduce the social and regional inequalities;
- IV. - to promote the well-being of all, without regard to origin, ethnicity, gender, color, age prejudices and any other forms of discrimination (Constituição da República Federativa do Brasil [CF/88], 1996, pp.15-16).

Brazil is a Democratic State under the Law and has as foundations “the sovereignty, the citizenship, the dignity of the individuals, the social values of work and free enterprise, and political pluralism” (C/F88, Article 1, p. 15) in which:

All power originates from the people which is exercised by elected representatives or directly by the former, in the format established by the Constitution (CF/88, 1996, Article 1, Paragraph 1, p. 15).

Among the social rights of Brazilian citizen are education and work which are detailed in the Federal Constitution (CF/88, 1996, Article 6). The minimum salary has to be

enough to meet the basic vital needs of the workers and his/her families [italics added] regarding to living, nourishment, education, health, leisure,

clothing, hygiene, transportation and social security, with periodical readjustments which preserve its purchasing power (CF/88, Article 7, Incise 4, p. 23).

The economic organization of the country,

based on the valuing of human labor and free enterprise, has as its main goal to ensure to all a decent living [italics added], according to the dictates of social justice, taking in consideration the following principles:

- I. - national sovereignty;
- II. - private property;
- III. - social function of property;
- IV. - free enterprise
- V. - consumer protection
- VI. - environment protection
- VII. - reduction of the regional and social inequalities;
- VIII. - search for full employment
- IX. - favored treatment to small size companies established under the Brazilian law and that have the domicile and administration in the Country (CF/88, 1996, Article 170, p. 90)

The social organization of the country has “as base the primacy of work [italics added], and as a goal the well-being [of the people] and the social justice [italics added]” (CF/88, 1996, Article 193, p. 35), in the country.

What is alluded to in the previous paragraphs is best summarized in the opening statement of the Brazilian Constitution which indicates that the State, as a democratic Power, has as its role

to ensure the exercise of the individual and social rights, the freedom, the safety, the development, the equality and the justice as supreme values of a fraternal, pluralist and without prejudices society, based on social harmony, and compromised, in the internal and international order, with the peaceful solution to controversies (CF/88, 1996, opening statement, p. 15).

In order to achieve the dictates of the Brazilian people and at the same time to meet everyone’s responsibilities to maintain and improve the planet Earth as an appropriate living space for the beings that inhabit it, the Country has to pursue a

development in which the social, environmental, and economic issues are bonded together. The economic development process Brazil has been going through since the middle of the 20th century caused the quality of life to improve significantly for a large percentage of the population. However, it also generated substantial social and economic inequalities among individuals, states and regions, in addition to environmental damage, as can be verified by statistics and analyses (provided by national and international organizations such as the Geography and Statistics Brazilian Institute (Fundação Instituto Brasileiro de Geografia e Estatística [IBGE], 1997b) and by The International Bank for Reconstruction and Development ([The World Bank], 1997), or by studies such as the one by Costa (1997) or that edited by Birdsall and Sabot (1996)).

Sustainable development seems to be the way to go in Brazil. A development that combines, as put by David Halpern, “economic growth with the jobs generation, environmental protection, and social justice” (In Jobim, 1998, online).

One of the important factors that contributes to the sustainability of a country is “the development and wise use of its . . . human and natural resources” (Bice, 1991, p. 2). Unfortunately, there is still much to be done in Brazil so that the previous statement becomes a reality because the average schooling of the Brazilian workforce was 3.5 years in 1996 (Pastore, 1997) while 48% of Brazilian workers had informal jobs in the same year (Instituto de Pesquisa Econômica Aplicada [IPEA], in “Trabalho,” 1998) - both have been going up, that is, the average schooling has been improving while the percentage of informal workers has been worsening. A major reason for the problems indicated above is that good K-11/12 public education for all Brazilians is still among the social rights to be fulfilled by the Public Power. Despite the advancements made in terms of slots offered and

in the number of children enrolled in 1-8 grade schools (more than 90% in the proper age), secondary education (9-11/12 grade schools) is still beyond the reach of most Brazilians - around 25% in the proper age (Instituto Nacional de Estudos e Pesquisas Educacionais [INEP/MEC], 1998). In addition to that, quality problems still plague the public state and municipal systems (Birdsall, Bruns & Sabot, 1996). Problems have been identified and actions have been proposed (some have been implemented), however, as federal, state, and municipal administrations may change every four years, this contributes sometimes to slow down or even reverse improvements in the public systems (Plank, 1996).

Besides the K-8 and 9-11/12 education public systems, there are also the higher education and the vocational-technical education and training public systems which have their strengths and weaknesses but for sure are short of meeting the needs of the Brazilian people (Castro, 1995). In this research, the investigator is interested in addressing the future of one of the public systems of education in Brazil, that is, the presently named, federal technological education system (*sistema federal de educação tecnológica* [FTES]). Such system operates in the vocational and technical education and training domain but its architecture and purposes are somewhat different to its American counterparts. According to Secretaria de Formação e Desenvolvimento Profissional [SEFOR/MTb] (1996a), besides the federal system, there is a number of universities, colleges, technological education centers, vocational-technical schools, vocational schools, vocational-technical distance education schools, unions schools, and business and industry training facilities which are involved with “preparation for work,” however they will not be the focus of this research.

The FTES was established in 1909 to provide primary (elementary) education and training to the children of the poor or “the unlucky ones,” as it was put by then national President Nilo Peçanha (In Ferreira, 1994, p. 11). The first 19 schools were built in the major Brazilian cities - mostly the capitals of the states. That was done more for social control reasons than for providing educational opportunities not offered by the states or municipalities (Ferreira, 1994). Today the system has facilities in around 100 locations throughout the country. From the early 1960s until 1997, the main role of the FTES schools and centers was to develop secondary level technicians who also got their secondary level diploma while getting vocational-technical training (schools and centers), and associate of applied science graduates and industrial engineers (centers) (Secretaria Nacional de Educação Tecnológica [SENETE/MEC], 1991; INEP/MEC, 1998). Throughout time, the FTES went through many expansions and transformations which have been targeted to meet Brazil’s needs and once more things seem to be heading this way.

Presently the FTES is going through a period of change. Since 1995, the current Brazilian federal administration under President Fernando Cardoso (through the Ministry of Education and Sports [MEC], to which the FTES is subordinated) has set in motion a series of measures that aim to redirect the actions of the FTES. Such actions have been a matter of controversy among practitioners, educators, students, employers, and other stakeholders.

Contrary to most of the solely academic public schools, the FTES schools and colleges presently have a reputation of providing quality secondary education but an out of tune with reality technical training - according to some who are asked. Castro (1995)

stated that most students that enrolled in the federal vocational-technical schools did so with the main purpose of getting the academics in order to take the entrance exams to college, and not for getting a secondary level technician degree. Such suspicion was confirmed by a 1996 federal government report (Secretaria de Educação Média e Tecnológica [SEMTEC-MEC], 1996c). That fact in addition to others such as the lack of adequate sensitiveness and mobility to proact and react to fast paced changes already happening in the country and the world, signal that it is already necessary to rethink the federal technological education system so that the Brazilian society expectations for the future (in the short, intermediate, and long range) regarding to “preparation for work” be met (Castro, 1995; SEMTEC/MEC, 1996c). Some of the expectations include: educating/training/ retraining more people, providing them with a higher level of manipulative and thinking skills, dealing with lifelong learning and global concepts, and quickly responding to training needs of new and emerging occupations (Bice, 1996).

But, is it necessary to have a federal system to provide technological education (or vocational-technical education and training [VTET])? Presently, despite several states having vocational-technical education (secondary and post-secondary levels) and training institutions, only São Paulo state, the most powerful Brazilian one, has really what one can name a system. Apart from the São Paulo state VTET facilities, the ones that belong to other states are having a hard time to survive due to, among other things, lack of enough funding, which is not surprising because most of the states can not even properly support their K-11/12 schools (see Costa, 1997, and SEMTEC/MEC, 1996c). Some of the states also have higher education institutions which contribute substantially to the problem (Castro, 1995; Paul & Wolff, 1996). So while the majority of states and municipalities can

not afford to have good quality technological education (or VTET) institutions, there seem to be room and a role for the federal system. Federal participation has happened in the provision of VTET throughout Brazilian history, and probably will continue to happen as long it is necessary.

Why is technological education (or VTET) necessary in Brazil? According to several authors (e.g., Burrus & Gittines, 1994; Cetron & Davies, 1997; Coates, Mahaffie, & Hines, 1997; Krugman, 1996; Toffler & Toffler, 1995), technology is already a major player in today's societies and it will increase its impact on them in the future. Tame it, extend its benefits to the population and prevent its bad use, are necessities to be fulfilled by the countries which intend to provide a good standard of living for their citizens and for guaranteeing space and respect from the international community.

According to Lewis (1991), "it is not uncommon today to find that the simplest consumer goods are a composite product of the toil of workers from disparate countries - countries different in culture, lifestyle, or stage of economic development" (p. 1). That is, the producers of goods and services no more see the local community as their market; they make and sell their products everywhere. This commercial flow causes people to get in touch with all kinds of technologies whether they want to or not. In order for a country to better keep its sovereignty in a growing technological world, it needs to stimulate the internal generation of technology, the improvement of the production of technological goods and services and the development of human resources able to deal with technology in its various aspects.

At a country level, the preparation of human resources able to work with technology requires time, resources (facilities, skilled personnel and funding) and political

will. Around the world there are various systems being used, some older than others, some more successful than others, each one with its own peculiarities, but most of them going through changes.

It is in the context described in the paragraphs above that the future of the federal technological education system is going to be addressed. But, what will be the future - the next 30 years - in which technological education will be delivered? It is true that “we cannot know what will happen in the future” (World Future Society [WFS], 1993, p. 1), but we can know “the possibilities of the future - that is, what might happen” (WFS, p. 1). Unless we know that we have alternatives and what they are, we can’t choose what we want to happen, let alone make it happen (WFS, 1993). “Once the possibilities are identified, we can try to make the desired possibilities become realities and prevent the undesired possibilities from ever being realized” (WFS, 1993, p. 1).

Even though “thinking ahead does not, of course, guarantee success” (WFS, 1993, p. 2), it enables us to prepare for events. By anticipating the future, we may visualize what changes of paradigm will be necessary in terms of technological education in Brazil, allowing the country to develop an adequate strategy for coping with the scenario to come.

Statement of the Problem

The research and data available on vocational-technical education and training in Brazil is minimal if compared to what is available in the United States. There is not an adequate body of knowledge or pool of information on the Brazilian experience in the

field available to be consulted by public policy makers in Brazil to support planning the federal technological education system beyond 5 years let alone 30 years, as policy makers develop a peoplepower training delivery system. The problem is that public policy makers in Brazil continue to make operational and policy decisions about the federal technological education system without an adequate knowledge base related to policy alternatives appropriate to the Brazilian culture.

Purpose of the Study

The primary purpose of the study is to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country's needs in technological education by the year 2025.

Research Question

The primary research question for the study is: What is the best strategy for the federal technological education system in Brazil to follow in order to contribute for the development of an appropriately trained civilian workforce for the first half of the 21st Century?

Several sub questions (process questions) are formulated to provide direction to the study. The answers for the questions below originated from a review of literature:

1. What is Brazil?
2. How is Brazilian education structured?
3. Why is Brazilian education structured the way it is?
4. Is the present structure of Brazilian education likely to change?

5. How is vocational-technical education and training structured in Brazil?
6. Why is Brazilian VTET structured the way it is?
7. Is the present structure of Brazilian VTET likely to change?
8. What is the Brazilian federal technological education system?
9. How is the Brazilian federal technological education system structured?
10. What are the strengths and weaknesses of the Brazilian federal technological education system?
11. What are the change trends for the Brazilian federal technological education system?
12. How is vocational-technical education and training structured in England, France, Germany and the United States of America?
13. What are the most probable scenarios for Brazil by 2025?

The answers for the questions below resulted from a Delphi survey:

1. What should be the role of the Brazilian federal government in vocational-technical education and training in Brazil by the year 2025?
2. How should vocational-technical education and training in Brazil be organized by 2025?

Definition of Terms

For the purpose of this study the following definitions of terms were used:

Education – “Encompasses the formative processes that are developed in the family life, in the human companionship, at work, in the institutions of instruction and research, in the social movements and civil society organizations and in the cultural

manifestations” (“Lei de Diretrizes e Bases da Educação [LDBE96],” 1997, Article 1, p. 19).

Formal and Regular Instruction – The one provided “according to the regulations of the LDB” of 1996, being subordinated “to supervision of the Public Government”, and entitled “to issue diplomas that are registrable in the appropriate government agencies” (Souza and Silva, 1997, p. 2).

Preparation for Work – A general term encompassing technological education, vocational-technical education and training, vocational education, vocational training, technical education, education for specific professions, development for professions, development for work, qualification for professions, qualification for work, and vocational qualification.

Scenarios – They “are attempts to imagine future possibilities on the basis of what we know (or think we know)” (WFS, 1993, p. 3).

Strategy – “The organization’s response to its environment over time” (Stoner, Freeman, & Gilbert, 1995, p. G-7).

Structure – “Something based upon or organized according to a plan or design” (Landau, 1997, p. 730).

Sustainable Development – “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987; in Sitarz, 1998, p. 3).

System – “A group or arrangement of parts, facts, phenomena, etc., that relate to or interact with each other in such a way as to form a whole” (Landau, 1997, p. 748).

Vocational-Technical Education – “Organized educational programs offering a sequence of courses which are directly related to the preparation of individuals [for working] in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree” (1990 Perkins Act, in National Center for Education Statistics, 1995, p. 2).

Training – “Courses designed to equip trainees with skills required to do a job” (Blanke & Hanley, 1995, p. 173).

Limitations of the Study

This study has the following limitations:

1. The review of literature depended on the researcher’s knowledge about the existence of sources of information and also on its availability (access, language, and cost);
2. The researcher had physical access to the educational systems of Brazil and the United States of America, but not to those of England, France, and Germany whose information was obtained solely from printed or electronic sources;
3. The researcher can read in Portuguese (Brazil’s language), English (England and USA language), French (France’s language), and Spanish, but not in German (Germany’s language);
4. The cost of obtaining information was limiting factor on the research because the researcher depended only on his personal funds (the researcher was sponsored but not the study he conducted);

5. The panelists for the Delphi survey were selected based on their knowledge and experience in future studies, in Brazilian government policy as a whole, in Brazilian government policies for education, in Brazilian government policies for vocational-technical education and training, in Brazilian vocational-technical education and training, and in international vocational-technical education and training through their publications and vitas. The participation of individuals of different nationalities (those who accepted to take part in the panel were mostly Brazilian and Americans) and expertises, at the same time enriched and “created problems” for the research. That was because some of them did not have a prior knowledge of Brazil and “preparation for work” initiatives in Brazil (on Round II, the experts were provided a description of Brazilian education because a number of statements required some knowledge about Brazilian education to answer them);
6. The composition of panel of experts depended on the knowledge of the researcher (and suggestions received) about the existing experts, on purposive sampling (Delphi does not require random sampling of subjects) on the pool of experts, and on the acceptance of the invited experts to participate in the three rounds of survey;
7. Some statements on the survey instruments (Rounds II and III) were not as clear as some panelists would like (this was a result of some panelists’ opinions which were not as clear as others desired, also of different views about “preparation for work” originated from different cultures, and of

these views being expressed in English and Portuguese - sometimes statements were difficult to be translated so that they had the exact same meaning in both languages);

8. The value of the Delphi study results depended on the competence and preferences of the panelists, and their willingness to properly participate in all rounds of the survey.

Significance of the Study

Addressing the research problem is important because: first, the Brazilian federal technological education system run by the Ministry of Education and Sports is presently a major player among the “preparation for work” providers existing in Brazil, being the largest one in terms of secondary level technicians trained; second, there have been strong arguments among the stakeholders (government officials, educators, practitioners, students, parents, business and industry, and other groups) about the role of the federal government in “preparation for work” (among the issues debated, some defend there is not a need for a federal system while others support its existence but different formats are proposed); and third, throughout the existence of the federal technological education system, the major decisions affecting it have been made by the executive branch of government based mostly on the worldviews and knowledge of those holding federal offices who not always were adequately prepared to deal with such areas (while in some moments of Brazilian history, the federal government seemed to be very interested in “preparation for work,” in others it seemed not to have “enough interest” in it).

The federal technological education system has served Brazilians for more than 80 years. It is a rather large educational system spreading over the country. To build a system of such size and complexity takes political will, time, personnel, and money. It is far more difficult to construct it than to tear it down. Before decisions about major changes on the federal technological education system are made, necessary studies should be conducted in order to reduce the risk(s) of poor options/pathways being chosen. By conducting the present study, the researcher expects to contribute toward the improvement of the decisions about the federal technological education system. Those decisions are important because the fate of the latter is attached to them.

Assumptions

The study has the following assumptions:

1. The case study method is an appropriate research tool for “investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon” (Merriam, 1988, p. 32);
2. The scenarios method is an appropriate research “tool for ordering one’s perceptions about alternative future environments in which one’s decision might be played out” (Schwartz, 1996, p. 4);
3. The Delphi technique is an appropriate research tool for determining “experts’ preferences and/or perceptions of a state of affairs” (Weatherman & Swenson, 1974, pp. 100-101);
4. The individuals who participated in the Delphi survey are experts in one (or more) of the following areas: in future studies, in Brazilian government

policy as a whole, in Brazilian government policies for education, in Brazilian government policies for vocational-technical education and training, in Brazilian vocational-technical education and training, and in international vocational-technical education and training;

5. The instruments used in this study were adequate for allowing the experts to report their judgements and opinions.

Organization of the Study

Chapter I introduces the study and includes the statement of the problem, the purpose of the study, research and process questions, definitions of terms, and limitations, significance and assumptions of the study.

Chapter II reviews the literature on Brazil, education in Brazil, vocational-technical education and training in Brazil, vocational-technical education and training in selected countries (England, France, Germany, and the United States of America), the case study method, and the Delphi technique. Sections one through four were developed in case study format. Sections five and six review the method and the technique used in this research

Chapter III includes the design, methods, and procedures in conducting the study. That is done in three sections: the case study, Brazil in 2025, and the Delphi study.

Chapter IV reports findings from the review of the literature related to the case study and to Brazil in 2025, and from the Delphi study.

Chapter V presents the findings about the federal technological education system, the conclusions about the best strategy to be followed by the Brazilian federal

technological education system in order to contribute for the development of an appropriately trained civilian workforce for the first half of the 21st century, the recommendations about the future of “preparation for work” in Brazil, and the recommendations for further studies.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Merriam (1988) stated that “a literature review interprets and synthesizes what has been researched and published in the area of interest” (p. 61). She also noted that “the literature itself consists of two types: data-based research studies and non-data-based writings” (p. 61). Merriam (1988) described data-based research as “studies that involve the collection and analysis of data gathered from people, organizations, documents, and so on”, and non-data-based writings as those that “reflect the writer’s experiences or opinions and can range from the highly theoretical to popular testimonials” (p. 61). According to her, “the amount of each type of literature to be found varies with the problem” (p. 61).

The focus of this research was on the future of the federal technological education system in Brazil. The latter is part of a major educational structure which is inserted in a physical-socio-economic-cultural context (Brazil). The past and present of the federal technological education system have been significantly influenced by the vocational-technical education and training developments in England, France, Germany, and the United States of America which have been present in Brazilian history at least since the

19th century. The knowing and understanding of the present and present of the federal technological education system form a sound base for the investigations about its future.

This review of literature was built as a descriptive case study which tried to provide a contextualized overview of the past and present of the Brazilian federal technological education system through its various aspects. Besides this, it also briefly described the case study methodology and the Delphi Technique. The latter was used to generate the findings about the future.

The review of literature was organized in six sections. The first three (Brazil: An overview, Education in Brazil, and Vocational-Technical Education and Training in Brazil) built on the top of the previous ones and provided a holistic view of the federal technological education system. The fourth (Vocational-Technical Education and Training in Selected Countries) described the current status of the major inspirers of vocational-technical education and training initiatives in Brazil. The last two sections (The Case Study Method and the Delphi Technique) served the purpose of shedding light on the research methodologies used.

Brazil: An Overview

Brazil is a developing country which has characteristics of both developed and undeveloped nations. The World Bank classifies the Brazilian economy as belonging to the upper middle income group (The International Bank for Reconstruction and Development [The World Bank], 1997) which has one of the worst distribution of wealth in the planet (see IBGE, 1996 and 1997 data, in "País mantém," 1998; and 1996 World Outlook, 1993 data; in Beting, 1996), while the United Nations Development Programme

(in Gomes, 1998) using 1995 data ranked Brazil slightly above the border between medium and high human development (quality of life index) countries.

In 1996 Brazil had a population of 157 million people living in an area about 87% the size of the United States territory (Fundação Instituto Brasileiro de Geografia e Estatística [IBGE], 1997b; U.S. Bureau of Census, Department of Commerce; in Riche, 1998). While the Brazilian population density was 18 inhab./km²; US one was 27 inhab./km² (IBGE, 1997b; U.S. Bureau of Census, Department of Commerce; in Riche, 1998). In 1995, Brazil was the eighth biggest world economy being 11% the size of the US one (The Economist, 1998; IBGE, in "Economia," 1998; Bureau of Economic Analysis, U.S. Department of Commerce; in "The U.S. Economy," 1998). To better understand Brazil, it is necessary to have a closer look at it. That is done beginning with the past which will be summarized in the following paragraphs.

After Columbus reached America in 1492, Portugal became aware of the existence of land in this part of the globe which led to the discovery of Brazil (this paragraph is according to "Descobrimento," 1998; Eakin, 1997; Prado, 1995; "Tratado de Tordesilhas," 1998). In 1494 Portugal and Spain signed the Tordesilhas Treaty which divided the new land to the east between the two countries. In 1500 Pedro Álvares Cabral, a Portuguese commander, reached Brazil which was added to Portugal's territory.

Brazil was a colony of Portugal from 1500 to 1808. The description for such period originated from the works of Baer (1996), "Colonização" (1998), Eakin (1997), "Economia colonial" (1998), "Escravidão" (1998), Monlevade (1997), Oliveira, Guido, and Bielschowsky (1997), Prado (1995), and "Sociedade colonial" (1998). At first the colonizers settled in the Brazilian Northeastern coast and eventually expanded to the south

to Uruguay and west crossing the Tordesilhas line and invading Spanish possessions. The main settlements were located along the coast. The Dutch and French tried to establish colonies in Brazil but were thrown out by the Portuguese. During the colonial period, Terra de Santa Cruz, the first colony denomination, was a source of Brazil-wood, sugar cane, cotton, tobacco, cattle, gold and diamonds for the colonizers. African (from 1530 to 1888) and native Brazilians (from 1500 to around 1750) provided slave manpower for the colonizers. The Catholic church was in charge of religious activities, education, and moral control of the population.

By the 17th and 18th centuries those who had been born in the colony had already developed their own agenda which did not match with that of the colonizer's (see "Colonização," 1998; Eakin, 1997; "Independência," 1998). Several revolts happened during that period - some resulted not only from internal factors but were influenced by external factors as well, e.g. American Independence and the French Revolution. The dissatisfaction with status quo gradually weakened the colonial system and eventually led to the independence of Brazil from Portugal. From an initial population estimated between one and three million native Brazilians in 1500, Brazil began the nineteenth century with 3.5 million inhabitants, two-thirds of them blacks or mulattos ("Escravidão," 1998; "População brasileira," 1998).

In 1808 the Portuguese Royal family and their court moved to Brazil running away from Napoleon Bonaparte (the description for the period is based on Baer, 1996; "Corte portuguesa no Brasil," 1998; Eakin, 1997; Prado, 1995). In order for the colony to be able to operate independently from Portugal, which was under French control, Dom João, the regent prince, took several initiatives. Among them were: permission for commerce

between Brazil and “friendly nations” and for construction and operation of factories and manufactures; and establishment of Bank of Brazil, educational institutions, military academies, Royal Press, Royal Library, and others. In 1810 an agreement was signed with England granting preferential treatment to merchandise from that country. In 1815 Brazil was raised to the category of United Kingdom to Portugal and Algarve - that was done so that Portugal could be represented in the Vienna Congress which reorganized the political map of Europe after Bonaparte’s defeat. In 1818 the regent prince became D. João VI - due to the death of Maria I, the prince’s mother. In 1820 the political situation in Portugal demanded the return of the Portuguese Royal family to Europe which happened in 1821. D. João VI left his first-born son, Pedro, as regent prince of Brazil.

In 1822 the Portuguese courts demanded not only D. Pedro’s immediate return to Portugal but also wanted to reverse Brazil’s status back to colony (paragraph’s sources: Eakin, 1997; and “Independência,” 1998). D. Pedro - who grew up in Brazil - urged by his Brazilian advisers declared Brazil independent from Portugal and became D. Pedro I, first Emperor of Brazil. If that had not been done, the already existing republican movements might have succeeded in turning Brazil into a republic by that time.

During the Brazilian imperial period, 1822-1889, there were two emperors: D. Pedro I, from 1822 to 1831, and D. Pedro II, the heir prince, from 1831 to 1889. In both reigns there was government centralization supported by a conservative elite which succeeded in suppressing separatists movements but not republican ones.

D. Pedro I’s reign was marked by an authoritarian administration plagued by political and economic problems (this paragraph originated from Baer, 1996; “Constituições,” 1998; Eakin, 1997; Prado, 1995; “Reinado, I,” 1998). In 1823 an

elected Constituent Assembly began discussions to write the first Brazilian constitution, however due to divergences with the emperor it was terminated. In 1824 a constitution written by the State Council was granted by D. Pedro I. The constitution determined a liberal state but D. Pedro I governed as an absolutist. In 1831 the emperor abdicated in favor of his son who later became D. Pedro II - D. Pedro I returned to Portugal and later became D. Pedro IV, king of Portugal.

D. Pedro II's reign was a parliamentary monarchy which consolidated the nation, and gradually abolished slavery - starting in 1850 and ending it completely in 1888 (the second reign description had as sources Baer, 1996; Eakin, 1997; "Escravidão," 1998; Prado, 1995; "Proclamação da República," 1998; "Reinado, II," 1998). Brazil's wars against other South American countries, in particular Paraguay, caused economic, social, and political problems which led to the proclamation of the republic in 1889.

During the imperial rule coffee became the major agriculture commodity and the center of the economy shifted from the northeast to the southeast (the economics of the imperial period was based on Baer, 1996; "Imigração," 1998; "Industrialização," 1998; Oliveira, Guido, & Bielschowsky, 1997; Prado, 1995). Sugar, cotton, rubber, and cacao complemented the role of coffee as export commodities. The coffee business, the dominant one, led to construction of the first railroads in Brazil, eventually providing the ground for the beginning of the industrialization of Brazil - the latter would help to lessen the problem of providing work for those not tied to the scheme "master-slave" which was predominant in rural areas. Incentives for immigration were provided by the imperial government. Until 1889, more than 1.5 million Portuguese, Spanish, Italians, Germans, Slavs, and others were brought to Brazil to substitute for the African slaves in agriculture,

to work in industry and perform other tasks necessary to promote the economic development of Brazil. The majority of the immigrants were sent to work on coffee plantations in the south. In 1900 the Brazilian population was 17 million people (“População brasileira,” 1998). That figure was 4.8 times the population of 1800.

In 1889 after almost twenty years of political campaigning, Brazil became a presidentialist, representative and federalist republic (Eakin, 1997; “Proclamação da República,” 1998; “Reinado, II,” 1998). The period from 1889 until 1930 is known as the “Old Republic.” From 1930 to 1945 there was the first Vargas administration (“Provisional Government,” 1930-1937 and “New State,” 1937-1945). The 1945-1964 period was named the “Democratic-Populist Republic” while the 1964-1985 period was termed the “Military Regime of 1964.” After a transitional civil administration (Sarney’s) elected by the National Congress in 1984, which lasted from 1985 to 1990, Brazil had three direct presidential elections, 1989 (Collor administration), 1994 and 1998 (Cardoso administrations). In 1998 general direct elections chose a president (Cardoso was re-elected), governors, and federal and state legislators for the 1999-2002 period - except for federal senators who have an 8-year term.

The “Old Republic” period (1889-1930) was at first dominated by the military (5 years) and after that by the coffee producers oligarchies from the southeast. The description below originated from Baer (1996), “Constituições” (1998), Eakin (1997), “Imigração” (1998); “Industrialização” (1998), Oliveira, Guido, and Bielschowsky (1997), Prado (1995), “República Velha” (1998), and “Revolução de 1930” (1998). In 1891 the Constitutional Congress promulgated the first Brazilian republican constitution, a liberal one, inspired in the republican tradition of the United States. The economic policy was

geared to coffee production supporting the groups who controlled it. Rubber was another relevant export up to the 1920s and cocoa continued to be exported after the 1930s but none of a match for the coffee business. Brazil was an exporter of raw materials and tropical products and an importer of manufactured goods. The immigration from Europe continued to be stimulated but such stimulus was extended to Asians - among the latter the Japanese were the most numerous. The immigrants plus the former slaves formed the manpower necessary to keep the export machine running. By 1930 the Brazilian population was 33.7 million people, twice the number of 1900 (IBGE, 1872-1980 [interpolation of data], in Martine & Camargo, 1997/1998).

The decentralization of government implemented after the fall of the monarchy and the emphasis on regional and states differences and the competition among them created tensions that started to weaken the national cohesion and identity (this paragraph was based on Eakin, 1997; Oliveira, Guido, & Bielschowsky, 1997; "República Velha," 1998; "Revolução de 1930," 1998). After World War I, the Brazilian power structure and its major players got heavy criticism which led to several political and cultural actions in addition to armed insurrections. In 1930 a split among those who held the political power led to the first Getúlio Vargas administration through a political-military movement.

Vargas lead a "provisional" administration which lasted until 1937 (the 1930-1937 period came from Baer, 1996; "Café," 1998; "Constituições," 1998; Eakin, 1997; "Industrialização," 1998; Oliveira, Guido, & Bielschowsky, 1997; Prado, 1995; "Revolução de 1930," 1998; "Vargas," 1998). His administration, a nationalist one, brought centralization to the government (power shifted from the states to the federal government), leading to a stronger presence of the federal administration on social and

economic concerns. The support to the coffee business (heavily hurt by the New York Stock Market crash) was maintained but the industrialization of Brazil began to get significant support - the latter contributed to the urbanization of Brazil. During the first Vargas administration, a new Constitution was promulgated by the Constituent Assembly in 1934. It maintained the essence of the liberal model in place, but gave more power to the federal government.

In 1937 Vargas became a dictator inaugurating the period called the “New State (Estado Novo)” (description according to Baer, 1996; “Constituições,” 1998”; Eakin, 1997; “Estado Novo,” 1998; “Industrialização,” 1998; Oliveira, Guido, & Bielschowsky, 1997; Prado, 1995; “Redemocratização de 1945,” 1998; “Vargas,” 1998). He granted a new constitution inspired by the European fascist models. It was a period of limited political rights but also a period of increased intervention of the federal government in various aspects of Brazilian social and economic life. Among them were the implementation of labor legislation and the construction of state owned and operated steel and oil plants. In 1945 Vargas was overthrown from power by a military coup d’état supported by many intellectuals, students, clergy and business people. The government presidency was handed to the president of the Supreme Court. An elected president was sworn in the following year. In 1945 Brazil was a 46.4 million people country, almost one and one half the 1930 figure while the inflation rate was 11.1% (IBGE, 1872-1980 [interpolation of data], in Martine & Camargo, 1997/1998; IBGE, 1996b; IBGE, in “Brasil,” 1996).

After Vargas’ deposition (October 2, 1945) began the period that is known in Brazilian history as the “Democratic-Populist Republic” which lasted until March 31,

1964. The following summary about that period originated from Baer, 1996; “Café,” 1998; “Constituições,” 1998”; Eakin, 1997; “Imigração,” 1998; “Industrialização,” 1998; Oliveira, Guido, & Bielschowsky, 1997; Prado, 1995; “Redemocratização de 1945,” 1998; “República Democrático-Populista,” 1998. In January 1946 an elected president was sworn in office. In the same year a new Constitution was promulgated reestablishing individual rights, the independence of the Executive, Legislative, and Judiciary, the autonomy of states and municipalities, and direct election (people’s vote) for presidents. However, democracy was troubled from the very beginning due to presidential intervention in unions (1947), banning of the leftist parties, and rupture in the relations with the USSR (1948). The latter due to pressure exerted by the USA.

During the 1945-1964 period, the people (under the control of the State) took part in the political process. The federal administrations were characterized as populists and nationalists. The federal administrations intervened in the economy pushing for the industrialization of the country through the establishment of national development plans, the nationalization of some areas and opening of others to foreign companies and investments. After 1950, the coffee business was no longer the key player in the Brazilian economic development; it was replaced by the industrial sector. The industrialization process accelerated the urbanization of Brazil causing deep changes in the country profile. Immigration was reestablished after World War II, but practically ceased to exist in sixties. During the World War II, European immigration was reduced and Japanese immigration was suspended. In 1960 the Brazilian capital was moved from Rio de Janeiro to Brasília, a brand new city built in the geographical center of country - the new capital has been viewed as a landmark of the integration of all parts of Brazil.

In 1964, after five administrations (including a second Vargas' one), the "Democratic-Populist Republic" period ended. The "Military Regime of 1964" period began after the Goulart administration which was very troubled by economic and political problems as had been the previous administration run by Jânio Quadros. The following overview about the "Military Regime of 1964" period was generated from Baer, 1996; "Constituições," 1998"; Eakin, 1997; Evans, 1979; "Industrialização," 1998; Oliveira, Guido, & Bielschowsky, 1997; Prado, 1995; "Redemocratização de 1945," 1998; "Regime Militar de 1964," 1998; "República Democrático-Populista," 1998. The military, supported by conservative politicians, Brazilian and foreign business people, part of the Catholic Church, and by segments of the population, overthrew the Goulart administration which was accused of preparing a communist coup d'état. President Goulart was campaigning for popular support to implement a series of reforms (agrarian, tributary, fiscal, and administrative among others) which were supposed to change the socio-economic structure of Brazilian society, threatening the existing status quo of conservative supremacy. Brazil was then a 78.6 million people nation, 1.7 times Brazil of 1945 while the inflation rate was 92.12% (IBGE, 1872-1980 [interpolation of data], in Martine & Camargo, 1997/1998; IBGE, 1996b; IBGE, in "Brasil," 1996).

As soon as the military took over (March 31, 1964) they, among other things, suspended political rights, terminated the terms of various congressmen, and retired compulsorily several judges, professors, and public workers. In 1967, a "sanitized" Congress promulgated a new constitution which intended to "legalize" the "Military Regime" and its acts. In 1969, the military administration in power granted the Constitutional Amendment No. 1 incorporated to the Constitution of 1967 dispositions

which allowed the Executive branch of government to almost completely replace the Legislative and Judiciary by taking from them many of their traditional attributions. The military regime lasted until 1985 when a civilian president was elected by the National Congress. That period is characterized by variable lack of political freedom, continuation of Brazil modernization through strong intervention of the State in economic matters not only as inducer but also as entrepreneur - the telecommunications infrastructure built during the period is a sound example of such posture.

During the 1964-1984 period the Brazilian GDP grew around 6.3% a year (in the 1950-1962 period, the average GDP growth had been 7.4% a year, while in the 1963 it was only 0.6%) (IBGE and Inter-American Development Bank [IDB], in Baer, 1996). From 1968 to 1974, the “economic miracle” period, the Brazilian economy grew around 10.9% a year while growth for the 1981-1984 period was around -0.6 a year - the latter was an erratic one because the GDP growth floated between -4.5 and +5.3% a year (IBGE and IDB, in Baer, 1996). The economic problems which troubled the last administration of the military regime (unbalanced budget, high inflation, unstable GDP growth) began to develop in the seventies due to the world oil crisis and to the increase of international interest rates which affected the financing of Brazilian economic growth causing a de-acceleration of the Brazilian economy (Brazil external debt was hurt significantly). In 1985 Brazil was a developing country with a 132 million population (1.7 times the Brazil of 1964) whose GDP (US\$ 582 billion in 1996 US\$) was distributed as follows: manufacturing/mining and services, around 44% each, and agriculture, around 12% (IBGE, 1996a; 1996b; 1997b; IBGE and Banco Central, in “Brasil,” 1997; IBGE and Banco Central, in “Economia,” 1998). The economic activities were protected from

external competition, the wealth concentration was the world's highest (Gini = 0.60 - 1985 data), inflation was around 237.72% (Costa, 1997; IBGE, in "Brasil," 1996).

In 1986, after six military presidents and in the midst of an economic crisis which had brought again high inflation and recession, a civilian president was sworn in office. The paragraphs about 1985-1994 period had as sources A. Nascimento (1996), Baer (1996), Banas (1996), Benjamin et al. (1998), Bernardes and Filho (1998), "Constituições" (1998), Eakin (1997), "Economia" (1998), Gomes and Unger (1996), "Governo Collor" (1998); "Governo Fernando Henrique" (1998), "Governo Itamar Franco" (1998), "Governo José Sarney" (1998), "Industrialização" (1998), Oliveira, Guido, and Bielschowsky (1997), "O Presidente segundo" (1998), "Planos Econômicos no Brasil" (1998), "Política nacional" (1998), "Presidentes do Brasil" (1998), Schwartzman (1997a), and Toledo (1997).

From 1986 until 1990 a civilian administration (José Sarney was sworn in replacing Tancredo Neves who died before being inaugurated), elected indirectly by the federal senators and representatives, and state delegates, governed Brazil. In 1988 a Constituent Congress promulgated a new constitution which built upon the Constitution of 1946 making it more democratic and more in tune with the present and setting the foundations for the nation the Brazilians wanted Brazil to be. From 1990 until 1994 there were two federal administrations (Fernando Collor was impeached and replaced by his Vice President Itamar Franco). From 1995 to 1998 there was the first Fernando Henrique Cardoso administration. The general elections held in October 1998 confirmed Cardoso for more one term (1999-2002). By the first time, the incumbent president and governors

could seek re-election for an additional consecutive term - an amendment to the Constitution introduced this change in 1997.

After the end of the military regime, the major tasks faced by the Brazilian government were changing the legislation to institutionalize democracy in Brazil, and solving the social and economic problems affecting the country. As alluded to before, the socio-economic scenario was one of recession, high inflation and high wealth concentration.

The change of legislation began by drafting a new constitution in 1985 which was promulgated in 1988. By June 1998 nineteen amendments had already been added, indicating that many compromises reached while drafting the Constitution of 1988 did not last very long. Since 1988, mandatory complementary legislation to the constitution has been approved by the Brazilian Congress in addition to regular legislation. The present federal administration has been pushing for a series of legislation reforms in Congress which are supposed to make government leaner and more agile in meeting the population needs. The opposition parties do not view the current federal administration proposals as the best way to meet Brazilian needs.

Economic problems have proved to be more difficult to solve than the ones related to institutionalizing democracy in Brazil. The Sarney administration implemented three different economic plans (Cruzado, 1986; Bresser, 1987; and Verão, 1989) which cut down inflation temporarily but did not provide a lasting solution to the overall Brazilian economic problems. The Collor administration inherited a scenario of high inflation (1,764.87% for 1989; IBGE, in "Brasil," 1996) and strong recession. The new administration (which lasted from 1990 to 1992) introduced the Collor plan (1990) which

in addition to stabilizing the economy, pushed for its modernization and opened it to international competition. The Collor plan was only temporarily successful in stabilizing the economy but the two other initiatives set out important changes in Brazil which have been reverberating until now.

In 1994, the Itamar Franco administration (which lasted from 1992 to 1994) set in motion the Real plan. Avoiding the mistakes of the previous economic plans (in Brazil and abroad) it stabilized the Brazilian economy and continued to push for its modernization and opening to foreign competition. 1995 inaugurated the Fernando Henrique Cardoso administration. As Cardoso had been the Minister of Finances whose team had developed the Real plan, the economic policy remained the same. The Real plan has been successful in lowering inflation (1994 = 909.70%, 1995 = 14.78%, 1996 = 9.34%, and 1997 = 7.48%), and in eliminating price indexation from the Brazilian economy (price general indexes [IGP-DI] provided by the Getúlio Vargas Foundation, in "Brasil," 1996, in "Brasil," 1997, and in "Cotações," 1998). However, the stability of the currency, the modernization of the economy and the opening to foreign competition has paid a price in terms of unemployment (the yearly annual open unemployment rate has been going up since 1995 after having been decreasing since 1992; see IBGE, 1997b, and IBGE, in Bautzer, 1998) while causing a slow improvement of the wealth distribution and quality of life of the Brazilian population as measured by the Gini coefficient (IBGE, in "País mantém," 1998; UNICEF/IBGE, 1997) and Human Development Index (In Gomes, 1998), respectively.

Brazilian social problems have existed since Brazil's discovery. The lack of proper attention to the needs of the majority of the population by the colonial/imperial/federal,

“capitania”/province/state and local governments have been more the rule rather than the exception throughout Brazilian history. Since the 1930s Brazil has been racing to industrialize. According to Oliveira, Guido, and Bielschowsky (1997), the industrialization process while bringing benefits for the country also aggravated the already existing regional imbalances, caused the urban areas to grow at the expense of rural ones, and population migrations from economically weaker regions and states to stronger ones. Also, the growing metropolitan areas demanded public services, infrastructure, transportation, housing and employment while having to deal with urban violence (Oliveira, Guido, & Bielschowsky, 1997). In addition to that as the public administrations did not provide adequate public education and health care to the majority of the population, the process of social exclusion got worse. According to Beting (1996), the latter was magnified by the indexation of the economy which was introduced in the beginning of the military rule up to 1994 - only those whose could afford to have money in banks or indexed by contract were protected against inflation. The price paid for the implementation of such an economic measure can be captured through the Gini coefficients for the period (Beting, 1996). In the end of the eighties/beginning of the nineties Brazil had the worst level of wealth concentration on the planet (Beting, 1996). The peak was in 1989 (Gini = 0.63, inflation rate = 1,764,87%), a reduction followed until 1992 (Gini = 0.58, inflation rate = 1,157,94%), then another peak happened in 1993 (Gini = 0.60, inflation rate = 2,708.55) [the Gini coefficient varies from 0 to 1; the closest to 1 the worse the wealth concentration] (see Beting, 1996; Costa, 1997; IBGE and FGV, in “Brasil,” 1996; UNICEF/IBGE, 1997).

After 1993 there was a decrease in the wealth concentration (the Gini dropped to 0.58 in 1996), probably due to the process of the stabilization of the economy started 1994. However, the former showed no improvement in 1997 (IBGE, in "País mantém," 1998; UNICEF/IBGE, 1997). The 1997 Gini for Brazil is still a high number but not the worst of the planet anymore and, even better, shows a slight tendency of improvement in the wealth distribution in the country contrary to what happened before the nineties: the fifties (0.50, 1960), sixties (0.56, 1970), seventies (0.59, 1980) and eighties (0.62, 1990) (Data from Benjamin et al., 1998; and UNICEF/IBGE, 1997).

Another index that provides a revealing view of the recent Brazilian history is the human development index (HDI) which is calculated by the United Nations Program for Development [UNPD] (HDI is an indication of level of quality of life, varying from 0 to 1: below 0.5, low quality of life; from 0.5 to 0.8, medium quality of life; and above 0.8 high quality of life). The HDI for Brazil has been increasing over time: in 1960, 0.394; in 1970, 0.507; in 1980, 0.673; in 1985/1987, 0.784; in 1991, 0.787; in 1993, 0.796; and in 1995, the last one, 0.809 (In Gomes, 1998). The last figure places Brazil slightly over the border between medium and high human development countries. The HDI figures show a tendency of improvement in Brazilian socio-economic conditions despite the poor wealth distribution in the country.

Using 1990 data for the various Brazilian regions (the Gini varied from 0.572 to 0.624) and 1991 data for the states (HDI varied from 0.466 to 0.871), it can be noticed that in the beginning of the 1990s, while the concentration of wealth was mostly the same around the country, it was higher where the quality of life was lower (see Costa, 1997). The states' IDH for 1996 show that at that time, no Brazilian state had low IDH, 16 of

them had middle HDI, and 10 of them had high HDI what is an improvement over 1991 when 2 states had low IDH, 18 had middle IDH, and 6 high IDH (In Gomes, 1998). In the following paragraphs as the Brazilian present is addressed, a more detailed view of Brazil will become clear.

The Brazil at the end of the 1990s is a federative republic having Brasília as capital. The incumbent president is Dr. Fernando Henrique Cardoso, a sociologist and former senator. The Brazilian states do not have state senates, there is only the federal one: three senators per state. Dr. Cardoso's first term began in 1995 and ended in 1998. Since he was re-elected for an additional four-year term, Dr. Cardoso will continue to be the president of Brazil until the end of 2002.

Brazil has a political structure similar to the United States one, that is, it is not only a federation of states but a presidentialist republic in which there are three branches of government: the Executive, the Legislative, and the Judiciary. In 1998 elections, there were over thirty political parties ("Quase 15 mil," 1998). However, eight of those parties are considered to be the most powerful. One hundred and six million Brazilians were registered voters by 1998 – voting is mandatory for those older than 17 and younger than 71 years who are not illiterate; it is optional for those who are 16, 17 and older than 70 years or for those who are illiterate in any age (CF/88, 1996, Article 14; "Quase 15 mil," 1998). The present Brazilian Constitution was promulgated in 1988.

The official language is Portuguese. English is the most taught second language at school. Due to the Mercosul agreement, the offer of Spanish as an additional language at school is growing. The main religions are Catholicism (83%), other Christian denominations (10%), and others (7%) ("Brasil," 1998). In the past years, Catholicism

has been losing ground to other Christian denominations in Brazil but it still by far the most important religion in Brazil.

Brazil is divided into five regions which include 26 states and Brasília (a federal district which is the capital of Brazil) - according to the IBGE each region has “common physical, human, economic, and social traits” (“Brasil,” 1997, p. 192). Table I (IBGE, 1996a, 1997b) provides an overview of some revealing aspects of Brazil.

Table I uncovers an uneven occupation of the Brazilian territory. The following description of originated from Becker (1997), Berquó (1997), “Demografia” (1998), IBGE (1997a, 1997b), “População Brasileira” (1998), “Regiões Brasileiras,” (1998), The Economist (1998), and The World Bank (1997). While the North and Centerwest regions have a very low population density, the South and Southeast have a considerable higher population density - however, the latter is much lower than the figures relative to Germany, Italy, Japan, the United Kingdom and somewhat close to the one in France. The IBGE data for the 1991/1996 period (In “Demografia,” 1998) showed that 2.7 million Brazilians moved to other regions of the country. The Northeast continued to be the main origin of the migrants to other regions (46.1% of the total) while the Southeast remained the main destination of the Brazilian migrants (45.6% of the total). The figures also showed that 23.4% of the total migrants left the Southeast to other regions - 41.8% of them returning to the Northeast. The population mobility has been mainly due to the search for a better quality of life. The destination of the migrants continued to be the same, however the total number of migrants has decreased over time.

TABLE I
ASPECTS OF BRAZILIAN REGIONAL
TERRITORY AND POPULATION

Region	% of Brazil's Territory (1995)	Number of States (1996)	Municipalities (1997)	Population (1996)	Habitants /sq km (1996)	Annual increase (*)	% Urban Population (1996)	% of GDP (1996)
<i>North</i>	45.3	7	449	11.3 (7.2%)	2.9	2.4	62.4	3.5
<i>Northeast</i>	18.3	9	1787	44.8 (28.5%)	28.8	1.1	65.2	12.6
<i>Centerwest</i>	18.9	4**	446	10.5 (6.7%)	6.5	2.2	84.4	5.9
<i>Southeast</i>	10.8	4	1666	67.0 (42.6%)	72.5	1.4	89.3	63.0
<i>South</i>	6.8	3	1159	23.5 (15.0%)	40.9	1.2	77.2	15.1
BRAZIL	100.0	27***	5507	157.1 (100.0%)	18.4	1.4	78.4	100.0

Note: (*) Mean geometric rate of annual increase (1991/1996)

(**) 3 states and 1 federal district (Brasília)

(***) 26 states and 1 federal district (Brasília)

Another distortion is the GDP distribution (sources of information: Costa, 1997; “Demografia,” 1998; IBGE, 1997b; “População Brasileira,” 1998; “Regiões Brasileiras,” 1998; The Economist, 1998, “The U.S. Economy,” 1998, and The World Bank, 1997). In 1996 the Southeast accounted for 63% of the GDP while having 43% of the Brazilian population. On the other hand the Northeast accounted for 13% of the GDP while having 28% of the Brazilian population, and the North, 4% of the GDP while having 7% of the Brazilians. Compared to the United States GDP/population rate, the Brazilian one is small - USA GDP is 9.3 times bigger than Brazil GDP for a population that is only 1.7 times bigger. The practical result is that in addition to the uneven GDP distribution, there is less “wealth” per region due to the size of the Brazilian economy. The impact per person per region can be better understood through the Gini coefficient and the HDI which will be discussed later.

Brazilian states are unevenly divided, e.g. the Amazonas state is 72 times larger than the state of Sergipe (for territory distribution refer to Becker, 1997; IBGE, 1996a, 1997a, 1997b; “Indicadores econômicos e sociais,” 1998; and “Regiões brasileiras,” 1998). The two largest states, Amazonas and Pará, are located in the North region. They comprise 33% of the Brazilian territory which is predominantly covered by the rainforest. The highest number of states and municipalities per region is located in the Northeast which is the poorest part of the country. Many of those municipalities function mainly on federal funds which they are entitled to receive. If they had to depend on their own funds to operate they would go bankrupt. The 1988 Federal Constitution made it easier to create new municipalities. Many were created just for political reasons, but were unable to sustain themselves economically. Such boom was stopped after an amendment to the

constitution was passed in 1990s which set more strict requirements for the creation of new municipalities.

As alluded before, Brazil began to be colonized by the coast (sources on population distribution in the Brazilian territory: Becker, 1997; Berquó, 1997; “Demografia,” 1998; IBGE, 1997a, 1997b, 1997c; “Industrialização,” 1998; “População brasileira,” 1998; “Regiões brasileiras,” 1998; The Economist, 1998; and The World Bank, 1997). Still today most of its population lives in the coastal area of the Northeast, Southeast and South. However since the seventies there has been an expansion of the internal frontier. The industrialization of the country and the modernization of agriculture, among other factors, combined to create the Brazil of today with urbanization rates close to those of developed countries - in 1996, 78% (slightly higher than in Germany, Canada, USA, France, and Japan). However, the urbanization rate varies throughout the Brazilian regions. It is higher in the Southeast (89.3%) and Centerwest (84.4%), close to the national figure in the South (77.2%), and lower in the Northeast (65.2%) and the North (62.4%). Brazil’s ten metropolitan areas are located on or close to the coast. Forty seven million people live in them while their annual population growth rate varied according to the location and size of the metropolitan areas being sometimes higher or lower than the national average (1.4%, 1991/1996 period).

Besides being more urban than ever, the Brazilian population is also presenting other trends in its profile. The following five paragraphs address some important aspects of the Brazilian population. They originated from Berquó (1997), “Demografia” (1998), IBGE (1997a, 1997b, 1997c), “População brasileira” (1998), “Regiões brasileiras” (1998), The Economist (1998), and The World Bank (1997).

The Brazilian population has been decreasing its growth rate. It is growing faster in the less populated regions (North and Centerwest) and slower in the other regions (Northeast, Southeast and South). The proportion is 2 to 1, however, as a whole, Brazil is bound to have a population distribution typical of developed countries, that is, the percentage of adults and elders is growing as part of the overall population - in 1996, 0-14 years, 32%; 15-64 years, 63%; more than 64 years, 5%. The population access to better living conditions (housing, sanitation, health care, and others) caused its growth rate to peak in the fifties, but since then, due to family planning, the population growth rate has declined steadily (in 1965 the number of children per woman was 5.7; in 1990, it was 2.7). For 1996, the more schooling the women had the less children they had (0 years, 5 children; 1-3 years, 3.6 children; 4 years, 3.0 children; 5-8 years, 2.4 children; 9-11 years, 1.7 children; and more than 11 years, 1.5 children).

The changes in the age structure of the Brazilian population caused the economically active population (15 to 64 years old) to increase from 58% (in 1980) to 63% (in 1996) impacting substantially the internal labor market - the U.S. figure for the same year is 67%. While more people are looking for jobs, on the other hand, the dependence ratio (children and older people in relation to the active population) has been improving and will continue to do so for quite some time until the proportion of the aged to the very young is reversed.

There are 97 men for every 100 women in Brazil. In urban areas the rate is 94 to 100 while in rural areas the latter is 109 to 100. Also there are more men than women in the North and Centerwest regions - as the latter are agriculture and mining new frontiers, their migrants are more men than women.

In 1996 55.2% Brazilians declared to be whites, 6.0 % blacks, 38.2% mulattos, 0.4% yellow, and 0.2% indians - the terminology is a literal translation of IBGE categories. The Southeast and South regions populations are mostly white, the North and Northeast regions ones are mostly mulattos, while in the Centerwest the number of mulattos is slightly superior to the whites. The majority of the indian population is located in the North region. An interesting fact is that if compared to 1991 data, the 1996 ones showed that the number of people who declared to be white or black increased in comparison to those who declared to be mulattos. Brazil is a country with a high miscigenation rate so possibly many of those who declared to be white may be really mulattos rather than whites. However, that is a controversial issue - Cardoso is among those who support that view ("O presidente segundo," 1998).

The Brazilian families have been changing too. While the median age at marriage has remained almost the same since 1974 (27.6 years of age for men in 1994; 23.7 (1974) to 24.1 (1994) years of age for women), the number of early and late marriages have been increasing, the total number of formal marriages has been decreasing, and the number of informal marriages and separations/divorces have been increasing. In addition to that, in 1996, 21% of the Brazilian families had women as their heads - this figure has been growing in all regions of the country for at least the last 16 years. A direct implication of the latter is the increase of women and children seeking jobs in order to be able to sustain themselves.

In 1995, 72% of the 39.6 million Brazilian housing units were occupied by their owners (sources on housing: "Habitação," 1998; IBGE, 1997a, 1997b; and Valladares, 1997). The average number of occupants was higher in rural than in urban areas (4.4 to

3.8., respectively) with the North and Northeast figures above the national averages while the other regions are below the latter. 96% of Brazilian homes have stoves; 89%, radios; 81%, television sets, and 75% of them have refrigerators. Access to public services (water supply, 76% of households; sanitary facilities, 60%; refuse collection, 65%) has been improving all over the country. Power is provided to 92% of the households in Brazil while telephone services are supplied to 22% of them. Overall the figures are better in urban than in rural areas and also better in the Southeast and South when compared to other regions of the country. The late trends show a general improvement in all figures reported above. The Cardoso administration expects that the privatization of power, telephone, water supply, and other public services - being performed presently - allow the offer of these services to Brazilian not reached by them yet.

The Brazilian public expenditure per person in health care (US\$ 117, in 1997) increased 43% from 1996 to 1997, however it is still far away from what is spent in Chile or Uruguay (never less than US\$ 300) and very far away from what is spent in France, England or the United States (between US\$ 1,200 and US\$ 2,000) - information on health originated from "Brasil" (1997), Cordeiro (1997), IBGE (1997a, 1997b), and "Saúde" (1998). There is a national health care system (SUS) which has the task of providing universal, similar, free access to health care to all diseases to all Brazilians. However this intent is still a goal to be reached due to several problems which range from lack of enough funds, mismanagement, fraud and others. Reflecting the fact that Brazil is a country of many socio-economic contrasts, the pattern of hospitalizations and of causes of death reveal traits of not only developed countries but also of underdeveloped ones. Another point important to mention is that the number of physicians and dentists is the

country is above the figures recommended by World Health Organization however as they are not distributed evenly, this creates a lack of them in certain areas and an excess in others. The Cardoso administration has been putting considerable effort to improve health care in Brazil, and has achieved some victories, however, there is still much to be done.

As alluded to before, the latest human development index [HDI] calculated for Brazil was 0.809 (using 1995 data). Such figure places Brazil slightly over the border between medium and high human development countries (0.00 to 0.49 low HDI, 0.50 to 0.79 medium HDI, and 0.80 to 1.00 high HDI). However this index is not uniform for all regions (In Gomes, 1998). Using 1996 data, the Southeast (0.843), the South (0.860), and the Centerwest (0.818) would be placed along the high human development countries while the North (0.749) and the Northeast (0.604) would be located among the medium human development countries - none of the Brazilian states would be placed among the low HD countries. These results do not come as a surprise for all that has been presented so far as the HDI is calculated from three elements: life expectancy at birth, schooling rate and GDP per capita. As to the discrepancies in schooling rate among regions, that will be discussed later. Despite the differences among Brazilian regions and states, their HDI has been going up overtime indicating a tendency of improvement in the Brazilian socio-economic conditions.

Another index that sheds light on the living conditions in Brazil is the Gini coefficient which has already been addressed before. The last Gini calculated for Brazil, using 1997 data, was 0.58 [the Gini coefficient varies from 0 to 1; the closest to 1 the worse the wealth concentration] - see "País mantém," 1998. The Gini figures for the various Brazilian regions, using 1990 data, showed the following pattern in descending

order: Northeast (0.624), Centerwest (0.618), North (0.595), Southeast (0.583), and South (0.572) - (IBGE, in Costa, 1997). While the wealth concentration was not substantially different among regions, it was worse in the poorest ones (Costa, 1997). Such pattern probably is still in place as the Gini for 1997 (0.58) was close to the Gini for 1990 (0.62). However, despite the still high figures, the Gini coefficients for the 1990s have shown some improvement in the distribution of wealth in Brazil.

According to 1987 data cited in *An Urbanizing World: Global Report on Human Settlements* (1996) released by the United Nations Centre for Human Settlements, 45.3% of the Brazilian population lived below the “absolute line of poverty” expressed in monetary terms” being 37.7% in urban areas and 65.9% in rural ones. The “Brasil 2025” study performed by an agency of the Brazilian government presented a much smaller figure for 1996: 19% of the total Brazilian population were said to be in the “poverty level” (data source: PNUD (1996) and Rocha (n.d.), in *Secretaria de Assuntos Estratégicos [SAE]*, 1998). Even the 1996 figure indicates the magnitude of the task that lays ahead in terms of making Brazil a country for all Brazilians and not only for part of them.

The most recent HDI and Gini coefficient for Brazil show that still a lot needs to be done to improve the quality of life for all Brazilians. As alluded before, the Real Plan has been the last governmental effort to improve the situation in Brazil. It was successful in lowering Brazilian inflation from a four digit figure in 1993 (2,708.6%) to a one digit figure in 1996 (9.3%) and 1997 (7.5%) - IGP-DI from Getúlio Vargas Foundation -, and in eliminating price indexation from the Brazilian economy. In 1996, overall, the prices that grew above the inflation rate were connected to housing (due to increase in public

tariffs and rents), transportation (due to increase in public transportation and fuel), and health and personal services (due to the lack of international competition) - sources on prices: IBGE (1997b), and Rizzieri (1997). The prices that grew below the inflation rate were related to areas that have international competition. They are food and beverages, household furnishings, personal expenses, and apparel - the latter had a deflation.

Another advance was reached in terms of getting positive yearly GDP growth (4.3% average) and GDP per capita growth (2.8% average) rates from 1993 to 1996 which contrasts the instability verified between 1981 and 1992 (for GDP related information see Baer, 1996; "Brasil," 1996, 1997, 1998; "Economia," 1998; Giambiagi, 1997; and IBGE, 1996a, 1997b). However, while the GDP and GDP per capita growth rates went up in 1993 and 1994, they went down in 1995 and 1996 - the 1996 figures were 2.9% and 1.5%, respectively. Such tendency creates concern. According to Pochmann (in "A empresa terá," 1998), the growth of the Brazil GDP has to be at least 6% per year in order for enough jobs to be created for those joining the labor force - estimates vary between 1.1 and 1.5 million jobs per year until 2020 (Pastore, 1997). However, there is no guarantee that the jobs will be created in the formal sector of the economy (Pochmann, in Pastore, 1997).

In 1996 the Brazilian GDP was US\$ 749 billion (11% of the US GDP) which was distributed as follows: services, 54.4%; manufacturing and mining, 33.4%; and agriculture, 12.2%. The participation of services in the Brazilian GDP has been growing slowly while the reverse is happening in regard to manufacturing and mining - in 1986 services represented 45.1% of the GDP, manufacturing and mining, 43.7%, and agriculture, 11.2%. The figure relative to agriculture has floated around 12% for more than ten years.

The overall pattern shown is different from what is happening in, e.g., the United States where for 1995 the figures were: 75% for services, 23% for manufacturing and mining, and 2% for agriculture activities (The Economist, 1998). The contrasts verified between both countries reflect peculiarities of Brazil such as the expansion of the agriculture frontiers, the land reform, the modernization of the economy and its adjustment to globalization.

Despite the smaller size when compared to other areas of the Brazilian economy, agriculture is still very important to the Brazilian economy (information on agriculture: “Agropecuária,” 1998; IBGE, 1997b; and Muller, 1997). In 1994, most of the crop production was located in the South, Southeast and Centerwest while most of the animal production was in the South and the Southeast. According to Mueller (1997), agriculture “attends the Country’s requirements for food, generates additional industrial and commercial activities, contributes to price stability and generates significant export revenues” (p. 173). However along with the productivity growth and the falling prices of agricultural products is the quest for land reform. That has been a noisy issue which has been addressed by the federal government but not fast enough and not in the proper way according to the opposition parties and the “Landless Movement” members (Benjamin et al., 1998).

Manufacturing and mining form the second largest sector of the Brazilian economy (Paragraph’s sources: “Brasil,” 1997; “Economia,” 1998; Guimarães, 1997; and IBGE, 1997b). It has been deeply affected by the opening of Brazilian economy to international competition. The transformations taking place “are related to the gradual process of trade opening , with the elimination of non tariff barriers and the progressive reduction of

customs duties; to the country's integration to Mercosul; and, to the effects of a non inflationary environment that has existed since 1994" (Guimarães, 1997, p. 191). In 1996, in the mining and quarrying sector, while productivity (24.6%), physical production (9.7%), and real average wage (9.0%) went up (14.5%), employment went down (-11.1%). In the manufacturing sector, the pattern was the same but with worse figures, that is, while productivity (13.8%), physical production (0.8%), and the real average wage went up (3.5%), employment went down (-11.4%). The pattern in 1996 shown has been a constant during the nineties along with growing internationalization and decentralization of manufacturing and internationalization of mining. In addition to that the federal, state, and municipal administrations have been selling State-owned companies in areas such as mining, steel, metal-works, oil refining, aviation, and others. The choice of opening the Brazilian economy using the strategies selected by the federal administrations of the nineties has been criticized by those who have opposed them. The growing control of manufacturing and mining companies based in Brazil by foreign corporations, "unfair" competition by imported products, and the increasing unemployment rate in the manufacturing and mining sectors have been major banners of the oppositionists (Benjamin et al., 1998).

The service sector has been the most dynamic in the Brazilian economy (information on services: "Brasil," 1997; Galvêas, 1997; Goldemberg, 1997; IBGE, 1997b; N. R. Castro, 1997; "Serviços," 1998; Ruschman, 1997; Teixeira, 1997; and "Telecomunicações", 1998). Its main segments are communications, trade, and financial services. Overall the participation of services in the Brazilian economy has been increasing, accounting for more than half of the Brazilian GDP in 1996. It is also the

sector that created more formal and informal jobs. However, the performance of its main segments is not similar. While trade and communications increased its share in the Brazilian GDP, between 1994 and 1996, financial services decreased its participation. The fastest growing segment is the communications sector due to the need for the expansion and modernization of Brazil's telecommunications infrastructure (in 1996, Brazil had 10.4 phone lines per 100 inhabitants which is a very low number when compared to international standards). From 1993 to 1996, the real average wage in the service area grew 35% however such growth was differentiated among its various segments. The performance of the services area has been directly impacted by the implementation of the Real plan and its collateral measures such as the opening of the Brazilian economy to international competition, and the privatization of State-owned companies (in areas such as power generation and distribution, water services, roads and highways operations, banking, water transportation, railways, telecommunications, and others). As in the manufacturing and mining sector, opposition parties disagree with the approach used by Brazilian federal administrations of the nineties to address the issues related to the services area. According to them, the denationalization of the various segments of services area and its exposition to international competition without proper protection against predatory practices is against the interests of the majority of the Brazilian people (Benjamin et al., 1998). That is because it takes the control of strategic areas (such as communications and financial services) for the Brazilian socio-economic development out the Brazilian government and society and places into the hands of foreign nationals (Benjamin et al., 1998).

Despite the advances in improving the quality of life, reducing wealth concentration, reducing the inflation yearly rate to one digit figures, and getting the GDP to grow, the Brazilian government is still having a hard time to reorganize itself and the economy so that both meet the needs of Brazilians. It still struggles to balance the national budget so that Brazil will be less dependent on foreign capital while at the same time rearranging itself and the economy. The Cardoso administration approach has been twofold. First is decreasing the size of the Brazilian federal government to offer only the services they believe are pertinent to the State while at the same time making what is left more flexible and efficient. That is what Cardoso calls “the necessary state” (“O presidente segundo,” 1998, p. 287). Second is inducing the growth of the Brazilian economy while at the same time regulating the activities of business and industry so that their interests do not harm those of the Brazilian citizens, but, on the contrary, meet the needs of the latter. The state and municipal governments have been “encouraged” by the federal government to do the same. Since that economic view was put in motion, the yearly growth rate of the Brazilian economy has been as following: 4.2%, 1995; and 2.9%, 1996 (in “Economia,” 1998; IBGE, 1997b). The influx of foreign investment capital has increased as a result of the government policies started during the Collor administration such as the opening of the Brazilian market to global competition and the privatization of state owned companies. While that increase may have been beneficial in the short term, it may bring problems in the medium and long term because of the growing dependence of the national economy on foreign capital (Benjamin et al., 1998).

Since 1995, after 14 consecutive years of positive results, the Brazilian trade balance has been negative. The Cardoso administration stated that such deficit is a result

of the increase of consumption in the country due to the decrease of the inflation rate, opening of the economy, and by the need for materials and equipment by business and industry to meet the market demands (“Economia,” 1998; Kume, 1997). In 1996 Brazilian exports were US\$ f.o.b. 47.8 billion and imports, US\$ f.o.b. 53.3 billion. Exports were distributed as follows: 62.2% were manufactured products while 37.8% were primary ones. As to imports, 37.9% were capital goods, 33.3%, raw materials, 17.3% consumer goods, and 11.5% petroleum products. The United States, Japan, European Community countries, and Mercosul countries are the main Brazilian trade partners (“Brasil,” 1998; “Economia,” 1998; IBGE, 1997b).

In 1996, the current transactions account (trade balance account + services account + unrequited transfers account) presented a deficit which was 3.2% of the GDP which economists, who oppose the federal government economic policy, regard as dangerous for being close to 4%, that would indicate a high dependence on foreign capital which is not always available (paragraph’s sources: Benjamin et al., 1998; “Economia,” 1998; IBGE, 1997b; Moura, 1997). In 1996 the Brazilian international reserves were US\$ 60 billion which provided a safety cushion in case of an especulative attack but at the same time contributed to increasing Brazil’s internal and external debt (the situation has changed for the worse due to the world economic crisis of 1998). Until the end of 1998, the Cardoso administration was able to restructure and manage the Brazilian economy, however there is consensus that several reforms have to be implemented (among them social security, fiscal, and tributary ones) which depend on the National Congress. Reforms of this caliber take time to be discussed and voted and time may be the scarcest commodity for the Brazilian government.

The significant changes that happened in the Brazilian economy have deeply impacted Brazilian workers (information on labor: IBGE, 1997b; Pastore, 1997; “Trabalho,” 1998; Urani, 1997). In 1996 an average of 48% of them had informal jobs and that percentage has been increasing during the nineties - in 1991 it was 41%. While the informal economy keeps the unemployment rate down, it does not pay the taxes which would benefit the population as a whole. Forty percent of Brazilian workers are women. Dividing the Brazilian workforce by age group the following pattern is revealed: 3.7% (15-17 years old), 60.7% (18-39), 31.6% (40-59), and 3.9% (60 and older) - it is not uncommon to find children younger than 15 working in poor areas of the country despite its not being legal. Since the percentage of 0-17 years old is decreasing as a part of the population, the average age of the Brazilian workforce has been increasing.

In 1996 the average schooling of the Brazilian workforce was 3.5 years, however this figure has been increasing (Pastore, 1997). A closer look at the 1996 data revealed the following pattern: less than 8th grade (46.4%), completed 8th grade (12.8%), incomplete secondary education (5.7%), completed secondary education (19.2%), incomplete college program (4.0%), complete college program (11.6%). The improvement of this context has been a matter of special attention lately in Brazil especially after the opening of the Brazilian economy to international competition during the nineties.

In 1980, the Brazilian labor force was distributed as follows: 37% in agriculture, 24% in industry, and 39% in the services area. The figures for 1990 presented the following pattern: 23% in agriculture and industry each, and 54% in these services area (The World Bank, 1997). The 1997 figures are the most recent numbers available: 16% in

agriculture, 22% in industry, and 62% in the services area (International Labour Office [ILO], 1998). Comparing the three sets of figures, there is a noticeable decrease in the labor share in agriculture and in increase in the services area - the 1980, 1990 and 1997 figures for the United States were respectively: agriculture, 3%, 3%, and 2%; industry, 31%, 28%, and 22%; and the services area 66%, 69%, and 76% (The World Bank, 1997; ILO, 1998). 1997 figures for the United States are similar to what has been predicted by Molitor (1981, p. 24) as the probable “post-industrial society workforce distribution” for the year 2000: 76% for services, 22% for manufacturing, commerce and industry, and 2% for agriculture and extrative activities. The contrasts verified between Brazilian and United States/Molitor figures reflect present peculiarities of Brazil such as the expansion of agriculture frontiers, land reform, mechanization of agriculture, modernization of the economy and its adjustment to globalization. The Brazilian workforce distribution probably will continue to change. However, it will take some time before the former reaches the “post-industrial society workforce distribution.”

Brazilian open unemployment rates (using IBGE methodology) for the nineties (1990-1997) have been oscillating between 4 and 6% - it was 5.4% in 1996. According to Urani (1997, pp. 127-128), the figures are low compared to international standards because of the growth of the informal sector of the economy and the decrease of the participation rate of the population in the labor force. He also stated that the explanation may be that there have been “more incentives to remain in school, since the job market is becoming more selective concerning educational attainment, the average real income of the better educated and their unemployment rates are declining” (Urani, p. 128). Even though the number of women participating in the workforce keeps increasing, the

unemployment rate for women is still higher than that for men and men still have the best jobs. Due to the reforms Brazil has been going through in connection with the opening of the economy to the world and its modernization, jobs are being lost in several areas of the economy sectors while being created in others. Pastore (1997) stated that in order to provide jobs to everyone the Brazilian economy will have to grow faster than it has been growing lately and in addition labor laws have to be more flexible. The first part of the statement seems to have a consensus in Brazil however, not the last one.

Between 1993 and 1996, the real medium income of Brazilian workers has increased around 20%. Such increase has been bigger in the informal economy (25%) and among the self employed (almost 45%) and lower among those in the formal economy (almost 10%). For other areas the percentages have been as follows: 10% in manufacturing, almost 30% in commerce, 35% in services - no data found for agriculture. According to a 1995-1994 study performed by DIEESE (cited in "Trabalho," 1998) for every four years of schooling (1-4, 5-8, 9-11 grades) there is a 44% increase in the worker's income. Such increase is 66% for the worker that finishes a four-year college program. The average schooling of Brazilian workers has been improving, however, it is still very low by international standards, which is a burden not only for workers but also for business and industry in Brazil. In part the latter are suffering the consequences of a situation for which they are to blame too. Before the opening of Brazil to foreign competition, a substantial segment of business and industry did not "see" the need for more schooling for Brazilian workers.

Similar to the rest of the world, Brazilian unions have also been losing members (sources on unions: Banas, 1996; IBGE, 1997b; "Sindicalismo," 1998). In 1992, 18.7%

of Brazilians older than 17 years old were unionized. That number declined to 18.5% in 1993 and to 18.0% in 1995. The unionization of Brazilian workers is low when compared to international standards. Since the implementation of the Real plan the focus of union actions shifted from salary adjustment to inflation to fighting unemployment and the flexibilization of workers' rights and of the labor work period.

As was shown before, the Brazilian population is getting older and living longer, and a huge part of it work in the informal economy. All Brazilians, whether they contributed to social security or not while they were working, have the right to draw retirement from public social security (information on social security: H.O.P.Castro, 1997; IBGE, 1997b; "Previdência social," 1998). Public workers used to retire with full pay from public social security. Previous federal administrations used social security funds for other purposes rather the original purpose. This provides a summarized picture of the problems the Brazilian social security system is having to fulfill its mission presently.

Changes have been and are being made in the social security legislation by the Brazilian Congress. The whole piece of legislation is called social security reform. Such legislation changes have been made in order to make social security not only more just but financially viable too. There is much controversy about the consequences of the changes made so far. Another social security reform is likely to happen in the years to come because many of the problems the first one intended to solve are either still to be addressed or have been partially addressed as indicated by F. Oliveira (in Lavoratti & Cristino, 1998).

To complement this overview of Brazil, it is necessary to address the present status of education there. Education is important because it impacts every part of human

commonalities, that is, a person as an individual (self), as a family member, as a citizen, as a lifelong learner, as an aesthetic/leisure participant, as a consumer, and as a producer (Parnell, 1995). Such roles will generate actions that will impact various aspects of a country life among them its political system, government, demographics, health care, business and industry, labor, social security, education, and science and technology, to name a few. Education has affected the past of nations, is affecting the present, and will affect the future.

The history of education in Brazil has not been an easy or just one. As happened before, since 1995 several reforms have been taking place. A review of education in Brazil, latest data, and the reforms that are in motion will be provided in the next section of this work in addition to the present status of science and technology there.

Education in Brazil

The Brazilian Constitution (CF/88, 1996) states in its 205th article that:

The education, right of all and a duty of the State and of the family, will be promoted and encouraged in collaboration with society, aiming for the full development of the individual, its preparation for the exercise of citizenship and its qualification for work (p. 99).

It has not always been like that. For a long time in Brazilian history, education was not provided to all Brazilians, and still today, despite what is stated in the Constitution, it is a right still to be fulfilled for many.

There are many definitions for education with similarities and differences among them. Duarte (1986) provided an overview on the matter. The most traditional ones describe education as independent of time and place where it occurs while the most recent

ones, since Durkheim (1858-1917), admit a relation of dependence. Existing definitions for education conceptualize it as an enlightener of individuals, as an enabler of individuals to live in society, as a means of keeping individuals under the control of those in power besides others. While probably no specific definition will ever prevail, the need for education in human life seem to be of consensus.

The two Directives and Bases of Education Acts of Brazil, Act No. 4021/64 (no longer valid) and Act No. 9394/96, differ in their definitions for education. According to Souza and Silva (1997), the definition present in the former was more philosophical while in the latter the definition aims more toward the development for life in society rather than for preparing the whole person. For them, in the newer definition, “lost the philosophy, gained the sociologism” (p. 7).

For purposes of the present study, the researcher will use the definition for education present in the Directives and Bases of Education Act of 1996 [LDB of 1996] (“Lei de Diretrizes e Bases da Educação [LDBE96],” 1997) as is stated in its first article:

Education encompasses the formative processes that are developed in the family life, in the human companionship, at work, in the institutions of instruction and research, in the social movements and civil society organizations and in the cultural manifestations (p. 19).

A brief retrospective will describe the way education was present throughout Brazilian history up to present days. First the review will cover the past until 1994. The “present” will address the period beginning January 1995 - it will include also information about the current status of science and technology in Brazil. Such review will cover mostly formal and regular instruction but it will also go beyond that whenever necessary. By formal and regular instruction it is meant the one provided “according to the regulations of

the LDB” of 1996, being subordinated “to supervision of the Public Government”, and entitled “to issue diplomas that are registrable in the appropriate government agencies” (Souza & Silva, 1997, p. 2).

Before the coming of the Portuguese to Brazil, education was mostly informal. The native Brazilians had their languages but no written code. According to Monlevade (1997), “transmission of culture happened through the contact of older with younger generations, beginning in the family socialization” (p. 17). The nomad tribal nations lived in symbiosis with Nature and the development in culture within each group happened assystematically - Brazil is not known to have civilizations as advanced as the Incas in Peru or the Maias and Aztecs in Guatemala and Mexico (Monlevade, 1997; Tobias, 1986).

Education in the first fifty years after the arrival of the Portuguese in Brazil (1500-1549) was asystematic, too. “Colonização” (1998), Göller (1996), Monlevade (1997), and Tobias (1986) described how life and education were by then. There was no school as such, just learning by observation and doing while at work, at “social activities” or other daily situation. The culture and language of the colonizer were imposed by their superior militar and technological levels. Formal education was available only in Portugal. At first, Brazil was a mere location for collecting raw materials, specially Brazil-wood, so no substantial infrastructure investment was made by the Portuguese government. From 1500 to 1529 Brazil was inhabited by the natives and Portuguese (mostly bachelors, missionaries, and exiled people). In 1530 Africans started to be added to the Brazilian population because the Brazilian natives refused to work as slaves in sugar plantations. The Portuguese authorities, at that time, viewed it as not necessary to provide any formal

education to those in Brazil which is contrary to the view of the Spanish who started schools and universities in their colonies in the Americas.

According to several authors (“Colonização,” 1998; Monlevade, 1997; Ribeiro, 1993), the system of 14 “hereditary captainships” established in 1534-1536 was not being successful in achieving the results expected by the Portuguese government. Therefore, the latter decided to have a stronger presence in the territory by establishing a local central administration which would support the existing captainships.

In 1549 along with the first general governor of Brazil, came many families and Jesuit priests who were the first to provide formal education in the territory. The Jesuits’ accomplishments in Brazil during the colonial times described below originated from “Companhia de Jesus” (1998), Göller (1996), Monlevade (1997), Ribeiro (1993), and Tobias (1986).

The Jesuits’ presence in Brazil was made possible due to a concession granted by the King of Portugal to open schools in Brazil. Their original mission was to catechize and provide instruction to the native Brazilians but as they were the only educators in the territory by the time of their arrival, they also took charge of educating the colonists. The Jesuits received funding from the Portuguese government to buy instructional materials, agricultural implements, and domestic utensils in Europe and were also granted land in Brazil upon which to build and operate primary and secondary schools. Funds were also provided to start the schools’ operations, however, after that they were self sustained. Their schools had as students the legal sons of the whites, mestizos, orphans from Lisbon, and a limited number of the native Brazilians’ children. The Africans or their children had no right to education.

At first the education for the sons of the colonists was the same as for the sons of the natives. The curriculum included learning the Portuguese language, Catholic religion, reading and writing, and Latin grammar or vocational learning - optionally, music and singing. Eventually that changed because it was found that the natives were not suited to become priests. Both the sons of the colonists and of the natives would get religious education. However, the former would get a more academic education while the latter a more utilitarian one. After 1570, the education provided in the Jesuits' schools was changed becoming more European - due to the priority of using the existing limited resources of people and funding for the education of the sons of the colonists and to the preparation of priests. The students were taught Greek and Latin rethoric, grammar, philosophy, and theology while the majority of the people (Africans and Brazilian natives) learned by observing and doing in their daily lives. The Jesuits' educational system was effective in preparing new priests, and in spreading Christianity but provided an education that was not useful in Brazil for the daily needs of their students while at the same time preparing them to embrace a static worldview. In 1759 the Jesuits were expelled from Portugal, Brazil and other colonies by the Portuguese government, accused of being an "impediment for the conservation of the Christian unity and of civil society one too" (Ribeiro, 1993, p. 33). According to Portuguese authorities, the Jesuits not only had become almost as powerful as the State going beyond their educational attributions in the kingdom. The latter was viewed at that time as not aimed at the interests of the country because the education provided by the Jesuits was seen as not adequate for preparing the Portuguese to compete in the industrial era. Also their wealth should be returned to the State (the Portuguese needed such wealth for paying for their external debts). At that

time the Jesuits had at least seventeen main schools around Brazil and tens of seminars, missions, residences, and literacy schools. Those were the first “public” schools in Brazil.

According to Monlevade (1997) and Tobias (1986), after the arrival of the Jesuits, other religious orders came to Brazil including the Benedictines, the Carmelites, the Franciscans, and the Dominicans. They also established schools around Brazil. Monlevade (1997) and Tobias (1986) also alluded to other schools which were created by educated lay people. Those schools were not official, because they were not operated by the Jesuits. They were also not paid, that is, they were private “sponsored” schools - funded by rich farmers or businessmen. The latter had as students sons of the free men, servants living in the houses and belonging to the households, and “curious” girls.

In 1759, in addition to the expulsion of the Jesuits from Brazil, an Executive Order (June 28) from the Portuguese government, related to educational activities in the colony,

... created the position of general director of studies, determined that all instructors had to take exams in order to be allowed to teach (who from that time on had the same rights as the nobles), prohibited public or private instruction without the authorization of the general director of studies, and designated commissioners who would have the task of assessing the state of the schools and instructors (Ribeiro 1993, p. 33).

The new educational guidelines were:

to prepare the perfect noble, now a businesspeople; studies should be simplified and abbreviated so that more people got interested in higher education; propitiate the improvement of the Portuguese language; diversify content, including scientific matter; make studies the most practical as possible (Ribeiro, 1993, p. 33).

As one can learn from Monlevade (1997), Ribeiro (1993) and Tobias (1986), between 1759 and 1772 the Portuguese government was not successful in replacing the public education that was previously provided by the Jesuits. According to authors above,

only after 1772 the Jesuit public education started to be replaced by a structure named “Regal Classes.” Anyone who thought he/she could teach could get permission from the King of Portugal through any town councillor. Such permission was granted to teach at the primary or secondary level. If the instructor had students he would be paid by the City Council for his/her work from taxes collected from butchers’ and sugar cane brandy distilleries. Teaching could happen any place and the curriculum was of rational and liberal inspiration but conservative in practice - the latter continued to be disconnected of the Brazilian reality.

According to Monlevade (1997), in addition to those who taught the “Regal Classes”, there were also other providers of education: seminaries (secondary education run by Catholic religious orders), and private “sponsored” schools. While in the seminaries instruction was provided by religious people, in the private “sponsored” schools, the instructors were lay people. Staff of seminaries and private “sponsored” schools were slave laborers.

The structure of “Regal Classes” and seminars did not get to replace the educational system implemented by the Jesuits in terms of coverage and quality - despite the fact that the focus of the latter was aimed at the interests of their order (Monlevade, 1997; Ribeiro, 1993; Tobias, 1986). While the African Brazilians continued without having access to education and had been joined by the native Brazilian, the Portuguese children had priority over the Brazilian born children which created resentment among the locals (Monlevade, 1997; Ribeiro, 1993; Tobias, 1986). Apart from the establishment of the Olinda Seminar in 1800 (located in Pernambuco, it had as a model the School of Nobles in Lisbon, and was for some time the best secondary school in Brazil), the situation

had other major developments only with the arrival of the Portuguese Royal family plus 5,000 court people to Brazil in 1808 (Monlevade, 1997; Ribeiro, 1993; Tobias, 1986). As alluded before, by the beginning of the nineteenth century, Brazil had a population of 3.0-3.5 million people, two-thirds of them being blacks (Africans and their descendants) or mulattos (a product of the miscigenation of the whites and blacks) (“Escravidão,” 1998; “População brasileira,” 1998).

In order for the Portuguese government to continue to operate from Brazil, the Regent Prince D. João took several initiatives which have already been alluded to before. Monlevade (1997), Ribeiro (1993), and Tobias (1986) indicated that education benefited from the arrival of many instructors who had come with the Royal family; from the economic boom that resulted from the government measures because more money was available for educational activities; from the establishment of the Royal Press (1808), the Royal Library (1810), the Botanic Garden (1810), the Navy and Army Academies (1808 and 1810, respectively), some surgery/anatomy/medicine colleges (1808 and after - which belonged to the Navy and Army); from the establishment of vocational and technical educational institutions and colleges (1808 and beyond); from the establishment of papers (the first one in 1808) and magazines (the first one in 1812); and from a major exchange of ideas and people from other countries due to international free trade policy in effect (such exchange increased since 1815, especially with the French). It is important to make clear that the educational institutions established between 1808 and 1821 were concentrated in a few cities located in few parts of Brazil (Rio de Janeiro (capital), Bahia, Minas Gerais, and Pernambuco) which were the centers of power by then. Also, before 1808 the only

higher education studies existing in Brazil were those taught by the religious orders to develop priests in Brazil which happened beginning in the 17th century.

According to Monlevade (1997), Ribeiro (1993), and Tobias (1986), the demand for primary and secondary education grew substantially during the period the Portuguese Royal family was in Brazil but there were neither enough instructors to provide such education nor enough funds to pay for it. Things got worse in 1821 with the return of the Royal family to Portugal because with them also left instructors and resources (“gold”) that were already in shortage. A result of such problems was the establishment of the first private “paid” schools in Rio de Janeiro and other major cities whose instructors were supposedly foreign and Brazilian licensed individuals. While the “Regal Classes” could neither be taught by women nor have them as students, the same was not true for private “paid” and “sponsored” schools.

In 1822 the political situation between Brazil and Portugal became so antagonistic that the former gained independence from the latter. “Independência” (1998), Monlevade (1997), Ribeiro (1993) and Tobias (1986), described what happened to education until 1831. The independence of Brazil did not bring “real” immediate changes in public education. Despite the proposal of the Constituent Assembly in 1823 to state in the constitution the establishment of a “system” of primary, secondary and higher education institutions around the country, the version “granted” by the emperor in 1824 stated that free primary education was to be offered to all citizens, and that schools and universities would be established, but made no mention of whom would offer what levels of instruction (primary, secondary, and higher education). In 1827 an Instruction Act was enacted which mandated the offering of free public primary education to all Brazilians in

all parts of the country and the use of the Lancaster and Bell method of organization of instruction (to compensate for the lack of enough qualified instructors). The original bill mandated the establishment of a “system” of primary, secondary and higher education around the country. However the situation did not change: education continued to be for the elite of the country while most of the population was illiterate (blacks, poor people, and also women who lived in small cities and rural areas). Before D. Pedro I’s abdication in 1831, he established Law programs in São Paulo and Olinda (Pernambuco) which were mostly an effort to provide human resources to run the public bureaucracy. That need was used as an excuse for not expanding primary education but only academic secondary and higher education and only for a few (at that time one could go directly to secondary education without passing through primary education). Also a Liberal Arts Academy and an astronomical observatory were established during D. Pedro I’s reign. There was no interest in secondary vocational-technical education because the sons of the elite wanted to go to college - where they may or may not get any technical training. As a result of that, the existing secondary level technicians in Brazil were mostly foreigners.

Monlevade (1997) and Souza (1997) wrote that even though the Constitution of 1824 stated that universities would be established around the country, it never happened during the imperial period. According to Monlevade (1997), universities were not established because they were viewed as expensive to run and also as institutions that could originate political problems later.

The first organized attempt to prepare teachers for primary education since the Jesuits had left Brazil in 1759, happened in 1835 with the establishment of the first *Escola Normal* which is a secondary level school (Göller, 1996; Ribeiro, 1993; Tobias 1986).

After that *Escolas Normais* multiplied in Brazil. According to Göller (1996), “in these schools, it was reproduced the same situation of the other secondary and primary schools: lack of instructors to prepare new instructors, and a curriculum restricted to the consolidated knowledge without being in touch with the practical reality” (p. 60).

In 1834 an amendment to the Constitution of 1824 transferred the responsibility of offering primary and secondary education from the central government to the provincial governments (Ribeiro, 1993; Tobias, 1986). According to Monlevade (1997) and Ribeiro (1993), such transfer while allowing flexibility did not allow public education to expand properly due to a lack of human, financial, and material resources, political will from the local governments, and social demand for it. Monlevade (1997) stated that apart from what happened in São Paulo province which was already a major powerhouse in the Brazilian economy, the situation remained mostly unchanged up to 1931. While the other provinces had a number of primary schools, they only had one secondary school each.

According to Piletti (1994; in Göller, 1996), during D. Pedro II’s reign, it was proposed that secondary education would be better taught by schools (lyceums) and not through the format of “Regal Classes.” The first lyceum had been established in the Rio Grande do Norte province in 1825 during the first imperial reign. Göller (1996), Ribeiro (1993), and Tobias (1986) described what happened. Lyceus were established in Bahia and Paraíba provinces in 1836. The following year a model lyceum, the D. Pedro II secondary school, was established in Rio de Janeiro then the capital of Brazil. Secondary education then reflected what was going on in Europe being a combination of humanities and experimental sciences but more to provide a “general culture” rather than aiming to improve the quality of life of the population. The emphasis either on humanities or on

experimental sciences kept shifting according to the various reforms that were mandated after 1834, that is in 1841, 1854, 1862, 1870, 1878, and 1888. Secondary education was still for the few that belonged to the elite of the country.

Ribeiro (1993) indicated that little happened regarding to vocational/technical education during Pedro II's reign. Some support was provided to commercial, agriculture and industrial programs in a few states but even such support was minimal. She also stated that two programs for the blind (1854) and deaf-mute (1856), respectively, were started in Rio de Janeiro, however they only survived due to the efforts of the instructors and administration.

Between 1843 and 1883, five times proposals for establishing universities in Brazil were introduced, none were implemented (Niskier, 1989; in Souza, 1997). The expansion of colleges and the establishment of universities in Brazil had to wait for the coming of the republic.

As alluded to before, near the end of the 1880s, two political facts happened as a culmination of the existing economic, social, and political developments: in 1888 the total abolishment of slavery, and in 1889 the proclamation of the republic ("Reinado II," 1998). Along with those two political facts came additional pressure for education for all which included the whites, the former slaves, native Brazilians, mestizos, and foreign immigrants. That pressure grew as the migration from the rural areas to the cities increased (Monlevade, 1997).

The first Republican Constitution (1891), like the Imperial one of 1824, also addressed the issue of education in its body. Several authors (e.g., Cury 1996; Göller, 1996; Monlevade, 1997; Ribeiro, 1993), discussed the matter. Public primary and

secondary education was to be secular and continued as a responsibility of the states (former provinces) except for in the capital of the country (the federal government would be in charge of it). Secondary schools could be established by the federal government in the states too. Public higher education might be provided by the states while the federal government might do the same in the capital of the country. Contrary to the Imperial Constitution of 1824 which mandated that primary education was free for all citizen, the Republican one of 1891 made no reference to free primary, secondary or higher education. Also, no level of public government was mandated to offer any level of education, that is, it was optional. Such determinations were coherent with the views of federalism, liberalism and positivism which were represented among the elite of the country at that time.

According to Ribeiro (1993), even before the approval of the first Republican Constitution, an educational reform was devised (1890) and put in place in the following year. Due to the existing decentralization, it was mostly aimed at the educational system in the capital of Brazil. Before 1900, the Reform of 1890 and the changes that followed tried among other things to make not only primary and secondary education more than a preparation for college but also the curriculum more scientific and less literary. However, neither was achieved. In the same period, higher education, which was scarce by the time of the proclamation of the republic being offered mostly through isolated colleges in a few major cities, witnessed the establishment of a few state and private colleges in Bahia, Minas Gerais, Rio Grande do Sul, and São Paulo (Duarte, 1986; Souza 1997). The real first tentatives for establishing Brazilian universities had to wait till the end of the first decade of the 1900s (Duarte, 1986; Souza 1997). Overall, education at the primary,

secondary, and higher education levels continued to be not in tune with the needs of the majority of the population.

By 1900, Brazil was a country of 17 million people, whose economy was very dependent on exporting agriculture products and on importing manufactured goods (“População brasileira,” 1998). Most of the population lived in rural areas while the illiteracy rate was 65% of the population 15 years and older (Fernandes, 1966, and IBGE, 1936, in Ribeiro, 1993; IBGE, 1940-1980, in Plank, 1996; IBGE, 1996a; IBGE, 1872-1980, in Martine and Camargo, 1997/1998; Monlevade, 1997).

During the “Old Republic” period getting education was something difficult to achieve. Between 1900 and 1930, the illiteracy rate only declined from 65% to 60% of the population 15 years and older (Fernandes, 1966, and IBGE, 1936, in Ribeiro, 1993; IBGE, 1996a). Despite the legal possibility of providing education at all levels, the states mostly provided primary education for part of the people while the federal government continued to fund and operate secondary and higher education institutions which were directed to the preparation of the elite of the country (Piletti, 1994, in Göller, 1996; Ribeiro 1993). Public vocational-technical education (primary and secondary levels) was provided by a mix of federal, state, and municipal institutions for a small part of the population - which did not include the elite because it was not interested in vocational-technical education.

According to Monlevade (1997) and Ribeiro (1993), private “communitary”, “confessional”, and “commercial” schools complemented the offer of primary and secondary education for those who could pay for it. The latter were the successors of the previously “sponsored”, “religious”, and “paid” schools. They differed among themselves

by who operated them, how they were funded, the curriculum taught, and by their selectivity (students would progress in the educational path depending on a mix of disciplinary, financial and curricular criteria). There were also private vocational-technical schools (primary and secondary levels). Data from the 1907-1912 period show that while the number of private vocational-technical schools doubled the number of public schools, the number of students enrolled in the former was slightly less than those enrolled in the latter (Diretoria Geral de Estatística, ano 1, in Ribeiro, 1993).

In addition to the private primary and secondary schools (academic and vocational-technical), there were also private higher education institutions. Data from the 1907-1912 period show that they responded for approximately half of the students enrolled in higher education while constituting more than 70% of the existing colleges (Diretoria Geral de Estatística, ano 1, in Ribeiro, 1993).

Overall, primary education was offered for less than one third of population in the proper school age while secondary and higher education was for an elected few (Ribeiro, 1993; INEP, 1939, in Ribeiro, 1993).

Despite unsatisfactory results achieved in the period not only in terms of quantity of Brazilians going to school but also in the quality of the education provided, data on education regarding the first republican period showed improvement when compared to the imperial one (Monlevade, 1997; Ribeiro, 1993). That improvement happened mostly in primary education because secondary education continued to have a very selective format and higher education was an extension of the latter (Monlevade, 1997; Ribeiro, 1993). More and more, reading and writing was seen as something necessary to function in the urban country that Brazil had been being transformed to since the 19th century.

Manufacturing/commerce was at the base of such change (Ghiraldelli, 1990, in Göller, 1996; Ribeiro 1993). So besides government and private institution efforts in education, several educational initiatives or proposals were developed by various agents such as pro-literacy nationalist, socialist, communist, workers, and anarchist groups - all non governmental organizations [NGO]s of several inclinations (Ghiraldelli, 1990, in Göller, 1996; Ribeiro 1993).

While the federal government did not get involved in setting nationwide regulations for primary education (but there were several reforms in various states) during the “Old Republic” period, it did so in secondary and higher education. From 1900 until 1930, federal administrations implemented four reforms which impacted mostly secondary education but which also related to higher education (Ribeiro, 1993). Such reforms “revealed an oscillation between the classic humanist influence and the real or scientific one” (Ribeiro, 1993, p. 79).

Despite getting more attention than during the imperial period, primary teacher training did not get the support it should have had during the first republican period (Monlevade, 1997; Ribeiro, 1993). Additional *Escolas Normais* or *Institutos de Educação* were established and the need to train teachers pushed for the development of curriculum and instructional materials which, according to Monlevade (1997), came to “sew a practice of pedagogical construction of the citizenship” (p. 32). Secondary teachers were recruited from among those with higher education degrees (lawyers, engineers, etc.) because there was no teacher training for this level. The latter did not need to be many because there were not many secondary schools. As to instructors for

higher education, according to Ribeiro (1993), “the selection criteria were not efficient” (p. 94).

During the “Old Republic” period, three major pedagogical views also influenced the educational issues in Brazil: the traditional, the libertarian, and the new school [*“escola nova”*] views (Ghiraldelli, 1990, in Göller, 1996; Ribeiro, 1993; Saviani, 1994). The first derived mainly from the intellectualist education and teaching method proposed by Herbart (German philosopher, 1776-1841) having several characteristics of the Jesuitic pedagogy. The second originated from the anarchist/communist worldview, and the last had the ideas of Dewey (American philosopher, 1859-1952) as the main reference (Duarte, 1986; Ghiraldelli, 1990, in Göller, 1996; Ozmon and Craver, 1995; Ribeiro, 1993; Saviani, 1994). While the traditional pedagogical view spread quickly in Brazil due its functionality being the predominant one during the “Old Republic”, the new school pedagogic view became the only viable alternative to it (from the 1920s on). That is because those who defended the libertarian pedagogical were repressed by the federal government due to its proposals of radical change in the existing social and political structure (Ghiraldelli, 1990, in Göller, 1996; Saviani, 1994).

The competing educational views intertwined with social, economic, and political issues originated several actions during the “Old Republic” period. Besides the reforms that federal administrations enacted relating to educational issues (in 1890, 1901, 1911, 1915, 1925), other reforms by states, and national and state congresses on education, the first period of the republic (1889-1930) witnessed a number of other initiatives in education performed by public governments or private entities. In order to contextualize

what has already been said about education in that period, some relevant milestones are presented below.

In 1890 the federal government established the Ministry of Instruction, Mail and Telegraphic Services which was terminated in 1892 with its functions scattered among other ministries (Duarte, 1986). It can be viewed as the precursor of the Ministry of Education and Sports [MEC] in the Republican period but its reach was much more limited (by the Constitution of 1891) than it is presently. At that time, the idea of having a national system of education did not match with the ideal of strict federalism and liberalism. In 1925 the National Department of Instruction was established (Duarte, 1986). In 1930 the latter was replaced by the Ministry of the Affairs of Education and Public Health which is officially considered the origin of the Ministry of Education and Sports [MEC] (Duarte, 1986; MEC, 1999). Since 1930 there were not only many reorganizations in the ministry in charge of education but also its denomination was modified a few times (Duarte, 1986; MEC, 1999). Over time, MEC had the following change of names: in 1937, Ministry of Education and Health; in 1953, Ministry of Education and Culture; in 1985, Ministry of Education; and in 1992, the denomination of Ministry of Education and Sports (Duarte, 1986; MEC, 1999).

In 1908 a private philosophy college (Faculdade de Filosofia de S. Bento) was established in São Paulo (Souza, 1997; Tobias, 1986). It was the formal beginning of pure research in Brazil (Tobias, 1986).

In 1909 the federal government established one elementary/vocational school in each of the capitals of the states (“Secretaria Nacional [SENETE/MEC],” 1991). Those schools were focused on the children of the poor because the elite sent their children to

schools that would lead them to higher education (such schools would originate what is presently known as the federal technological education system). According to Souza (1997), in the same year, a university was established in Manaus during the rubber boom - unfortunately it closed its doors in 1926.

In 1911 the federal government established the Superior Council of Instruction. In 1925 it went through changes and became the National Council of Instruction; in 1931 the Campos Act transformed it into the National Council of Education; in 1961, the first Directives and Basis of Education Act, made new changes and established the Federal Council of Education which was terminated in 1994 and replaced by the National Council of Education in the same year (Duarte, 1986; Saviani, 1998a, 1998b; Souza & Silva, 1997).

In 1912 a university was established in Curitiba, however, it only lasted four years (Carneiro, 1984; Souza 1997; Tobias, 1986). The following year a federal College of Medicine was established in São Paulo capital which was set up to be a model institution. It was organized with the technical support of the Rockefeller Foundation and its instructors were from Brazil, France, and Italy (Souza, 1997; Tobias 1986).

In 1920, the federal government established the Universidade do Rio de Janeiro which was formed by the union of several already existing colleges - the authorization for its establishment had been provided by a federal law in 1915. It was renamed to Universidade do Brasil in 1935, and later became Universidade Federal do Rio de Janeiro (Duarte, 1986; Souza, 1997; Tobias, 1986). That is considered to be the oldest Brazilian university.

In 1922 federal congressman Fidelis Reis proposed a bill which mandated compulsory vocational education for every youngster in Brazil as part of their schooling. That bill became law only in 1927 but due to pressure from the elites, the compulsory status of vocational education was removed, and the dualism persisted (SENETE/MEC, 1991).

In 1924, educators established the Brazilian Education Association (Associação Brasileira de Educação [ABE]) which was probably the major forum of Brazilian education until 1967 when it held its last national conference (Duarte, 1986; Göller, 1996; Plank 1996; Yamamoto, 1996). It has also acted as a clearinghouse of studies and papers on education (Göller, 1996; Yamamoto, 1996).

In 1927, the University of Minas Gerais was established, the second oldest Brazilian university (Duarte, 1986).

During the 1920s, as urbanization and industrialization started to gain momentum in Brazil, the “*escola nova*” movement started to develop as well as the “Marxist” movement (Plank, 1996; Ribeiro, 1993; Yamamoto, 1996). The latter had as founders some Brazilian activists of the anarchic-unionist movements after being exposed to the writings of Marx (Yamamoto, 1996). While the “*escola nova*” movement made itself felt strongly present by the end of the 1920s, the “Marxist” one would only be an important player in the educational arena from the end of the 1960s on (Saviani, 1994; Yamamoto, 1996).

In 1930, as alluded to before, a political-military movement (the Revolution of 1930) ended the “Old Republic” period giving birth to the first Vargas administration (1930-1945). By then, Brazil was a country of 34.7 million people (twice the population

of 1900), who lived mostly in rural areas (IBGE, 1996a; IBGE, 1872-1989 [interpolation of data], in Martine & Camargo, 1997/1998). The boost to be given by the federal government to industrialization would start to change not only that but also the base of the Brazilian economy which still was dependent on exporting agriculture products and on importing manufactured goods (“Estado Novo,” 1998; Ribeiro, 1993; “Vargas,” 1998). While the illiteracy rate was around 60% of the population 15 years and older, primary education was offered to around 2 million students (approximately 6% of the population which had a life expectancy between 30-35 years by then) (IBGE, 1982, in Martine e Camargo, 1997/1998; IBGE, 1996a; IBGE (former DGE), year I, in Ribeiro, 1993; INEP, 1939, in Ribeiro, 1993). Secondary and higher education were for a few. Less than 60 thousand students were enrolled in secondary education college bound, less than 50 thousand students in secondary education not college bound, and less than 25 thousand students in higher education (IBGE (former DGE), year I, in Ribeiro, 1993; INEP, 1939, in Ribeiro, 1993).

After 1930, the national government became more involved with education. Addressing one of the criticisms of the *escolanovistas* (adepts of the “new school or *escola nova*” movement), it started to organize education in Brazil (Göller, 1996). In 1930, the Vargas administration established the Ministry of the Affairs of Education and Public Health, which was “required to define national policy guidelines, and to develop a National Education Plan to direct the activities of states and municipalities” (Plank, 1996, p. 65). During 1931-32, the Vargas administration provided a legal and organizational structure to secondary, commercial, and higher education (Göller, 1996). Among other actions, it created the National Council of Education which replaced the National Council

of Instruction. Despite being the first effort to organize education in Brazil and to tune it to the social-economic situation of the country, such reform (Campos reform) still did not address primary and normal education which was the demand of most of the population. That revealed a major concern with the children of the elite rather than with those of the common citizen (Göller, 1996).

In 1932, the *escolanovistas*, pushing for broader changes in Brazilian education, published their main work “*Manifesto dos Pioneiros da Educação Nova*” (Manifesto of the Pioneers of the New Education) which described their proposals for Brazilian education (Duarte, 1986; Göller, 1996; Plank, 1996; Ribeiro, 1993). According to the *escolanovistas*, in order to meet “the exigencies of ‘modernization’, democracy, and economic growth,” (Plank, 1996, p. 65) schooling should be “universal, secular, co-educational, compulsory, and free” (Plank, p. 65) so that equal opportunity would be assured to every child. Among other things, the “*Manifesto*” proposed that every Brazilian should have an integral education, common to all, but taking in consideration their natural aptitudes, that is, a single type of education, abolishing the existing dualism (Göller, 1996; Plank, 1996; Ribeiro, 1993). Also present on the “*Manifesto*” was the demand for the end of centralism, that is, schools should meet local needs (Göller, 1996; Plank, 1996; Ribeiro, 1993). Through the analysis of education in Brazil and its link to country development, in addition to the proposals presented to solve the problems identified, the “*Manifesto*” made clear the divorce existing between such structure and the proposal for nationalism combined with developmentalism, which was being pushed by the federal government by then (Göller, 1996). As the views of the *escolanovistas* for education were understood as complementary to the views of modernization of Brazil

proposed by the first Vargas administration the former were viewed sympathetically the latter (Plank, 1996). Such sympathy contributed to having the *escolanovistas*' proposals as "the framework for the chapter on education in the Constitution of 1934" (Plank, 1996, p. 65).

The Constitution of 1934 established that it was "the obligation of the State to provide education for all citizens, assigning priority to the universalization and democratization of schooling" (Plank, 1996, p. 65). In order to achieve that:

federal, state, and local authorities were obliged to spend a designated percentage of their revenues to support the educational system (the federal percentage was set at [a minimum] 10 percent, and those for states and municipals at [a minimum] 20 percent); the main responsibility for establishing schools and administering the basic education system was assigned to state and municipal governments. Federal authorities were required to define national policy guidelines, and to develop a National Education Plan to direct the activities of states and municipalities (Plank, p. 65).

Unfortunately the Constitution of 1934 was short lived because in 1937 the "*Estado Novo*" regime began. The latter had its own ideas about how education should be organized and run in Brazil.

Besides being the year of the promulgation of a new national constitution, 1934 was also the year in which the University of São Paulo [USP] was established (Duarte, 1986; Souza 1997). It was a state university formed "by the union of the existing colleges in São Paulo state which were entwined by the newly organized College of Philosophy, Sciences and Letters so that they became integrated" (Souza, 1997, p. 23), and not only by the establishment of a rectorship and a university council as the solely points of connection between loose colleges as it had happened when the University of Rio de Janeiro (a federal one) was established in 1920 (Souza, 1997). The latter would become

the “model” for the establishment of universities in Brazil (except for the USP and the University of Brasília [UnB]) (Souza, 1997). The University of São Paulo, from the very beginning, performed instruction, research and extension (having a highly qualified professorate formed by Brazilians, French, Italians and Germans) and presently is a reference university for Brazilian higher education (Duarte, 1986; Souza, 1997).

According to Ribeiro (1993), the 1931-1937 period is known in the history of Brazilian education as the “conflict of ideas.” She stated that many congresses and conferences were held to discuss educational issues. The traditional and the *escolanovista* views existed, which she described as follows. The former was defended by Catholic educators and by the owners of private schools/colleges, the latter by those engaged in the “*escola nova*” movement. While the traditionalists proposed among other things “education subordinated to the Catholic worldview, non coeducation, ... private education, and the responsibility of the family as to education” (Ribeiro, p. 111), the *escolanovistas* proposed the opposite, that is, “laic education, coeducation, public education, and the public responsibility as to education” (Ribeiro, p. 111). However, both groups were against “the principle of monopoly of the instruction by the State” (Ribeiro, p. 111) thus being against communist (leftist) and fascism (rightist) ideologies. Despite being a period of renewal and intense exchange of ideas it was also marked as the beginning of the radicalization from the part of the traditionalists which at some point in time started to accuse the *escolanovistas* of having materialist and even communist ideas for Brazilian education (Plank, 1996; Ribeiro, 1993). That was done gradually as the traditionalists started to lose ground in the debates (Plank, 1996; Ribeiro, 1993). However, what was behind the “fight” was the clash between the past and the future, that

is, a clash between educators (traditionalists) who supported the socio-economic *status quo* of the “Old Republic” (a rural agrarian society), and those (*escolanovistas*) who were in favor of what was to come (an urban-industrial society) (Ribeiro, 1993).

In 1937, another major political clash between the Brazilian elites happened (“Estado Novo,” 1998; Ribeiro, 1993). The opposition forces not connected to the elites of the country were not involved because they had been strongly repressed especially between 1935 and 1937 (“Estado Novo,” 1998; Ribeiro, 1993). Vargas, representing certain sectors of Brazilian society connected to the urban-industrial development model, performs a *coup d'état* to prevent the return to power of those linked to the rural-agrarian for export model (“Estado Novo,” 1998; Ribeiro, 1993). The “*Estado Novo*” (New State) period (1937-1945) would bring more changes to education in Brazil.

The Constitution of 1937 (granted by the “*Estado Novo*” regime) kept certain principles related to education present in the Constitution of 1934 but some of the proposals made by the *escolanovistas* that had been incorporated to the latter were affected or reversed, including decentralization and all citizens right to public education (Göller, 1996; Ribeiro, 1993; Plank, 1996). The Constitution of 1937

... emphasized [that] the State’s [first] obligation [in education is] to provide basic [primary] education and vocational training to the “less favored classes”, and otherwise deemed public action to be supplementary to the efforts of families and private agencies including the Catholic Church. Public agencies were to intervene only in cases where private agencies failed to provide sufficient opportunities (Plank, 1996, p. 66).

While, the Constitution of 1934 had established a minimum percentage of the federal, state, and municipal taxes to be spent on education, the Constitution of 1937 abolished such obligation (Monlevade, 1997; Plank, 1996; Rama, 1987).

Besides what was written in the new constitution, the “*Estado Novo*” regime took a series of major actions to implement its view on education which were addressed by Duarte (1986), Göller (1996), Plank (1996), Ribeiro (1993), and SENETE/MEC (1991). It restructured the Ministry of the Affairs of Education and Public Health, and promoted a series of reforms in primary, secondary (Capanema’s), and higher education. Primary education was made not mandatory for enrolling in secondary education. Candidates had only to take entrance exams to enroll in the latter. Secondary education was divided into six branches: agriculture, industrial, commerce, military, normal, and “secondary.” The latter being the only one that led to higher education. Strong emphasis was given to the expansion of vocational education. The “*Estado Novo*” regime consolidated the separation of education for those who would become leaders and for those who would be conducted.

As some of the results generated by the reforms implemented by the “*Estado Novo*” regime, many governmental agencies were established. Among them were: in 1938, the MEC think tank, that is, the National Institute for Pedagogical Studies (Instituto Nacional de Estudos Pedagógicos [INEP]); in 1939, the National Service of Educative Radiobroadcasting (Serviço Nacional de Rádiodifusão Educativa); and in 1942, the National Service of Industrial Apprenticeship (Serviço Nacional de Aprendizagem Industrial [SENAI]) (Duarte, 1986; “*Estado Novo*,” 1998; Paiva, 1987; Ribeiro 1993). Another important initiative during the “*Estado Novo*” was creation of the National Fund for Primary Instruction (Fundo Nacional do Ensino Primário [FNEP] which would only be operational in August 1945 (two months before the end of “*Estado Novo*”) (Duarte, 1986; Paiva, 1987). Twenty-five percent of the funds of the latter was to be used for providing

primary education for illiterate adolescents and adults through programs supported by the federal government (Duarte, 1986; Paiva, 1987).

The 1937-1945 period would also witness the establishment of: in 1938, the national organization of higher education students, that is, the National Union of Students (União Nacional dos Estudantes [UNE]; in 1940, the Catholic colleges in Rio de Janeiro which later would become the first Brazilian Catholic university, that is, the Pontifical Catholic University of Rio de Janeiro (Pontifícia Universidade Católica do Rio de Janeiro [PUC-Rio]); and in 1945, the precursor of graduate studies in Brazil, that is, the Technological Institute of Aeronautics (Instituto Tecnológico da Aeronáutica [ITA] (Duarte, 1986).

According to Göller (1996), during the “*Estado Novo*” period, many colleges of philosophy, sciences, and letters were established. She also stated that they were viewed as so important that later they became a pre-requisite for the establishment of universities. Another issue raised by her was that they highlighted the need for preparing teachers for secondary level schools.

The “*Estado Novo*” regime (1937-1945) ended as a result of a combination of the pressure for democracy due to the end of World War II, and the fighting between Vargas and the elite groups that had been supporting him (Vargas had been getting closer to the masses in order remain in power) (“*Estado Novo*,” 1998; Ribeiro, 1993). The “Democratic-Populist Republic” period followed and lasted until 1964.

In 1945 Brazil was a 46.6 million people country (1.4 times the population of 1930), still rural (66.3% of the total population) but more urban than in 1930 (70% of the people still lived in rural areas then) (IBGE, 1996a, 1996b; IBGE, 1872-1980

[interpolation], in Martine & Camargo, 1997/1998). While the illiteracy rate was around 55% of the population 15 years and older, primary education was offered to 3.2 million students (6.9% of the population which had a life expectancy of 43.5 years by then), secondary, and higher education still for a few (only 25% of the children 5-14 were at school; 256 thousand students in secondary education college bound; 209 thousand in secondary education not college bound; and 27 thousand students in higher education (IBGE, 1982, in Martine & Camargo, 1997/1998; IBGE, 1996a; IBGE, 1940-1980, in Plank, 1996; IBGE (former INE), 1935-1955, in Ribeiro, 1993).

In 1946, as democracy was restored, a new constitution was written. According to several authors (e.g., Göller, 1996; Plank, 1996; Ribeiro, 1993; Saviani, 1996a, 1996b), the same groups (the Catholic religious/defenders of private education, and the *escolanovistas*) that had been fighting over Brazilian Education since the 1920s were in battle mode again. During the “*Estado Novo*” regime the discussions were low key due to the political situation. Göller (1996) stated that the Catholic orders did not want interference of the State in their vast school network they possessed while the defenders of public education proposed schooling to be “laic, free, mandatory and guaranteed by the State” (p. 84).

Like the Constitution of 1934, the 1946 one included the citizen’s right to free primary education with the State having the responsibility to provide it (for education in the Constitution of 1946 refer to Oliveira, 1996; and Plank, 1996). This did not eliminate the possibility of the existence of private schools. As to education beyond primary education, it was to be gradually free but only for those who could not afford it. In this point it was stricter than the Constitution of 1934 which did not have the same limitation

indicated. The new constitution also required that each level of government spend a mandated percentage of their revenues on education which was not present in the Constitution of 1937 but was in the 1934 one. The federal percentage was set at a minimum 10 percent, and those for states and municipals at a minimum 20 percent. However, the implementation of such reforms was blocked in the National Congress which took over 15 years (1946-1961) debating the Directives and Basis of National Education Act (Lei de Diretrizes e Bases da Educação Nacional [LDB]). It was finally approved in 1961 becoming Act No. 4,024 (Göller, 1996; Plank, 1996; Saviani, 1996a, 1996b, 1998a).

Several studies (e.g. Göller, 1996; Plank, 1996; Ribeiro, 1993; Saviani, 1996a, 1996b, 1998a) showed that educational issues intertwined with socio-economic-political ones made it very difficult for the congresspeople to reach a consensus on the LDB text. The decisions about education got caught in a much broader context which related to the kind of society Brazil should be in the future. It is appropriate to remember that those discussions happened during the “Cold War” period. As to specific educational issues, there were those who defended administrative centralization versus those who proposed decentralization; there were those who pushed for an expansion of public schooling versus those who favored private and religious schools. The compromise reached left the main issues poorly settled or unsettled which contributed to the difficulty of the State to meet the educational needs of the Brazilian people, favoring the action of defenders of private education.

The LDB of 1961 has been discussed in many works (e.g., Göller, 1996; Peres 1993; Plank, 1996; Rama, 1987; Ribeiro, 1993; Saviani, 1996a, 1996b). The tone of the

LDB was a mix of the *escolanovista* and traditional views. During the 1945-1960 period the former was the predominant pedagogical view, however the traditional one was still strong and very well supported in the Federal Congress. Schooling was divided into four phases: pre-school for children up to 7 years old, primary (minimum 4 years, maximum 6 years), secondary (gymnasial, 4 years, plus collegial, 3 years), higher education (undergraduate, graduate, and intermediate programs). Both gymnasial and collegial instruction had various versions (academic (secondary), technical (agriculture, industrial, and commerce), and normal). Graduation from any of the branches of collegial instruction allowed the students to take entrance exams to any area of study of higher education. That was not allowed before. Curriculum became less rigid being divided in three parts: a national one (mandatory), a state one (mandatory), and a school one (courses would be chosen based on a list prepared at the state level).

While the LDB was being discussed in Congress, other pieces of legislation related to education were approved. In 1953, during the second Vargas administration, secondary vocational-technical program graduates were granted the right to go to college if they passed required complementary exams. In 1954, the National Fund for Secondary Instruction (Fundo Nacional do Ensino Médio) was established, and in 1959, legislation was passed to update Brazilian vocational/technical schools to the Brazilian new industrial phase. 1956-1961 was the period of the Kubitschek administration which pushed strongly for the industrialization and modernization of the Brazilian economy. Its slogan was "50 years in 5" ("Kubitschek," 1998, p. 104); and in 1961, the National Fund for Higher Instruction was established (Fundo Nacional de Ensino Superior) (Duarte, 1986; SENETE/MEC, 1991).

Besides the initiatives presented above, the federal government established several agencies, institutions, and organizations related to education during the 1945-1964 period, being some of them: in 1946, the National Service of Commercial Apprenticeship (Serviço Nacional de Aprendizagem Comercial [SENAC]); in 1951, National Council for Research (Conselho Nacional de Pesquisa [now CNPq formerly CNP], and National Campaign for Higher Education Personnel Improvement (Campanha Nacional de Aperfeiçoamento de Pessoal de Nível Superior [CAPES]); in 1953, the Ministry of Education and Culture [MEC] - the Public Health function was separated from Education; in 1954, Campaign for the Improvement and Diffusion of Secondary Education (Campanha de Aperfeiçoamento e Difusão do Ensino Secundário); in 1955, Brazilian Center for Educational Research and Regional Centers for Education Research (Centro Brasileiro de Pesquisas Educacionais e Centros Regionais de Pesquisas Educacionais) which became part of the INEP; and in 1961, the University of Brasília (Universidade de Brasília [UnB]), which represented an opportunity of establishing a university from scratch, as an integrated educational institution in tune with the Brazilians needs but also taking in consideration the international academical values and standards (Duarte, 1986; Ribeiro, 1993).

From the 1950s up to the 1970s, besides the UnB, in each Brazilian state was established a federal university - in Rio Grande do Sul and Minas Gerais states, more than one (Souza, 1997). In addition to the federal universities, not only state, municipal, and private universities were also established around the country but also isolated public and private colleges, what is viewed by Souza (1997) as the result of “the victory of the thesis of decentralization process of Brazilian higher education” (p. 26).

An important non governmental event of the 1945-1964 period was the establishment of the Brazilian Society for the Advancement of Science (Sociedade Brasileira para o Progresso da Ciência [SBPC] in 1948 by scientists mostly from the biological field which was inspired in the British [BAAS] and American [AAAS] Associations for the Advancement of Science - despite the SBPC main publication was named *Ciência e Cultura* (Science and Culture), only in the 1970s the SBPC included the social sciences in its annual meetings which contributed to making the discussions held by the SBPC more critical of the *status quo* in Brazil by then (Yamamoto, 1996). Nowadays, the SBPC is the largest and most important academic organization in Brazil.

The 1958-1964 period witnessed “the major mobilization in the field of adult education” (Paiva, 1987, p. 203) up to that point in time in Brazilian history - despite the previous efforts in the field using FNEP funds (Paiva, 1987). The results of elections of 1960 showed effects of the diffusion of elementary [primary] instruction (which had received more support since the operationalization of the FNEP in 1945) among the population which caused the new federal administration and non governmental organizations to provide more attention to the activities related to adult education - the choices of traditional political leaders (who belonged to the existing elite) were not followed by many people (just the alphabetized could vote) in special regarding to the presidential election (Paiva, 1987). The movements for popular education of the period had as “the broader goal obtaining the active participation of the adult population in the political life of that country” (Ribeiro, 1993, p. 171) for which it was necessary to teach the illiterates, who were 36-40% of those 15 years and older in the country (IBGE, 1996a), to read and write, but in a way that they could learn through alphabetization

methods appropriate for them, and at the same time to understand the socio-economic-political situation there were immersed in (Göller, 1996; Paiva, 1987; Ribeiro, 1993). The most important of those movements were the Base Education Movement (Movimento de Educação de Base [MEB]), Popular Centers of Culture (Centros Populares de Cultura [CPCs]), and the Popular Culture Movements (Movimentos de Cultura Popular [MCPs]) (Duarte, 1986; Göller, 1996; Paiva, 1987; Ribeiro, 1993).

The MEB began as joint project of the federal government and the National Conference of the Brazilian Bishops (Conferência Nacional dos Bispos do Brasil [CNBB]) limited to “the undeveloped regions of the North, Northeast, and Centerwest of the country” (Paiva, 1987, p. 223) which was implemented by lay people connected to the Catholic church (Duarte, 1986; Paiva, 1987; Ribeiro, 1993). It started officially in 1961 and still exists nowadays. Originally, the MEB was a movement of Christian inspiration which “aimed the human promotion through the people’s education, but there were no evangelization purposes” (Paiva, 1987, p. 223) being its educational activities performed through the distance education format (by using the Catholic radio stations) which had local support of local staff who had received prior training (Paiva, 1987; Ribeiro, 1993). The CNBB has kept the MEB in operation which has been developing literacy, GED, continuing education, and evangelization programs in destitute communities (Duarte, 1986).

The CPCs originated from the National Union of Students [UNE] being active during the from 1961 until the beginning of 1964 - using a popular vocabulary, they developed plays (performed in the streets, universities and unions), a movie, a documentary, a popular culture festival, and a popular music festival, besides recording

disks, publishing popular literature (*literatura de cordel*), and organizing a national network for the distribution of art and culture (Paiva, 1987; Ribeiro, 1993). The main goal of the CPCs were “to contribute for the process of transformation of the Brazilian reality, mainly through a didactic art which had a political` content” (Paiva, 1987, p. 233; also cited in Ribeiro, 1993, p. 172).

The MCPs started in Recife in 1960 (through a combination of efforts by university students, intellectuals, artists, and the city government of Recife) lasting until 1964 being restricted to Pernambuco and Rio Grande do Norte states (Northeast region of Brazil) - in the context of the MCPs was experimented Paulo Freire’s Liberation Pedagogy (Duarte, 1986; Göller, 1996; Paiva, 1987; Ribeiro, 1993). The MCPs intended to involve “the people in the process of the development of culture and guaranteeing free education for all” (p. 96) while the Freire’s pedagogy proposed education as being “a political act through which teachers and students search for to widen their critical view of the world, participating in the historical process which aims the construction of an open, free and just society, a truly democratic one” (Cotrim, 1993, in Göller, 1996, p. 96).

Due to success of Freire’s pedagogy on Pernambuco, national interest developed, so the federal government decided to establish the National Plan of Alphabetization (Plano nacional de Alfabetização [PNA]) in January, 1964, which aimed to teach 5 million people to read and write, through Freire’s pedagogy, until 1965 (Paiva, 1987; Ribeiro, 1993). In April the military administration (in power since the March 31 *coup d’état*) terminated the PNA, later, the existing popular education movements were gradually discontinued, being some of their members repressed by the military administration (Paiva, 1987; Ribeiro, 1993).

As alluded to before, in March 1964, in the middle of an socio-economic-political turmoil, the military seized power. The “Military Regime of 1964” period followed and lasted twenty-one years. In 1964 Brazil was a 79.3 million people country (1.7 times the population of 1945) having half of the population living in urban areas (in 1945, the figure was 33.7%), the latter a product of the push given to the industrialization process of Brazil since the 1930s (IBGE, 1996a; IBGE, 1996b; IBGE, 1872-1980 [interpolation of data], in Martine & Camargo, 1997/1998; Ribeiro, 1993). In 1965, while the illiteracy rate was around 36% of the population 15 years and older (in 1945 the figure was around 55%), primary education (4-6 grades) was offered to 9.9 million students (12.1% of the population which had a life expectancy of 52.6 years by then; 3.1 times 1945 figure; 10.2% in private schools), secondary education (7 grades) was provided for 2.2 million students (at that time, all could go to college; 4.7 times 1945 figure; 52.6% in private schools), and higher education for 155 thousand students (5.7 times 1945 figure, being around 47.4% in private institutions)(IBGE, 1872-1980 [interpolation of data], in Martine & Camargo, 1997/1998; IBGE, 1960-1991 [interpolation], in Plank, 1996; IBGE, 1996a; IBGE, 1996b; MEC, 1960-1989 [interpolation], in Paul and Wolff, 1996).

Overall, in 1965 the average number of years of schooling was only 2.5 years per men (in 1960, 2.4) and 2.0 years per women (in 1960, 1.9), varying from 3.0 years per person in the Southeast to 1.2 years, in the Northeast, (INEP/MEC, 1998).

Despite education reached more people in the 1945-1965 period than in the previous ones, the figures still were very poor in all its levels, specially in primary education because still only 49% of the children 5-14 were at school (IBGE, 1940-1980 [interpolation] in Plank, 1996).

In order to implement their view on Brazil how should become, the military regime made significant changes in education so that it could back the efforts of quick economic growth in conjunction with minimum social and political unrest as can be observed in several studies (e.g., Göller, 1996; Monlevade, 1997; Plank, 1996; SENETE/MEC, 1991; Ribeiro, 1993; Souza, 1997). Reforms were developed and set in motion at all levels of education. They originated from the MEC-USAID (Ministry of Education and Culture - US Agency for International Development) Agreements which generated a lot of controversy because the USAID proposals and interests were told to be not beneficial to Brazil by students, teachers, professors, and politicians who had a different view of how country should be. Another matter of complaint was that such reforms were not only prepared without the proper participation of Brazilian society but also imposed to it. A Cotrin's (1993) quotation indicates why the military government views on education were disliked by a number of people:

The liberal humanist inspiration that characterized the LDB/61, was suffocated by the technicist tendency of the Acts 5,540 [higher education] and 5,962 [primary and secondary education], which are in accordance with the technobureacratic-capitalist-dependent model adopted by the military regime (Göller, 1996, p. 98).

As alluded before, as soon as the military regime began, not only the National Plan for Alphabetization was terminated (April 1964) but also the popular education movements were discouraged through several means (Göller, 1996; Plank, 1996; Ribeiro, 1993). In 1967, the federal administration established the Brazilian Movement of Alphabetization (Movimento Brasileiro de Alfabetização [MOBRAL]) which only started its operations in 1970, was supposed to have ended by 1972 (after alphabetizing 9 million people), but it lasted until 1985, the last year of the military regime, when it was replaced

by the EDUCAR agency, also a federally supported one, which had been established the civilian administration which followed (Duarte, 1986; Göller, 1996; Paiva, 1987; Plank, 1996; Ribeiro, 1993). MOBREAL used a modified version (without the political content) of Paulo Freire's method, and stressed the link between being able to read and write, and the improvement of the students' economic and cultural life (Paiva, 1987; Plank, 1996; Ribeiro, 1993). According to Ribeiro (1993), the emphasis was in the former rather than in the latter. While official statistics indicate that one third of the more than 30 million participants of program were made literate, its critics doubt the quality of the acquired literacy (Plank, 1996).

Another measure taken by the military regime related to education still in 1964 was the creation of a "federal wage tax [the salary-education tax (*contribuição social salário-educação*)] of 2.5% that is imposed on the total wage bill of most employers" (Plank, 1996, p. 81) which was "to generate new revenues for the expansion and improvement of primary schooling" (Plank, p. 81). The *salário-educação* tax is still in effect nowadays - while one third of the tax collected is used as an equalization fund by the federal government, two thirds of the tax collected in each state remains in the state as state money for primary education (Monlevade, 1997).

In order to cut the protests against the military regime originated from the higher education domain and at the same time adequate the higher education institutions to their socio-economic-political project (the substitution of the nationalism-developmentalism doctrine for the interdependence once), the military administration designed and had the Congress to approve Act No. 4,464/65 (which dealt with matters related to student organizations and to the MEC-USAID agreements), and Act No. 5,540/68 (which along

with the Decree No. 464/69, replaced the LDB of 1961 regulations regarding to higher education) - the Legislative was controlled by congresspeople who supported the military because many opposition congresspeople had lost their political rights (Göller, 1996; Ribeiro, 1993; Saviani, 1996b, 1998a). Therefore the changes aimed to solve existing “problems” such as the lack of enough slots for those willing to go to college and “unwanted” political participation in the national life by instructors, students, and staff (Göller, 1996; Ribeiro, 1993; Saviani, 1996b, 1998a). In order to expand the higher education with maximum economical efficiency while at the same time banning political activities from the higher education life, among other things, higher education institutions were mandated to be organized and operated in a way that was inspired their American counterparts, political activities were repressed in higher education institutions, and general entrance exams were put in place to select those who would fill the existing slots for every program in every university or independent college (Göller, 1996; Ribeiro, 1993; Saviani, 1996b, 1998a). According to Saviani (1996b),

the Higher Education Reform enabled the transference of the so called standard of excellence to the graduate programs and to the undergraduate programs of big institutions, in general, public ones, leaving the task of absorbing the new continents of students for the private schools [colleges], in general isolated institutes, characterized by having a doubtful quality (p.145).

Besides witnessing the reform in higher education, the 1960s also was marked by the beginning of graduate programs in Brazil - it was necessary not only for providing instructors for the growing higher education but also to incite scientific and technological research (Yamamoto, 1996). In order to support the graduate programs, besides the already existing CAPES and CNPq (both existing since 1951), and the FAPESP

(Foundation for the Support of Research of São Paulo State), it was established the Financier of Studies and Projects (Financiadora de Estudos e Projetos [FINEP]) and the National Fund for Scientific and Technological Development (Fundo de Desenvolvimento Científico e Tecnológico [FNDCT]) (Yamamoto, 1996). While research in social sciences could not be performed taking in consideration all worldviews (the marxist one, for instance), due to political reasons, in most public institutions, some private research institutes (like the Brazilian Center of Analysis and Planning [Centro Brasileiro de Análise e Planejamento, CEBRAP], established in 1969 in São Paulo, and the Carlos Chagas Foundation [Fundação Carlos Chagas] located in Rio de Janeiro), and universities (like the Pontifical Catholic University of São Paulo (Pontifícia Universidade Católica de São Paulo, PUC-SP) were able to perform “non bounded” research (Yamamoto, 1996). While the CEBRAP (which had been established by researchers who, for political reasons, had been expelled from the University of São Paulo [Universidade de São Paulo, USP], a state university) and the PUC-SP became references in social sciences research and political activism, the Chagas Foundation became an excellence center in education (Yamamoto, 1996). After the researchers re-democratization of Brazil, while PUC-SP researchers mostly remained in academia (but participating in politics too), some of the CEBRAP ones, in addition to that, ran for political offices. Presently, a CEBRAPian is the president of Brazil (Fernando Henrique Cardoso, a sociologist) while another is the Minister of Culture (Francisco Weffort, a political scientist). While most of PUC-SP old-timers have been connected to left wing parties, the CEBRAPians ones split themselves among leftist and center-to-the-left parties.

During the 1960s, two masters' programs in education are established in Brazil - they were the first graduate programs in the field (Buffa and Nosella, 1991, in Yamamoto, 1996). In 1965, the first was established at the Pontifical Catholic University of Rio de Janeiro (Pontificia Universidade Católica do Rio de Janeiro - PUC-RJ), and in 1969, the second (psychology of education), at the PUC-SP (Yamamoto, 1996). In the 1970s, over thirty masters' in education were established in Brazil, in addition to the first doctoral program in education - 1976, at PUC-RJ (Yamamoto, 1996). The PUC-SP also established its doctoral program in education a year later (Yamamoto, 1996). PUC-SP graduate programs in education occupied "a central place in the educational debate" (Buffa and Nosella, 1991, in Yamamoto, 1996, p. 81) during the military regime period, being an academic reference center of the Marxist view on Brazilian education and society since then (Yamamoto, 1996). Those responsible for the educational production inspired on the Marxist view (at PUC-SP and several other universities) have been strong critics of government policies and activities in education since the 1970s because the latter are seen as not appropriate for Brazilian needs (see Carnoy, 1984; Freitag, 1986; Frigotto, 1995; Gadotti, 1995; Göller, 1996; Ribeiro, 1993; Saviani, 1996a, 1996b, 1998a, 1998b; Yamamoto, 1996). Presently, there are over 50 master's programs in education in Brazil, in addition to over 10 doctoral programs in the same area too - research is being done without any political constraints (Yamamoto, 1996).

Between the approval of the Acts No. 4,464/65 and 5,540/68, in 1967, the military regime also had a new Constitution approved by the Brazilian Congress. The process of its development and approval revealed a fight between the Ministry of Education and the Ministry of Planning regarding to educational issues (Horta, 1996). The final version of

the Constitution guaranteed free primary education (defended by both), but showed that while the former views had prevailed in terms of “organization and provision of instruction” (Horta, 1996, p. 239) but the latter ones had been fulfilled in terms of “the limitation of public resources to education and the gradual privatization of secondary and higher education, through the generalization of the scholarships mechanism” (Horta, p. 239). It was the debut of “the theory of human capital” in Brazilian education which the Brazilian educators name “*economismo educativo* (educational economicism)” - economists were major players if compared to educators in educational policy making in Brazil during the military regime (Göller, 1996; Horta, 1996; Ribeiro, 1993; Saviani, 1996b, 1998a). The Constitutional Amendment No. 1 of 1969, introduced some changes in the constitutional statements related to education but their essence remained the same (Rama, 1987).

In 1968, but before the approval of the Act No. 5,540/68, the military regime also had the Brazilian Congress to pass legislation establishing the National Fund for the Development of Education (Fundo Nacional de Desenvolvimento da Educação [FNDE]) - Act No. 5,537/68 (Duarte, 1986). The FNDE was originally devised “to fund projects in instruction and research in the three levels of education” (Duarte, 1996, p. 83) and continues to exist nowadays.

Two years later after the approval of the higher education reform (1968/1969), it was the time for the reform primary and secondary education whose brief description below is based on the works of Göller (1996), Plank (1996), Rama (1987), Ribeiro (1993), and Saviani (1996b, 1998a). In 1971, the National Congress approved Act No. 5,692 which had been proposed by the federal administration - it replaced the 1961 LDB

regulations regarding to primary and secondary education - the Legislative continued to be controlled by congresspeople who supported the military because many opposition congresspeople had lost their political rights. Act No. 5,692 restructured primary and secondary education, dividing it in “*1o. Grau* (1st Degree),” grades 1-8, and in “*2o. Grau* (2nd Degree),” grades 9-11/12. In the former, eight years were made mandatory contrary to only four compulsory years as it was before. In both, curriculum should have academic and technical contents, that is, every student should get both ending the division between academic and “technical” schools. According to Plank (1996), that was done “to expand the supply of middle-level manpower and reduce the demand for university enrollment” (p. 67).

At first, the educators who opposed the military regime supported the reforms introduced by the latter in primary and secondary education because they thought the reforms would fulfill their view of education, that is, only one type of school, public, of quality, offered to all which met the country’s needs (Plank, 1996). The support ended when they noticed that such a thing would not happen. Among the reasons were: the adoption of an educational view (technicist [behaviorist] pedagogy) that was contrary to their one (based on the “*escola nova*” [progressive/humanist] or liberation [radical] pedagogies or a combination of both which had been the antagonists of the traditional [liberal] pedagogy), and the lack of enough funds for public education (at all levels of government), leaving the door open for the private schools for those who could afford it (Göller, 1996; Plank, 1996; Ribeiro, 1993; Saviani, 1994, 1996b). The initiative of a curriculum which included academical and vocational contents for all was widely ignored and finally made optional in 1982 through the Act No. 7,044 (Göller, 1996; Plank, 1996;

Ribeiro, 1993; Saviani, 1996b). New reforms on K-11/12 education would have to wait for a new Constitution (1988), a new LDB (1996), and further developments (Saviani, 1998a, 1998b).

In addition to the reforms alluded above, the military administrations also took actions regarding to vocational-technical education and training. The latter received substantial attention during the military regime (Plank, 1996). A description of what happened during the period will be provided in “Vocational-Technical Education and Training in Brazil” which will be discussed in the next section.

Plank (1996) summarized what the military regime did in relation to education by stating that the National Education Plans and policies developed aimed at

a more rational and efficient use of educational resources at all levels of the system. The crucial role of primary schooling in economic development was acknowledged ..., but most new resources and administrative attention were in fact devoted to the expansion of the higher education and vocational secondary education (p. 67).

The 1974 elections showed that the people wanted democracy back. According to Göller (1996), as democracy slowly made its come back during the 1974-1985 period, so did the discussions involving education and not only among educators. She stated that the opposition parties addressed educational problems making proposals to solve them. When the military regime ended, open discussions about changes in education had been happening for at least five years.

Continuing the legacy of the ABE (1927-1967) which had its last conference in 1967, national conferences on education were held every two years since 1978 (Yamamoto, 1996). Three non governmental organizations, the CEDES, the ANDE, and the ANPED, have been the co-promoters of those events. The CEDES, Center for

Studies of Education and Society (Centro de Estudos de Educação e Sociedade), was established in Campinas (in the grounds of Campinas State University, but independent of it), São Paulo state, in 1979, by educators interested in investigating the Brazilian education and its relations with society for developing critiques of Brazilian education and proposals of “an education not only interrogative, critical, but also affirmative, in the search of valid alternatives” (CEDES, 1986, in Yamamoto, 1996, p. 73). The ANDE, National Association of Education (Associação Nacional de Educação), was established in Rio de Janeiro, also in 1979, as a “center of studies, aiming to meet the needs of educators of all levels, with a line of activity ‘eminently political, and not unionist or corporative’” (Yamamoto, 1996, p. 73). The ANPEd, National Association for Graduate Studies in Education (Associação Nacional de Pós-Graduação em Educação), the oldest of the three, was established in 1978, and differentiates from the two others for “dedicating specifically to graduate studies and research” aiming to increase “the articulation among the various scientific communities” (Yamamoto, 1996, p. 74). Besides the NGOs alluded above, from the second half of the 1970s on, several associations, unions, and other organizations were created by personnel working in the educational area which together with those already existing by then have been gradually increasing their influence on educational issues since then (Yamamoto, 1996).

In 1985, in the middle of an economic crisis and after 11 years of gradual transition the political control shifted from the military to civilian. A civilian president (José Sarney) was inaugurated - as alluded before, he was to be the vice president, but the president elect (Tancredo Neves) died before being sworn in. In 1985 Brazil was a 132.0 million people country (1.7 times the population of 1964), around 70% of the population living in

urban areas (in 1964, the figure was around 50%), the latter a product of the push given to the urban-industrialized society Brazil had become (IBGE, 1996a; 1996b). In 1985, while the illiteracy rate was around 22% of the population 15 years and older (in 1965 the figure was around 36%), primary education (now 8 grades - before it was 4-6 grades) was offered to 19.6 million students (15.1% of the population which had a life expectancy of 64.3 years by then, twice 1965 figure [being 12.1% in private schools - in 1965 it was 10.2%]), secondary education (now 3 grades - before it was 7 grades) was provided for 2.0 million students (all could go to college; 9% decrease since 1965 [33.3% in private schools - the figure in 1965 was 52.6%]), and higher education for 1.4 million students (9.1 times 1964 figure [being 59.3% in private institutions - in 1965 it was around 47.4%]) - the numbers for primary and secondary education should be watched carefully because the number of grades in each one changed in 1971 due to the Act No. 5,692; the numbers for higher education include 38 thousand graduate students (IBGE, 1960-1991, in Plank, 1996; IBGE, 1996a, 1996b; INEP/MEC, 1998; MEC, 1960-1989, in Paul and Wolff, 1996; MEC, 1980-1989, in Plank, Sobrinho, & Xavier, 1996).

Still in 1985, a new constitution began to be discussed in Congress which was promulgated on October 5, 1988. After its completion, a bill (No. 1258-A/88) for a new LDB was introduced in the Federal House of Representatives (Câmara dos Deputados) in December of the same year, which after many versions and proposals, became Act No. 9394 in December 20, 1996 (Saviani, 1998a, 1998b). Since then up to 1998, the Constitution and the LDB have been altered, complemented or detailed by amendments, laws, decrees, executive orders, and by National Council for Education's expert opinions

and resolutions in order to implement the educational view of the Cardoso administration and its supporters for Brazil (Saviani, 1998b).

Before discussing the present status of Brazilian education (under the legislation that is in place), let us address what was happened in the period between 1985 and 1995. As alluded before from March 1985 to March 1990 Brazil had the Sarney administration. From March 1990 to October 1992 Brazil had the Collor administration which was followed by the Franco administration until December 1994 - Collor was impeached and substituted by Franco, his vice president.

During the Sarney administration, the most important facts related to education were the writing of the Constitution of 1988 by the National Congress, the beginning of the discussions in Congress about a proposal of a new LDB, the separation of the culture function from the education one in the federal government structure (they became separate ministries, Ministry of Education [kept the MEC acronym], and the Ministry of Culture [MinC]), the establishment of the EDUCAR Foundation (which replaced the MOBREAL) and the PROTEC program (besides other initiatives related specifically to vocational-technical education and training).

The statements of the Constitution of 1988 on education will begin to be addressed in the following paragraph, the LDB of 1996, later in this section, and the PROTEC program will be covered in the section on the vocational-technical education and training in Brazil. The Ministry of Culture has been a federal government agency since the Sarney administration. As alluded before, the EDUCAR Foundation replaced the MOBREAL for pursuing “many of the same objectives” (Plank, 1996, p. 77) of the latter - the EDUCAR

Foundation was by its turn substituted by the PNAC initiative during the Collor administration (Plank, 1996).

The articles on education of the Constitution of 1988 were a result of the proposals of those who defended public and private instruction, having most of former originated from what is stated in previous Brazilian constitutions, their amendments, and even previous complementary and ordinary legislation (Pinheiro, 1996; Rama, 1987). It was established that education and work are among the social rights of every Brazilian citizen (CF/88, 1996, Article 6) being education a “right of all” having the State and the family “the duty” to provide it (CF/88, Article 205, p. 99). It also mandates that education “will be promoted and stimulated with the collaboration of society, aiming to achieve the full development of the person [every Brazilian], his/her preparation for the practice of citizenship, and his/her qualification for work [italics added]” (CF/88, p. 99) - the underlined statement originated from the Act No. 5,692/71 (Souza & Silva, 1997). The right to education for all has been present in Brazilian constitutions since 1934 but by 1998, not all Brazilians had had their right to education fulfilled yet as will be shown later (Rama, 1987).

To legislate about “the directives and basis of national education” (CF/88, Article 22, Incise 24, p. 32) continued to be a private competency of the Union (federal level of Public Government) but besides the Union, the states (since 1988 joined by the Federal District) also maintained their right legislate about “education, culture, instruction and sports” (CF/88, Article 24, Incise 9, p. 34) within their level of competency (Souza & Silva, 1997; Rama, 1987).

Instruction to be provided in Brazilian educational institutions must obey the following principles:

- I. equality in the conditions for access and permanence at school;
- II. freedom to learn, teach, research, and to spread the thought, the art, and the knowledge;
- III. pluralism of ideas and of pedagogical concepts, and co-existence of public and private instruction institutions;
- IV. free public instruction in official [public] institutions;
- V. valuing those who work in education, . . . ;
- VI. democratic administration of the public instruction [public educational institutions], . . . ;
- VII. guarantee of quality standard (CF/88, 1996, Article 206, Paragraphs 1-7, pp. 99-100).

According to Souza and Silva (1997), compared to previous legislation (not constitutions), the most innovative principles were “equality in the conditions for access and permanence at school,” and “democratic administration of the public instruction [public educational institutions]” (p. 14). They also stated the other principles were present in previous legislation but organized or worded differently from above. Pinheiro (1996) remarks that the inclusion, by the first time, in a Brazilian constitution of the principle of “free public instruction in official [public] institutions” (CF/88, 1996, Article 206, Incise 4, p. 99) at levels of instruction was the major gain of the defenders of public education in the Constitution of 1988.

The Constitution of 1988 did not provide a detailed description of each level of instruction that is alluded to in it (what was not the case) however some determinations regarding to various levels are present in such piece of legislation.

Child care (later defined in the LDB of 1996 as for children from 0 to 3 years of age) and pre-school (later defined in the LDB of 1996 as for children from 4 to 6 years of age) continued not to be mandatory, however, they are free when offered in public schools

(CF/88, 1996, Article 208, Incise 4). Such statement indicates that more attention was provided to this level of education if compared to previous constitutions (Rama, 1987; Souza & Silva, 1997).

Fundamental instruction (later defined in the LDB of 1996 as having at least 8 grades) continued to be mandatory, and the State has the obligation of the offer it even to those who are not in the proper age - if the latter is not done, differently from before, the present legislation provides legal means for suing the State for not offering fundamental instruction (CF/88, 1996, Article 208, Incise 1, Paragraphs 1-2; “Lei de Diretrizes . . . e Emenda Constitucional No. 14 de 1996 [LDBE96/EC14],” 1997, EC14 of 1996, Article 2; Plank, 1996; Souza & Silva, 1997). In order to guarantee that all those in the proper age group are getting fundamental instruction, the states, the Federal District, and municipalities, supported by the Union, will have “to hold a census [periodically] on the fundamental instruction students, to verify their presence at school, and to look after, along with the parents or responsible ones, for students going to school” (CF/88, 1996, Article 208, Paragraph 3, p. 100). The Public Government has also to meet the fundamental instruction students’ needs in terms of “didactic-instructional material, transportation, nourishment and health care” (CF/88, 1996, Article 208, Incise 7, p. 100).

The competent Public Authorities “will set minimum contents for fundamental instruction, so that the common basic development and the respect to cultural and artistic, national and regional values be assured” which will be taught in Portuguese but “native [Brazilian] communities also the utilization of their mother languages and their own learning processes” - the innovation here refers to the inclusion of statement which makes reference to the native Brazilian communities (CF/88, 1996, Article 210, Paragraph 2,

p. 100). Religious instruction will continue to be taught, during the regular class schedule, at public schools at the fundamental instruction level (but it is not mandatorily offered at public schools at the middle instruction level anymore) remaining to be an optional course for the students too - this is an example of the long lasting influence of the confessional educational institutions (specially the Catholic ones) in the Brazilian educational scenario (CF/88, 1996, Article 210, Paragraph 2; Rama, 1987).

Middle instruction (later defined in the LDB of 1996 as having at least 3 grades) continued to be not mandatory, but the universalization of free middle education is to be done gradually - the original text of the Constitution of 1988 stated that this level of education was to be gradually made mandatory too, however such determination was dropped in the Constitutional Amendment No. 14 of 1996 [EC of 1996] because the majority of the Brazilian population in the proper age group has already joined the workforce and may not be able to attend school (CF/88, 1996, Article 208, Incise 2; LDBE96/EC14, 1997, EC14 of 1996, Article 2; Souza & Silva, 1997).

As general statements about all levels of formal and regular instruction, the Constitution of 1988 mandates that “regular evening instruction [be offered in an] adequate [way] to the conditions of the student”, that “specialized educational care [be provided] to handicapped students, preferably through regular schools”, and that everyone must have “access to the highest levels of instruction, research, and artistic creation according to the his/her capacity” (CF/88, 1996, Article 208, Incises 3, 5, and 6, p. 100). It is also stated that Brazilian History will be taught taking “in consideration the different contributions of the different cultures and ethnicities for formation of the Brazilian people” (CF/88, 1996, Article 242, Paragraph 1, p. 239).

According to Constitution of 1988, “the Union, the States, the Federal District and the Municipalities will organize in a collaboration regime their instruction systems” (CF/88, 1996, Article 211, p. 100). For the first time it is stated in a Brazilian constitution that municipalities can set up their own instruction systems not being subordinate to the states systems anymore (Plank, 1996; Rama, 1987). The organization and funding of the federal system of instruction and the Territory ones (which are defined in the LDB of 1996) is the responsibility of the Union which will also have supplementary and redistributive roles in terms of funding and technical assistance to the States, Federal District, and the Municipalities so that “the equalization of education opportunities and a minimum instruction quality standard” (LDBE/EC14, 1997, EC14 of 1996, Article 3, pp. 11-12) be guaranteed. That statement and the following ones in this paragraph are written according to article 3 of EC14 of 1996 which modified the paragraphs 1 and 2 of the Article 211 of the Constitution of 1988. While the States and Federal District instruction systems (which are defined in the LDB of 1996) will provide prioritarilly fundamental and middle instruction, the Municipalities ones (which are defined in the LDB of 1996) have as priority providing children education and fundamental instruction. The States and Municipalities must coordinate their efforts so that the mandatory instruction be provided to all those live in each Municipality (LDBE/EC14, 1997).

Private schooling is allowed in Brazil as long as private initiatives fulfill “the general norms of national education”, and be authorized and have their “quality evaluated by the Public Government” (CF/88, 1996, Article 209, Incises 1-2, p. 100). As shown before, private schooling has always been present in Brazilian education, however, at

constitutional level, it is the first time that is stated that the quality of the educational services they provide will be evaluated by the Public Government (see Rama, 1987).

It does not matter if public or private, “universities have didactic-scientific, administrative, and financial and patrimonial management autonomy, and will obey the principle of non dissociation among instruction, research, and extension” (CF/88, 1996, Article 207, p. 100). For the first time, there is specific reference to universities in a Brazilian Constitution which is an indication that they should have a high but not total degree of independence (but the constitution may be changed) to perform their duties of instruction, research, and extension (Pineiro, 1996; Rama, 1987).

As alluded before the Constitution of 1934 and 1946 (written by the Congress during democratic periods of Brazilian history) had stipulated that the Union would use, annually, never less than 10%, and the States, the Federal District and the Municipalities, at least, 20% to their tax revenues, in the maintenance and development of instruction, while the Constitutions of 1937 and 1967 (written during non democratic periods) abolished such obligations. A Constitutional Amendment No. 24 of 1983 not only re-established such obligations but also increased the percentages from 10% to 13% (the Union), and from 20% to 25% (the States, the Federal District and the Municipalities) (Plank, 1996; Rama, 1987). The Constitution of 1988 maintained the mandatory spending in education at all levels of Public Government but increased the percentage to be spent by the Union from 13% to 18% (CF/88, 1996, Article 212). It provided some directions about how the public funding should be dealt with being more detailed than the previous ones - some modifications were introduced in 1996 by the Constitutional Amendment No. 14 (CF/88, 1996, Article 212, Paragraphs 1-5, Article 213, Incises 1-2, Paragraphs 1-2;

LDBE/EC14, 1997, EC14 of 1996, Articles 4-5). Overall, public funds are to be used for financing public instruction, research and extension, however private institutions may get them too for fulfilling specific purposes if they meet certain conditions stated in legislation - the Constitution of 1988 is more emphatic than the previous ones regarding to the use of public funds for public education, however the possibility of some of the public funds to be used in private institutions still remained and was even increased (CF/88, 1996, Article 213, Incises 1-3; Pinheiro, 1996).

From 1988 until 1998, at least 50% of the mandatory public expenditures on education of each level of Government were supposed to have been used "to eliminate illiteracy and universalize fundamental education" (CF/88, 1996, Article 60, ADCT [transitional provisions], p. 124), unfortunately such was not obeyed as it should have been (Plank, 1996). A new attempt to fulfill such proposition was put in place by the Cardoso administration which had the National Congress to approve a new version for Article 60 of the constitutional transitional provisions which mandated the States, the Federal District, and the Municipalities to spend at least 60% percent of their mandatory expenditures on education while the Union would have at least 30% of its mandatory expenditures on education - that will be mandatory from 1996 until 2006 (LDBE/EC14, 1997, EC14 of 1996, Article 5, Paragraph 6). In addition to that it was created a re-distribution fund (one per state/federal district) which will be used solely for financing the maintenance and development of public fundamental instruction and for paying its teachers at least a national minimum salary - whenever the minimum expenditures per student are not reached, the Union will complement the funds resources (LDBE/EC14, 1997, EC14 of 1996, Article 5, Paragraphs 1-7). Differently from the previous three federal

administrations, the Cardoso one has been pushing very hard for the achievement of the eradication of illiteracy and the universalization of fundamental instruction in ten years' time, however, as the Union mandatory expenditures in fundamental education decreased from 50% to 30% of its total expenditures in education, some critics say that the Federal Government is trying to have it accomplished using mostly other levels of government money (Saviani, 1998b). Anyway, if the Public Government is going to be successful or not, it is still to be seen.

Like the Constitutions of 1934 and 1967, the Constitution of 1988 explicitly required the development of a national plan of education (*Plano Nacional de Educação* [PNE]) but differently from the former, it clearly mandated it has to be a pluriannual one and established by a law (CF/88, 1996, Article 214). The Constitution of 1988 was also specific by stating that the national plan of education must aim at:

the articulation and the development of instruction in its various levels, and the integration of the actions of the Public Government which lead to

- I- eradication of illiteracy;
- II - universalization of the provision of schooling;
- III - improvement of the quality of instruction;
- IV - development for work;
- V - humanistic, scientific, and technological promotion of the Country

(CF/88, 1996, Article 214, p. 101).

As the Constitution of 1988 did not state when a bill for establishing the national plan of education had to be introduced in the National Congress and who had to do it (such matter was covered the LDB of 1996), only in the February of 1998, such a bill (in fact two of them, one from the Cardoso administration, and another from the opposition parties) were introduced in the National Congress (CF/88, 1996, Article 214, Incises 1-4;

Lei de Diretrizes e Bases da Educação [LDBE96], 1997, Article 87, Paragraph 1; Saviani, 1998b).

According to Pinheiro (1996), in relation to education, the Constitution of 1988, “like previous ones, [presents] a conciliatory solution for the conflict between the public and the private” (p. 284) but such agreement was “more unfavourable to the public sector than to the private one” (p. 283), however Saviani (1998a) stated that most of the educators’ proposals for the education chapter of new constitution (the 1988 one) which were listed in the final document (*Carta de Goiânia*) of the Brazilian Conference on Education of 1986 (*Carta de Goiânia*) were included in the Constitution of 1988.

During the Collor administration (which lasted 30 months), the most important facts related to education were the continuation of the discussions in Congress about the LDB of 1996 (which will be addressed later), the establishment of the PNAC illiteracy eradication program (which replaced the EDUCAR Foundation), and the CIACs program (“a major effort to build full-day educational and social service centers (CIACs) for poor children” (Plank, 1996, p. 68)).

The PNAC initiative did not differ from the EDUCAR one being just a continuation of the previous illiteracy eradication program - there was merely a change of name (Plank, 1996). The CIACs program was inspired in the CIEPs program (Integrated Public Education Centers [Centros Integrados de Educação Pública] which had been enacted in Rio de Janeiro state in the 1980s during Brizola’s administration (Plank, 1996). The full-day educational and social service centers were built all over the country and like in Rio de Janeiro, it was an effort disconnected from a coherent educational policy and out of the control of the proper education agencies - in Rio, the Education Secretariat; in

Brasília, the MEC (Plank, 1996). The CIACs program was continued by the Franco administration but under a different name (CAICs program) and with less “direct political manipulation” (Plank, 1996, p. 78).

As alluded before, Franco administration (which lasted 27 months) completed term of the president Collor which was impeached in the end of 1992. The most important facts related to education were the continuation of the discussions in Congress about the LDB of 1996 (which will be addressed later), the development of the Decennial Plan of Education for All according to the recommendation of the UNESCO meeting held in Thailand in 1993 (it was the main document used in preparation of the Cardoso administration proposal of the PNE in 1997), the CAICs program (which replaced the CIACs program), the termination of the Federal Council of Education (which was replaced by the National Council of Education), and the creation by law of the National System of Technological Education (which will be addressed in the following section of the chapter).

The CAICs program was a continuation of the CIACs program, however the president Franco placed it under the MEC control and allowed less direct political manipulation (Plank, 1996). Despite “on conceptual grounds institutions like the CIEPs and CIACs [and CAICs] make very good sense” (Plank, 1996, p. 78), they became very controversial educational initiatives due to the socio-economical-political context they were tied to. Instead of continuing such effort, the Cardoso administration preferred to terminate the program and put in place their own initiatives for fundamental education which aimed at improving/maximizing the performance of the already existing educational

facilities and personnel rather than building new ones while at the same time pushing for having all the children age 7-14 in school.

The Federal Council of Education (Conselho Federal de Educação [CFE]) was terminated in 1994 by Franco administration and replaced by the National Council of Education (Conselho Nacional de Educação) which had less powers than the previous one - such change was put in place by a provisional act (Saviani, 1998a, 1998b; Souza & Silva, 1997). The termination of the CFE occurred as a result of mounting accusations of improper conduct by some of its members in the CFE last years of operation which have never been properly investigated or confirmed (Souza & Silva, 1997). In November 25, 1995 what was provisional became permanent (Saviani, 1998b). Act No. 9,131 of 1995 (already during Cardoso administration) altered the LDB of 1961 establishing MEC as the main authority in Brazilian education having the CNE an advisory role (Saviani, 1998a, 1998b; Souza & Silva, 1997). The CNE's attributions are listed on Act No. 9,131 of 1995 if compared to the CFE's ones which are listed on the LDB of 1961 show that since the termination of the latter, MEC has the final word in Brazilian education what was not true for some educational issues in the 1961-1994 period (Plank, 1996; Rama, 1987; Saviani, 1998a, 1998b; Souza & Silva, 1997).

In January 1, 1995, the Cardoso administration was inaugurated. Brazilian economy was not in crisis anymore but still a lot of work lay ahead for eliminating the significant socio-economic discrepancies existing in the country. One year later Brazil was a 157.1 million people country (1.2 times the population of 1985 - the population of 1995 was 155.8 million), 78% of the population living in urban areas (in 1985, the figure was

around 70%) - Brazil had become a complex urban society with a still young but slow growth population (IBGE, 1996a, 1996b, 1997b).

Since the very beginning, the Cardoso administration became very active in education with policy connected to the overall government strategy of maximizing public services efficiency. At the same time privatizing what the present federal administration and its supporters do not consider should not be owned and operated by Public Government. Its critics call such approach the neo-liberal policy or the minimal state one.

The present shape of Brazilian education is a blend of the past trends affected by Cardoso administration initiatives - administrative and legal ones. As alluded before, from January 1995 up to 1998, the Constitution has been altered (EC14 of September 1996), a new LDB has been approved (the final version was the one supported by Cardoso administration (LDB of December 1996) which was slightly altered in 1997 (Act No. 9,475)), both have been complemented or detailed by laws, decrees, executive orders, and by National Council of Education's expert opinions and resolutions in order to implement the educational view of the Cardoso administration and its supporters for Brazil (Saviani, 1998b).

Before describing the status of the various layers of Brazilian education using mostly 1996 data, let us briefly present what were the pieces of legislation related to education approved by the National Congress from 1995 until 1998. They had been either proposed by Cardoso administration or by congresspeople which had worked closely with MEC's team - the latter was the case of the final version of the LDB of 1996 (Saviani, 1998a, 1998b). Some of such pieces of legislation were enacted before the approval of the LDB of December 1996, others after, what allows us to conclude that the Cardoso

administration did not want to take much time in beginning to implement its view of education.

In November 1995, Act No. 9,131 established the role of MEC and the National Council of Education making MEC the most important authority in Brazilian education (the coordinator of the national policy for education) and the CNE an advisory one - that altered part of the LDB of 1961 (Ministério da Educação e do Desporto [MEC], 1999; Saviani, 1998b; Souza & Silva, 1997). In December 1995, Act No. 9,192 regulated the process of choice of the two highest ranking officials in higher education federal institutions (MEC, 1998b; Saviani, 1998b; Souza & Silva, 1997). In September 1996, the Constitutional Amendment 14, modified four articles (34, 208, 211, and 212) of the CF/88 related to education (already discussed) and rewrote Article 60 which establishes mechanisms to the universalization of quality fundamental education and to the eradication of illiteracy - the special fund which was created for such purpose was regulated by Act No. 9,424 of December 1996 (MEC, 1998b; Saviani, 1998b; Souza & Silva, 1997). After the enactment of the LDB of December of 1996, two laws related to education were enacted Act No. 9,424 of December 1996 (already alluded to) and Act No. 9,475 of July 1997 which rewrote Article 33 of the LDB of 1996 - the latter relates to the instruction of religion in public fundamental instruction schools. Besides the laws what was stated above there are other pieces of legislation proposed by MEC that are still in Congress - including the Bill No. 4,173/98 which institutes the national plan of education (Instituto Nacional de Estudos e Pesquisa Educacionais [INEP/MEC], 1998; Saviani, 1998b). Whenever there was no legal need for a law, the complementation and detailing of educational regulations were done by decrees, executive orders, and by National Council of Education's expert

opinions and resolutions which will be detailed whenever necessary (MEC, 1998b; Saviani, 1998b; Souza & Silva, 1997).

The LDB of 1996 has been discussed by many authors already (see Alves and Villardi, 1997; Carneiro, 1998; Demo, 1997; Hingel, 1997; Grossi, in LDBE96, 1997; Saviani, 1998a, 1998b; Souza, 1997; Souza & Silva, 1997). A brief summary of its making will be provided below based on Saviani (1998a) until we cite another work while its determinations will be detailed in the overview of the present status of Brazilian education which will be done later. As alluded before, the discussions in the National Congress regarding to the LDB of 1996 began in December 1988, two months after the promulgation of the Constitution of 1988, however among educators proposals for a new LDB began to be developed since, at least, the end of 1987. The first bill of the LDB was introduced in the House of Representatives in December of 1988 (during Sarney administration, and the 1987-1990 legislature) but in May of 1992 another one was introduced in the Senate (during Collor administration, and the 1991-1994 legislature) - while both originated from the legislative branch of government, the former was based on proposals developed by educators mostly not connected to the federal government, and the latter was developed with strong participation of educators who were MEC officials at that time.

As the proposals set forth different views about how Brazilian education should be and were developed in different ways, a political race began so that one bill prevailed over the other. That changed with the beginning of the Franco administration (in September 1992) which preferred the House of Representatives bill instead of the Senate one - which was the opposite of the Collor administration. The Senate bill did not complete its path

through the Senate before the House of Representatives one completed its path through the House. In May 1993, the latter was sent to the Senate and it seemed that the House's bill was going to become law.

In January 1995, the Cardoso administration was inaugurated (and the 1995-1998 legislature too) which had a different view for Brazilian education if compared to the House's bill that was being discussed in the Senate (Saviani, 1998b). Such bill went through significant modifications in the Senate which made the version that was approved in February 1996 and sent back to the House really a different proposal if compared to the one that had been sent to the Senate - MEC had a strong participation in the development of the Senate's proposal (Saviani, 1998a).

In December 1996 the House of Representatives approved the LDB Senate version with minor modifications which was signed by president Cardoso on December 20, 1996. Some educators characterize the LDB of 1996 as "innocuous and generic" (Saviani, 1998a, p. 199) and "minimalist" (Cunha, in Saviani, p. 199) while others understand it really should bring only "the essential" (Souza & Silva, 1997, p. 3) leaving the details to "minor pieces of legislation" (Souza & Silva, p. 3).

There are commonalities between the version originated in the House if compared to the final version of the LDB of 1996, and even its critics see positive points in it too (Saviani, 1998a). Public education gained with it if compared to previous legislation but private education still can provide the services it offered before, however with more Public Government control. MEC became the major authority in Brazilian education and any federal administration can shape that latter according to its view what can contribute to improve, worsen, or keep the existing status of education in Brazil (Saviani, 1998a).

The LDB of 1996 divided Brazilian formal (schooling) education in two levels: basic (K-11/12) education and higher education (LDBE96, 1997, Article 21, Incises 1-2). In addition to those, there are four modalities of education which complement them: youth and adult education, vocational-technical education and training, special education and distance education (LDBE96, 1997, Chapter 2, Section 5, Chapter 3, Chapter 5, Article 80).

Basic education has goals developing each person, providing him/her with the knowledge necessary for exercising his/her citizenship, and preparing him/her to advance in his/her studies and work (LDBE96, 1997, Article 22). It is organized in three sub-levels: children's education, fundamental instruction (previously named 1st Degree), and middle instruction (previously, 2nd Degree) (LDBE96, 1997, Article 21).

Children's education, the first phase of basic education, is not mandatory and is provided at child care centers to children up to three years old and at pre schools for those from four up to six years of age (LDBE96, 1997, Articles 29 and 30, Incises 1-2). In 1996, there were not comprehensive data about the number of children attending child care centers, however there were 4.3 million enrollments in pre schools (45% of the children 4-6 years old) being 76% of them in public institutions (55.4% of the children 4-6 years of age, a growth of 17.7% in the 1991-1996 period) - Southeast (58.8%), Northeast (58.6%), Centerwest (50.4%), North (47.8%), and South (46.6%) (IBGE, 1997c; INEP/MEC, in "Educação," 1998; INEP/MEC, 1998; PNAD 1995, in IBGE, 1997b). Previous legislation (Act No. 5,692/71) on children's education was economic if minimal to the LDB of 1996 which among other things stated that the municipalities and the Federal District are expected to offer children's education but priority is to

fundamental education (LDBE96, 1997, Article 10, Paragraph 1, Article 11, Incise 5; Souza & Silva, 1997). Despite the population in the age group less than 7 years old has been decreasing its share in the total Brazilian population, the number of enrollments in children's education has been increasing due to the transformations Brazilian society has been going through however the quality of the services provided is variable. Those issues in addition to others caused Public Government to provide more attention to this level of basic education in order to guarantee the public is properly served (INEP/MEC, 1998).

Before starting to attend fundamental instruction, a significant number of children attended alphabetization classes in 1996. They were 1.4 million children enrolled in them which last one school year (33% younger than 7 years of age, and 67%, 7 and older) - 83% of them in public schools (mostly municipal) and 17% in private ones (INEP/MEC, 1998). As the LDB of 1996 does not allude to an alphabetization year as a distinct "sub level" of basic education, since 1997 it should have been integrated to pre school but MEC plans to propose the extension of mandatory fundamental education to nine years (by diminishing one year in pre school) what is already done in many countries (INEP/MEC, 1998).

Fundamental instruction, the second phase of basic education, is mandatory for all children from 7 to 14 years of age, and must be provided free of charge at state, Federal District, and municipal schools being the last two ones the main responsible for its offer - the latter is also a right of those older than 14 years old who have not completed fundamental instruction yet (LDBE96, 1997, Article 10, Incise 6, Paragraph 1, Article 12, Incise 5, Article 37, Paragraph 1). Fundamental instruction lasts at least eight years, each having at least 200 school days and 800 hours of activities, final examinations (when

required) period not included. (LDBE96, Article 24, Incise 1, Article 32). The curriculum (Articles 24-28 and 32-34 of LDB of 1996) has a national common base which is complemented by a regional diversified part, “according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students” (MEC, 1998a, online). In 1996, fundamental instruction was offered to 33.1 million students (21.1% of the population [which had a life expectancy of 67.3 years by then], 1.7 times 1985 figure [being 11.2% in private schools - in 1985 it was 12.1%]) - Southeast (39.1%), Northeast (31.6%), South (13.5%), North (8.5%), and Centerwest (7.2%) (IBGE, 1996a, 1997b; INEP/MEC, in “Educação,” 1998; INEP/MEC, 1998).

Among the various changes introduced by the LDB of 1996 (for fundamental and middle instruction), the most important ones are: preparing students to advance in studies and work and not specifically for that latter as required before, 20 additional days in the school year calendar (which includes extra 80 hours of activities), more flexibility to organize instruction, curriculum, and students’ evaluation and promotion, special care to the contributions to different ethnicities to the formation of Brazil, the requirement of the study of a foreign language starting at 5th grade, additional detailing related to physical education and sports activities, besides determinations regarding to the provision of basic instruction in rural areas (Souza & Silva, 1997). In 1995, the average grade promotion was 68.4% (60.6%, in 1988), the average grade failure was 15.5% (18.8%, in 1988), and the average dropout rate was 16.1% (20.6%, in 1990) - the numbers have improved but are not satisfactory yet (INEP/MEC, in “Educação,” 1998; INEP/MEC, 1998). Out of the 33.1 million students enrolled in fundamental instruction, 25.9 million belonged to the 7-14 age group (90.8%; in 1991, it was 86.1%; in 1985, it was 81%) - 2.7 million children

were out of school, more than half of them in the Northeast (IBGE, 1997c; INEP/MEC, in “Educação,” 1998; INEP/MEC, 1998). In 1996, only 22.4% of the boys, 31.5% of the girls at the age of 14 were in 8th grade and those who completed fundamental education took in average 11.2 years to do so (INEP/MEC, in “Educação,” 1998). These numbers provided an overview of fundamental education in Brazil in 1995/1996 which despite the advances verified still presented significant problems in the students’ promotion and dropout rates at school (due to several reasons, quality of instruction in many schools being one of them) in addition to the need of extending this level of basic education to the all children in the age group and to the significant number of those who did not get it in the proper age (M. H. G. Castro, 1997; INEP/MEC, in “Educação,” 1998; INEP/MEC, 1998).

Middle instruction, the last phase of basic education, is not mandatory yet for all those from 15 to 17 years of age - as alluded before, the Constitution stated it should become progressively compulsory. It must be provided free of charge at public schools but it is the states and Federal District main responsibility to provide it - the latter is also a right of those older than 14 years old who have not completed fundamental instruction yet (LDBE96, 1997, Article 10, Incise 6, Paragraph 1, Article 12, Incise 5, Article 37, Paragraph 1). Middle instruction lasts at least three years, each having at least 200 school days and 800 hours of activities, final examinations (when required) period not included. (LDBE96, Article 24, Incise 1, Article 35). The curriculum (Articles 24-28 and Articles 35-36 of LDB of 1996) has a national common base which is complemented by a regional diversified part, “according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students” (MEC, 1998a). The competent

Public Authorities are to set minimum contents for middle instruction based on what is stated in the LDB of 1996. In 1996, middle instruction was offered to 5.7 million students (3.6% of the population, 2.8 times 1985 figure [being 20.5% in private schools - in 1985 it was 33.3%]) - Southeast (49.1%), Northeast (21.0%), South (16.3%), Centerwest (7.2%), and North (6.5%) (IBGE, 1997b; INEP/MEC, in "Educação," 1998; INEP/MEC, 1998).

The most relevant changes introduced in middle education by the LDB of 1996 were already addressed before, however, it is important to stress the modification of purpose of this level of basic education which was to prepare for work while now it is to prepare students to "advance" in studies and work (Souza & Silva, 1997). A look at the performance of the first graders of middle education (in 1996) revealed that 56% of the students were promoted to the next grade, 34% were not successful, and 10% dropped out of school - the percentages have not improved in the 1993-1996 period (INEP/MEC, in "Educação," 1998). In 1996, out of the 5.7 million students enrolled in middle instruction, 2.5 million belonged to the 15-17 age group (44.0%; in 1991, it was 43.1%) - 7.8 million children were out of school (IBGE, 1997c; INEP/MEC, in "Educação," 1998; INEP/MEC, 1998). In 1996, only 17.2% of the boys, 24.7% of the girls at the age of 17 were in 11th grade (the last one) and 54.3% of the middle instruction students were older than 17 (INEP/MEC, in "Educação," 1998). The numbers shown above indicate that the universalization of middle instruction in Brazil is a goal that will take time to be reached however it may not take very long as can be learned from the rate of enrollment for the nineties (52.2% for the 1991-1996 period) (M. H. G. Castro, 1997; INEP/MEC, 1998). In 1996, the majority of the students who began middle instruction were older than

17 (due to promotion problems in fundamental education), most of the middle instruction ones were already engaged in the workforce and studied in the evening in public schools run by the state governments - among the latter were many who returned to school (INEP/MEC, 1998). Overall, while qualitative problems are of comparative magnitude in fundamental and middle instruction, the universalization of the latter is more distant to achieve if compared to the former's.

Higher education (previously, also named 3rd Degree) has the purpose of preparing personnel for careers which require this level of education, of developing research, and performing extension - essentially the same that is stated in Act No. 5,540/68 (LDBE96, 1997, Article 43, Incises 1-7; Souza & Silva, 1997). It is structured as follows: sequential programs, undergraduate programs, graduate programs, and extension programs/courses - sequential programs were not alluded to in previous legislation (LDBE96, 1997, Article 44, Incises 1-4; Souza & Silva, 1997). As in the case of basic education public institutions, instruction in higher education public ones is also provided tuition-free - also not stated in previous legislation (LDBE96, 1997, Article 3, Incise 6; Souza & Silva, 1997). Public higher education institutions programs are mostly offered during day-time, however they have to establish evening programs as long as appropriate funding is provided - the latter was not guaranteed in previous legislation (INEP/MEC, 1998; LDBE96, 1997, Article 47, Paragraph 4; MEC, 1998a; Souza & Silva, 1997). Private higher education is paid, its programs predominantly offered in evening-time programs, and its participation in research is minimal which is mostly done by public institutions (universities and specialized institutes) (INEP/MEC, 1998; LDBE96, 1997, Article 45; MEC, 1998a; Schwartzman, 1997b).

Sequential programs are something new in Brazilian higher education. According to the LDB of 1996, they should be offered in different fields and levels, and must be open to those who meet the exigencies of the instructional institutions they apply for (LDBE96, 1997, Article 44, Incise I). According to Souza and Silva (1997), sequential programs have are partial regular programs and are aimed to provide a “quick and emergencial training of personnel in the various activities connected to the production of goods and services” (p. 78). They also stated that such programs provide certificates and not diplomas and are nested in the higher education regular programs (Souza & Silva, 1997). In 1998, the CNE established the norms for the provision of sequential programs and they are expected to start to be offered at most in 1999.

Undergraduate programs are open to those who have completed middle school through regular or alternative (GED) means and have been admitted through a selection process (LDBE96, Article 10, Incise 6, Paragraph 1). Such programs last between four and six years, each year having at least 200 school days, final examinations (when required) period not included. (LDBE96, Article 44, Incise 2, Article 47; MEC, 1998a). The undergraduate programs need authorization and accreditation to operate which can be revoked based on the evaluations that are conducted by MEC periodically (LDBE96, 1997, Article 46, Paragraphs 1-2; see also Decrees 2,026/96, and 2,306/97, in Saviani, 1998b). In 1994, there were 1.7 million undergraduate students (1.1% of the population, 1.2 times 1985 figure [with 58.4% in private institutions - in 1985 it was 59.3%]) - Southeast (55.1%), South (18.4%), Northeast (15.9%), Centerwest (6.7%), and North (3.9%) (IBGE, 1996a, 1997b; INEP/MEC, 1998). While one million of them (60%) studied in universities, 40% of the students were enrolled in private institutions in

the Southeast (INEP/MEC, 1998; MEC, 1998a). As to the areas of study chosen by Brazilian undergraduates students, they made the following choices: 41% of them were enrolled in applied social sciences programs (such as law, business administration, and economics), 16% in human science programs (such as teachers' development and psychology), 12% in health sciences programs, 10% in exact and nature sciences programs, 9% in engineering and technology programs, 7% in linguistics, languages, and arts programs, 3% in agrarian sciences programs, and 1.5% in biological sciences, 0.5% others (INEP/MEC, 1998; MEC, 1998a).

During the last 15 years, the expansion of higher education slots in Brazil was slow (18.7%, 1980-1994) which resulted in the fact that in 1994 less than 12% of the population in the 18-24 age group was enrolled in higher education programs - below the percentages in Argentina (40%), Chile (20.6%), Venezuela (26%), and Bolivia (20.6%) (INEP/MEC, 1998). As more people have graduated from middle school (in 1994, 1.3 for each undergraduate slot), and the Brazilian economy has grown and become more complex, the need for this level of higher education has also increased, demanding an expansion of its offer at much higher rate than its present one (INEP/MEC, 1998).

Graduate programs are open to those who have completed undergraduate programs and meet the exigencies of the instructional institutions they apply for (LDBE96, 1997, Article 44, Incise 3). Graduate studies include master's (from two to four years), doctoral (from four to six years), specialization (similar to a master's with creative component), improvement, and updating programs - each school year in graduate programs is required to have at least 200 school days, final examinations (when required) period not included. (LDBE96, 1997, Article 44, Incise 3, Article 47; MEC, 1998a).

Master's and doctoral programs need authorization and accreditation to operate which can be revoked based on the evaluations that are conducted by MEC periodically (LDBE96, 1997, Article 46, Paragraphs 1-2; see also Decrees No. 2,026/96, and 2,306/97, in Saviani, 1998b). In 1996, there were 74 thousand sponsored graduate students in Brazil and 4.1 thousand ones abroad spread in 24 countries but 72% of them in the United States, England, and France - the majority of Brazilian graduate students are not sponsored however those who study in public universities do not pay tuition (MCT, 1996, in IBGE, 1997b; MEC, 1998a). In the 1990-1995 period the fellowships provided for studies in Brazil increased 90% while in the same period those provided for study abroad decreased 2.4% - from 1990 to 1993, there was an increase of 18% (MCT, 1996, in IBGE, 1997b).

In 1994, out of the 141.4 thousand higher education instructors in Brazil, 15.1% of them had doctoral degrees and 23.7% had master's ones (MEC, 1998a). Such numbers (in addition to the need of researchers, and other professionals that may not teach or do research - top administrators, for instance) indicate an already significant need for those with graduate degrees which will tend to increase as Brazilian higher education is pressed to grow in terms of institutions, programs, enrollments, and research (at the federal level, research is coordinated by the Ministry of Science and Technology [MCT]). According to Schwartzman (1997b), most of the latter is done in public institutions (universities and specialized institutions; federal or São Paulo state ones) and is underfunded (the GDP percentage spent in Science and Technology is small if compared to "developed countries or Asian countries of recent industrialization" (p. 295), however there was a substantial growth of resources for graduate studies, mostly after 1987 which impacted positively

“the number of publications by Brazilian researchers in international literature” (p. 293) (unfortunately that was not accompanied by an increase in funding for research projects which, on the contrary, has stagnated and been unstable).

Extension programs and courses are open to those who meet the exigencies of the instructional institutions they apply for (LDBE96, 1997, Article 44, Incise 4). As they are not regular programs or courses, the institutions that provide them will establish the regulations regarding to their organization and operation (Souza & Silva, 1997).

In 1994, the various higher education programs/courses alluded before were taught at 851 educational institutions all of which need authorization and accreditation from MEC to operate and will be evaluated by MEC periodically - the latter determines the continuation or not of the former (LDBE96, 1997, Article 46; MEC, 1998a; see also Act No. 9,131/95, Decrees No. 2,026/96 and 2,306/97, in Saviani, 1998b). From the academic point of view, they are classified as universities (15%), university centers (none), integrated colleges (10%), colleges, and higher education institutes or schools (the last two categories, 75%) - 1994 data (MEC, 1998a; see also Decree No. 2,306/97, in Saviani, 1998b).

While all higher education institutions offer programs, only the universities have to do research and extension (MEC, 1998a; see also Decree No. 2,306/97, in Saviani, 1998b). Like the universities, the university centers can create, organize, and terminate programs and courses at their campuses as well as increase or reorganize the slots for each program/course without previous authorization from MEC - medicine, odontology, and psychology programs require authorization from the National Health Council, while law ones, from the Federal Council of the Brazilian Bar Association (MEC, 1998a; Decree No.

2,306/97, in Saviani, 1998b). The integrated colleges, colleges, and higher education institutes or schools do not have the autonomy of the university and university centers, but they can request upgrade in their status if they meet the requirements existing in the legislation (Decree 2306/97, in Saviani, 1998b).

Since 1995, the quality of the services provided by such institutions has been evaluated periodically by MEC (before that, only graduate programs were periodically evaluated) which has not only revealed the situation in them but also forced them to act to improve their instruction, research, and extension (and associated costs) to at least an acceptable level which is necessary to continue in operation.

As alluded before, besides basic and higher education, there are four modalities of education which complement the former: youth and adult education, vocational-technical educational and training, special education, and distance education (LDBE96, 1997, Chapter 2, Section 5, Chapter 3, Chapter 5, Article 80).

Youth and adult education is aimed at those who could not attend and complete basic education in the proper age (LDBE96, 1997, Article 37). It is offered through tuition-free programs and General Educational Development [GED] tests - such educational opportunities while meeting the national base of the curriculum, must also take in consideration the characteristics, the needs and the interests of the students, guaranteeing to those that are workers the necessary means of access and permanence at school (LDBE96, 1997, Article 37, Paragraphs 1-2, Article 38, Paragraph 1-2). The LDB of 1996 did not make drastic changes in previous legislation however it updated its content so that educational challenges the Brazilian people faces could be properly met (INEP/MEC, 1998; Souza & Silva, 1997).

Despite the progress achieved in the last decades, in 1995 the average number of years of schooling was only 5.4 years per men (in 1990, 5.1; in 1985, 4.5) and 5.7 years per women (in 1990, 4.9; in 1985, 4.2), varying from 6.2 years per person in the Southeast to 4.1 years, in the Northeast, while still 15.6% of the population 15 years and older (in 1991, 20.1%; in 1985, 22%) were illiterate (16 million people) - 30.5% of such population group in the Northeast, 13.3%, in the North and Centerwest (each), 9.3%, in the Southeast, and 9.1%, in the South (IBGE, 1996a, 1997a, 1997b, 1997c; INEP/MEC, 1998). In 1995, while 32.7% of those in the 50 years and over age group were illiterate (16.7% of those 40-49, and 11.0% of those 30-39), only 5.9% of Brazilian population has 12 or more years of schooling, over 70% have less than 8 years of schooling (INEP/MEC, 1998). In 1995, the number of those who completed fundamental instruction through the GED pathway was 224 thousand (57% in the Southeast), while for middle instruction, the figure was 76 thousand students (61% in the Southeast) (IBGE, 1997b; INEP/MEC, 1998).

The numbers provided above justify what is written in the Constitution of 1988, the LDB of 1996, the Constitutional Amendment No. 14 of 1996, and Act No. 9,424/96 which, as alluded before, mandate the eradication of illiteracy in ten years-time, mandatory fundamental education for all children, and its offer for those who could not get in the proper age while also indicating where the funding to achieve such goals will come from. To have completed fundamental instruction is not only a right of every Brazilian but is also necessary for each person to be able to exercise fully its citizenship while at the same time improving his/her chances in the labor market - the right to educational opportunities

beyond fundamental instruction is guaranteed in Constitutions of 1988 too (CF/1988, 1996, Article 208, Incises 1-7; INEP/MEC, 1998)

Vocational-technical education and training [VTET] is open to students who are enrolled or completed any level of basic and higher education, as well as to the worker in general, young or adult, as a way of qualification to the exercise of activities in the productive life (LDB96, 1997, Article 40, Paragraph 1). It can be developed in articulation with the regular instruction [schooling education] or in formats which meet continuing education strategies (LDBE96, Article 40). VTET can be offered at regular instruction schools, in specialized institutions or in the workplace (LDBE96, Article 40-42). Since the release of Decree No. 2,208/97 (April 18), VTET has been divided in three levels: training (independent of previous schooling), vocational-technical (middle instruction level), and technical (associate of applied sciences level) (In Saviani, 1998b). VTET has been provided at the public, semi public, and private levels and will be addressed in details in the following section of this chapter - the main focus will be on the federal technological education system which is the main subject of this work.

Special education is aimed at students that have special needs (handicapped and highly gifted ones) being its offer at the public institutions guaranteed by the Constitution of 1988 (CF/88, 1996, Article 208, Incise 3). Preferentially, they should attend regular schools which should provide specific complementary supports, however when that is not possible, the students should enroll in specialized institutions (LDBE96, 1997, Article 58, Paragraphs 1-3). Special education must be provided from children's education level up to the highest levels of instruction being the duty of the various instructional systems (federal, state, Federal District, and municipal) being properly prepared to fulfill such need

in their level of competency (LDBE96, 1997, Article 58, Paragraph 3, Article 59, Incises 1-5). Private institutions may receive public funding for providing special education if they meet criteria specified in legislation (LDBE96, Article 58, Paragraphs 1-3, Article 60, Paragraph 1).

Data regarding to the number of Brazilian children and youngsters with special needs is poor as previous general census did not collect such information, however, the 1996 Census on Education revealed that the number of enrollments in special education (all levels of basic education) was minimal - 201 thousand for the whole country (INEP/MEC, 1998). Half of the enrollments were located in the Southeast while 25% of them were registered in the South what indicated a substantial national unbalance in the provision of special education (INEP/MEC, 1998). The data collected also showed that 60% of the total enrollments in basic education were in public institutions, but 63% of pre school enrollments and 56% of middle instruction ones were in private institutions (INEP/MEC, 1998). The LDB of 1996 provided much more attention to special education than the Act No. 5,692/71 (which was later complemented by lower legislation), however, as a general rule, schools are not prepared yet to fulfill what is mandated by the Constitution of 1988 and the LDB of 1996 in relation to special education what will require a significant effort from Public Government for years to come (INEP/MEC, 1998; Souza & Silva, 1997).

Distance education is open to the Brazilian population as an option to get formal and informal education. Differently from before the LDB of 1996, distance learning programs can be provided at all levels and modalities of instruction and of continuing education (LDBE96, 1997, Article 80; Souza & Silva, 1997). In addition to that, distance

education methodologies can be used as a support to regular programs activities too. Distance education is encouraged by Public Government, and its providers have flexibility in terms of organization and special administration, but must not only be accredited by MEC but also obey federal regulations regarding to students evaluations and diploma registration - if it is the case (LDBE96, 1997, Article 80, Paragraphs 1-2). The development, control, and evaluation of distance education programs must meet regulations of the instruction system (federal, state, Federal District, or municipal) they are subordinated to - such systems will be integrated or co-operate whenever necessary (LDBE96, 1997, Article 80, Paragraph 3).

Brazil already has a number of public educational radio and television networks in addition to the educational programs that have been produced and broadcasted by commercial television networks, however Internet is still far away from being used in most Brazilian schools or for providing distance education programs in Brazil (INEP/MEC, 1998). Not counting on the use of distance instruction/learning as a supplement to presencial education, so far only fundamental and middle instruction, and VTET have been provided through distance education (the former as non presencial GED programs) in Brazil, but the LDB of 1996 enlarged the possibilities to be explored ahead which will need not only the technical competence to do it, but also financial and political support as well as a change of attitude regarding to the value of this modality of education - the LDB of 1996 (Article 80, Paragraph 4, Incises 1-3) listed a number of provisions regarding to the support that distance education is entitled to (LDBE96, 1997).

Besides the levels and modalities of education already discussed, the LDB of 1996 also made reference to military instruction and to Indian (as the native population is named in Brazil) education (LDBE96, 1997, Articles 78-79, and 83).

Like in previous legislation, military instruction was said be the subject of specific law due to its nature (Souza & Silva, 1997). However, the LDB of 1996 stated that the instruction systems will enact regulations indicating the equivalences between the various levels and modalities of Brazilian education and military instruction (LDBE96, 1997, Article 83). Presently, the three branches of the armed forces (Air Force, Army, and Navy) have a number of educational institutions spread over Brazil.

By the first time, Indian education is addressed as a separate type of education in an LDB (Souza & Silva, 1997). After many centuries of efforts to eliminate the indian cultures through several means including the provision of an education which imposed “foreign values and the negation of differentiated identities and cultures” (INEP/MEC, 1998), a Brazilian Constitution (1988) and an LDB (1996) guaranteed their right to an education that included their languages, learning processes, sciences and cultures, as well as to have their contributions to the formation of the Brazil properly to acknowledged (CF/88, 1996, Article 210, Paragraph 2, Article 242, Paragraph 1; LDBE96, 1997, Articles 78-79). The recognition of the former at the higher levels of law made official what had already happening for some years as a result of efforts of ONGs and Indian communities, while the latter has been an effort to rewrite Brazilian history in all its nuances that have been undertaken for some time already (INEP/MEC, 1998). In addition to the urbanized Indians (there is no structured information about them, however many are believed to keep their languages and traditions), “there are between 280 and 329 thousand

Indians living in reserves who belong to about 210 different groups” (INEP/MEC, 1998, p. 61).

Since 1991, MEC is the coordinator of the efforts regarding to Indian education but its implementation is to be performed by the states, Federal District, and municipalities - the Indian education efforts have the input of the National Foundation for the Indians (LDBE96, 1997, Article 78; INEP/MEC, 1998). Besides coordinating the efforts of Indian education, the federal government has to provide technical and financial support to the instruction systems that provide integrated programs of instruction and research can be developed (LDBE96, 1997, Article 79, Paragraphs 1-2, Incises 1-4). The implementation of Indian education (which take in consideration what is stated in the LDB of 1996) nationwide is a task that has just begun and will be not an easy, quick, or cheap one because the information about Indians as a whole is poor, their population is reduced, scattered and heterogenous, and the human resources to provide it need to be developed to the appropriate extent not to mention the necessary provision funds to pay for all. However, as the National Plan of Education also has to contain the goals to be achieved in terms of indian education, public government has to provide it what leaves no room for inaction (LDBE96, 1997, Article 79, Paragraph 2, Incises 1-4).

For each level or modality of Brazilian education, the LDB of 1996 required that the instructors have the proper degrees (which are very similar to what is stated in previous legislation, Acts No. 5,540/68 and 5,692/71, but there were changes relating to where, when, and how the training is to be provided besides others) (LDBE96, 1997, Articles 61-66). The 295 thousand children’s education (pre school and alphabetization) instructors and the 777 thousand 1-4 grade instruction ones (1996) are required to have

either secondary or higher education teaching degree what is still not true for 22% of the former and 15% of the latter - higher education training is preferred (INEP/MEC, 1998; LDBE96, 1997, Articles 62-63). The 612 thousand 5-8 grade instruction degree teachers and the 327 thousand 9-11/12 grade instruction ones (1996) are required to have a higher education teaching degree however 26% of the former and 14% of the latter still do not meet the necessary qualification (INEP/MEC, 1998; LDBE96, 1997, Articles 62-63). The 141 thousand higher education instructors (1994) are required to have graduate training, preferentially at masters' and doctoral levels (universities mandatorily at least one third of their instructors), but the latter is still a goal to be reached - in 1994, doctors (15.1%), masters' (23.7%), specialization (masters' with creative component) (35.6%), bachelors (25.4%), others (0.2%) (INEP/MEC, 1998; LDBE96, 1997, Article 52, Incise 2, Article 66; MEC, 1998a).

The numbers provided above show that there are a significant number of Brazilian instructors (at all levels) that still need to get the proper degrees to do their job. In addition to that there is a need for constant update in the skills of those who already have the minimum qualifications, and for better working conditions and pay which are, for a substantial number of instructors, far below what is necessary to provide quality education as well as to attract good professionals (INEP, 1998). The legislation in place (the Constitution of 1998, the Constitutional Amendment No. 14 of 1996, the LDB of 1996, and complementary legislation) are a start, but it will require much political and technical competence to change the unfavorable context that the teaching profession is presently immersed in Brazil.

In 1996, basic and higher education in Brazil was provided by 290 thousand educational institutions (10% more than in 1991) which along with the public agencies (MEC, CNE, states, Federal District, and municipal secretariats of education, and others) which are in charge of education belong to one of the following instruction systems: federal, states, Federal District, municipal. Each instruction system has its competencies stipulated in the LDB of 1996, many of which have already been addressed previously (INEP/MEC, 1998; LDBE96, 1997, Articles 8-20).

The Federal Instruction System includes the instruction institutions maintained by the Union (in 1996, 349 basic education institutions (some provide VTET too); in 1994, 57 higher education ones (some provide VTET too) - those numbers include those of the Federal District), the private higher education institutions (in 1994, 633), and the federal agencies of education (MEC, CNE, and others). (INEP/MEC, 1998; LDBE96, 1997, Article 16, Incises 1-3).

The States and Federal District Instruction Systems include the instruction institutions maintained, respectively, by the states Governments (in 1996, 70 thousand basic education institutions (some provide VTET too); in 1994, 73 higher education ones (some provide VTET too)), and by the Federal District one (see previous paragraph), the higher education institutions maintained by municipalities governments (in 1994, 88), the fundamental and middle instruction institutions created and maintained by private organizations (in 1996, 21 thousand), and the states and Federal District agencies of education, respectively - in the Federal District, the children's education institutions, created and maintained by private organizations (see the following paragraph), are also

part of its instruction system (INEP/MEC, 1998; LDBE96, 1997, Article 17, Incises 1-4, Paragraph 1).

The Municipalities Instruction Systems include the fundamental and middle instruction, and children's education institutions maintained by the municipalities governments (in 1996, 181 thousand), fundamental and middle instruction, and children's education institutions maintained by private organizations (in 1996, 38 thousand), and the municipal agencies of education (INEP/MEC, 1998; LDBE96, 1997, Article 18, Incises 1-3). Municipal instruction systems can only provide other levels of instruction than children's education and fundamental instruction if those are properly met and if the funding does not come from the 25% of their tax revenues they mandatorily have to spend in education (LDBE96, 1997, Article 11, Incise 5).

The funding for Brazilian Education, in its different levels and modalities, comes from public and private sources - the former which has already been addressed before, is covered in the Constitution of 1988, Constitutional Amendment No. 14 of 1996, the LDB of 1996, and complementary legislation. In 1995, 42.9 billion US dollars (5.97% of Brazilian GDP) were spent in education being 81% from public sources (federal, state, municipal; 4.85% of the GDP), and 19% from private ones (families, companies/workers' training; 1.12% of the GDP) (Afonso, 1997, in INEP/MEC, 1998). The state governments provided 47% of public funds to education, the municipalities ones, 29%, and federal level, 24% (INEP/MEC, 1998). Families contributed with 80% of private funding while 20% came from other sources (Afonso, 1997, in INEP/MEC, 1998).

Data from the 1980s and 1990s provide in indication that Brazil has spent a larger percent of public expenses in education than countries such as the United States, Canada,

Sweden, and Norway, however the reverse was also true when the comparison is done in terms of expenses in education as a percentual of the GDP (UNESCO, 1994, in INEP/MEC, 1998; UNESCO, 1996, in IBGE, 1997b). Unfortunately, compared to developed countries, the public expenditures per student are much lower in basic education, and equivalent or above in higher education (Monlevade, 1997; Paul and Wolff, 1996; Plank, 1996). While such comparisons have to be taken with caution (what and what is not to be included as education expenses vary from country to country, as well as the sizes and distribution (specially the age one) of their general (and student) population and GDPs too), the improper use (for political, incompetence, other reasons, or a combination) of resources which should, by law, have been directed to public education has been detected by several works (see Melchior, 1987; Monlevade, 1997; Paul and Wolff, 1996; Plank, 1996). The efficiency and efficacy in the use of the existing public funds for education are necessary to improve and increase the reach of Brazilian education, however such funds seem not to be enough to provide quality education in all present public institutions (they are tuition-free) (INEP/MEC, 1998; Saviani, 1998b). The allocation and use of public funds for education has been a hot issue in Brazil and there are no indications it will cease to be in the near future.

As shown before, since 1995, many legal initiatives were taken to improve Brazilian education. In addition to all legislation that has been enacted since then (which follows what is stated in the Constitution of 1988), the federal government has implemented actions in all levels and modalities of Brazilian education in order to enforce what is mandated by law - it has been accompanied in such task by the states, the Federal District, the municipal governments. Among the issues that have been attacked at the

national level are: reorganization and operation of the various levels of public government, the curriculum and evaluation of all levels and modalities of education, the instructors training and the quality of instruction provided by them, school and classroom environment, the operation and reorganization of the schools (accountability, democracy, efficacy, efficiency, and flexibility are sought after), and administrators and staff training.

Nowadays Brazilian education has from top quality educational institutions to low quality ones being the latter more numerous than the former. Its problems have already been identified since quite awhile ago as well as what caused them (there is more agreement on the former than on the latter). Proposals for the National Plan of Education have been sent to Congress indicating the goals to be reached in ten-years' time. To what degree the present initiatives (which will continue at the federal level at least until 2002) will contribute to change Brazilian education so that it fulfill what was demanded by the Brazilian people in the Constitution of 1988, it is still to be seen.

In the following section, vocational-technical education and training in Brazil is covered. That is not only necessary to complement the overview of Brazilian education but also to address its part in which is inserted the main concern of this work, that is, the federal technological education system - VTET in Brazil will be discussed as whole but the main focus will be on the latter. Past developments will be addressed as well as the reforms introduced by the Cardoso administration which have been welcome by some and disliked by others setting the ground for the conclusions and recommendations of this work.

Vocational-Technical Education and Training in Brazil

While the Brazilian Constitution (CF/88, 1996) stated that

the education [italics added], right of all and a duty of the State and of the family, will be promoted and encouraged in collaboration with society, aiming for the full development of the individual, its preparation for the exercise of citizenship and its qualification for work (Article 205, p. 99),

the LDB of 1996 (LDBE96, 1997) asserted that

vocational-technical education and training [italics added], integrated to the different forms of education, to work, to science, and to technology, leads to the permanent development of aptitudes for the productive life (Article 39, p. 35).

In addition to that it is also stated by the LDB of 1996 (LDBE96, 1997) that

the student that is enrolled or completed fundamental, middle, or higher [education] instruction, as well as the worker in general, young or adult, will count on the possibility of having access to vocational-technical education and training (Article 39, Paragraph 1, p. 35).

Since its origins in the sixteenth century, Brazilian vocational-technical education and training [VTET] has experimented with changes in terms of scope, nomenclature, organization, degree of need, and value, and nowadays the debate goes on regarding its various aspects.

The LDB of 1996 and complementary legislation (specially Decree No. 2208/97 and MEC Executive Order No. 646/97) introduced significant changes in VTET which affected substantially the Federal Technological Education System [FTES] whose future is the main goal of this study. In order to better deal with the future of the FTES, a brief retrospective will describe in which way VTET was present throughout Brazilian history up to our present days but the main focus will be on the FTES. First the review will cover

the past until 1994. The “present” will address the period beginning January 1995. Such review will cover mostly formal and regular instruction but it will also go beyond that whenever necessary. By formal and regular instruction it is meant instruction provided “according to the regulations of the LDB” of 1996, being subordinated “to supervision of the Public Government”, and entitled “to issue diplomas that are registrable in the appropriate government agencies” (Souza & Silva, 1997, p. 2).

As alluded to previously, before the arrival of the Jesuits in 1549, there was no system for education or training in Brazil (Monlevade, 1997; Tobias, 1986). The first curriculum taught by the Jesuits was the same for the sons of the colonists and the sons of the natives who after having initial common instruction, at some point in time, had to choose between getting academic instruction or a vocational one (agriculture and handicrafts) (Ribeiro, 1993; Tobias, 1996). As soon as the Jesuits noticed that the sons of the natives were not suited to become priests that changed (Ribeiro, 1993; Tobias, 1996). The sons of the colonists were taught a more academic curriculum while the sons of the natives got a more utilitarian one (Ribeiro, 1993; Tobias, 1996). However after the death of Father Nóbrega (the head of the Jesuits in Brazil) in 1570, the Jesuits’ schools in Brazil had their curriculum changed to solely academic due to the priority of using the existing limited resources of people and funding for the education of the sons of the colonists and the preparation of priests - vocational instruction in educational facilities was terminated (Ribeiro, 1993; Tobias, 1996). From a beginning where anyone could attend vocational instruction, the latter was directed to those at a lower position in society or considered less apt intellectually, and finally not offered at all. Such view was the beginning of negative mindset towards VTET in Brazil (Fonseca, 1986, in Arruda, 1990).

During the Jesuit period in Brazil a remarkable initiative in terms of vocational instruction in an educational facility was taken in Ouro Preto (Minas Gerais) in 1749. A Franciscan friar, Gaspar de Santa Teresa, who was also an engineer and architect, started a not for profit lyceum for trades which provided training in carpentry, metal working, sculpture, painting, metal casting, tailoring, and clayware making - among the students were Antônio Francisco Lisboa, and Ataíde, who would become very famous as a sculptor and painter, respectively, in Brazil (Duarte, 1986).

In 1759 the Jesuits were expelled from all Portuguese possessions, including Brazil. The situation did not change regarding vocational instruction which as a general rule was provided at first at the sugar mills, then at minting and engraving facilities, and in the beginning of the nineteenth century at the navy arsenals (Ribeiro, 1993; Silva, 1991).

One fact that contributed to the delay of establishing VTET schools/programs in Brazil before the 1800s was an Executive Order from the Portuguese government (1785) which mandated the closing of factories in Brazil in order to prevent competition with the ones located in Portugal (Ribeiro, 1993). It was only revoked after the arrival of the Portuguese Royal family in Brazil in 1808 (Ribeiro, 1993).

Among the various initiatives taken by the Portuguese government to enable its operation from Brazil, was the establishment of several educational institutions and programs in addition to the military academies and surgery/medicine colleges/programs. These included a) technical schools/programs in metal working/gun making (in Minas); b) agriculture [botanics included], c) economics, d) chemistry [industrial chemistry, geology, and mineralogy], e) technical drawing (in Bahia); and f) agriculture and chemistry (in Rio de Janeiro). The technical instruction provided was viewed as a sort of higher education

(Ribeiro, 1993). The 1808-1821 period did not bring any significant changes to vocational instruction which was aimed for the poor, the handicapped, the orphans, and other “unlucky ones” (Peçanha, 1909, in Ferreira, 1994, p. 11). It was mostly provided as a side activity of non educational institutions that would only begin to change after the middle of the nineteenth century (Duarte, 1986; Fonseca, 1986, in Arruda, 1990; Silva, 1991).

During the imperial period (1822-1889), VTET continued to get little attention from those in charge of education. However some vocational programs and schools (agriculture, industry, commerce) were established in Salvador, Rio de Janeiro, Niterói, and Ouro Preto as well as in other cities located in Maranhão, Pará, Pernambuco, Rio Grande do Sul, and Sergipe during D. Pedro II's reign (Duarte, 1986; Ribeiro, 1993; Vianna, 1970). Vocational instruction continued to be viewed as something for the “unlucky ones” being offered through few vocational schools, and other organizations (among them orphanages and asylums) that contributed to strengthening the low esteem related or attributed to it (Fonseca, 1986, in Arruda, 1990; Vianna, 1970).

The first ten years of the republican period (1889-1909) did not witness much in terms of concrete actions regarding to VTET. The fear of the already large and growing number of “unlucky ones” in the major cities lead to a federal governmental policy of social control which involved among other things setting up a network of vocational schools around the country (Ferreira, 1994). That policy was enforced through the establishment of “asylums, mental hospitals, military arsenals, prisons, correctional houses, and vocational schools [around the country] in order to keep the idle and unemployed ones under a certain level of control” (Ferreira, 1994, p. 11). By not only teaching their students the work ethic and an occupation but also by “educating” them, vocational

education (taught at schools and other types of facilities) would keep them out of the streets, would allow them to dream about having a “future,” and would also provide skilled labor to the still incipient Brazilian industry. Brazil was still a rural country whose economy was mostly based on agriculture for export (Arruda, 1990; Ferreira, 1994; Silva, 1991).

The possibility of establishment of a federal network of vocational and technical institutions began to emerge during the presidential campaign of 1906. States and municipal governments in addition to the business and industry people had not acted until that time to establish such schools; the exceptions were minimal (Ferreira, 1994; Secretaria Nacional de Educação Tecnológica [SENETE/MEC], 1991). It was the first time VTET became an issue in a presidential campaign, the winner, Afonso Pena who eventually became Brazil’s 6th president, declared in a speech to the nation: “the establishment and the multiplication of institutes of vocational and technical education can contribute much also to the industries progress, preparing trained and skilled masters and workers” (Fonseca, 1961, in Silva, 1991, p. 35).

Pena died in June 1909 being replaced by his Vice President, Nilo Peçanha, who through Decree No. 7,566 (September 23, 1909) established 19 vocational schools (artisans’ apprenticeship schools), one per Brazilian province (Ferreira, 1994; SEMTEC/MEC, 1994b; SENETE/MEC, 1991; Vianna, 1970). Those schools were the formal beginning of the present federal technological education system. In addition to vocational training, they had to provide primary education and were aimed at the children of “the unlucky ones” (Ferreira, 1994; SENETE/MEC, 1991; Silva, 1991; Vianna, 1970). The schools were tuition-free and their goal was to prepare carpenters, tailors, locksmiths,

shoe makers, leather and metal, besides other types of artisans (Ferreira, 1994; SENETE/MEC, 1991; Silva, 1991; Vianna, 1970). Their instruction was only normalized in 1911 through Decree No. 9,070 (October 25) (SEMTEC/MEC, 1994b). The fact that only São Paulo and Rio de Janeiro had enough industries and companies to possibly employ the future graduates of the vocational schools at that time provides a significant indication that the main goal for their establishment was really other than providing skilled peoplepower for entry level positions in industry (Ferreira, 1994).

On October 20, 1910 the agriculture branch of the present federal technological education system was established. Decree No. 8,319 which not only organized the agriculture instruction in Brazil but also established the agriculture apprenticeships which would operate in model-farms. The first ones were established in the following provinces: Amazonas, Minas, and São Paulo, in addition to Rio de Janeiro, the Federal District at that time (Duarte, 1986; SEMTEC/MEC, 1994b). Before that vocational agriculture instruction in Brazil was provided mostly by philanthropic organizations and aimed for the “unlucky ones” (Duarte, 1986). Overall, agriculture instruction was divided in four levels: primary agriculture instruction, agriculture apprenticeships, secondary agriculture instruction, and higher education instruction, all of which should prepare skilled labor in the following areas: agriculture, zootechny, rural industries, and veterinary medicine. Agriculture instruction was subordinated to the Ministry of Agriculture, Industry, and Commerce (Duarte 1986; SEMTEC/MEC, 1994b; SENETE/MEC, 1991). It is believed that as in the case of the trade and industrial vocational instruction, vocational agriculture at first was intended more for social control rather than for preparing skilled people power. The population was growing in the cities because people were leaving the rural

areas so it was important to keep them in the latter by “educating” them enough for them to take their “position” in the existing social order.

Other relevant initiatives regarding to VTET that happened during the “Old Republic” period (1889-1930) were:

- 1912 – the establishment of the Brazilian Confederation of Labor (Confederação Brasileira do Trabalho [CBT]) during the fourth Brazilian Workers’ Congress (November 7-15) which besides other claims should push for mandatory primary instruction for all (Ministério do Trabalho [MTb], 1998);
- 1917 – (August 11): the establishment of an institution for preparing instructors for teaching the trades and arts (Escola Normal de Artes e Ofícios Wenceslau Braz; presently Centro Federal de Educação Tecnológica Celso Suckow da Fonseca [CEFET-RJ]) in Rio de Janeiro (Decree No. 1,880) (SEMTEC/MEC, 1994b; Vianna, 1970);
- 1918 – (June 12): changes made in the regulations for the instruction of trades and arts enacted in 1911 (Decree No. 9,070) by the Decree No. 13,064 (SEMTEC/MEC, 1994b);
- 1918 – (October 16): the establishment of the National Department for Labor (Decree No. 3,550) which aimed for regulating the organization of work in Brazil (MTb, 1998);
- 1920 – the establishment of the Service for the Remodeling of the Vocational-Technical Instruction which was in charge of this type of instruction in Brazil (SEMTEC/MEC, 1994b);

- 1922 – congressman Fidelis Reis proposed a bill which mandated compulsory vocational education for every youngster in Brazil as part of their schooling. That was the first attempt to establish the same type of education for all Brazilians (SENETE/MEC, 1991; Soares, 1995);
- 1926 – instruction in the artisan’s apprenticeship schools was standardized at the national level despite regional differences (Arruda, 1990);
- 1927 – Reis’ bill became law but due to pressure from the elites, the proposed compulsory status of vocational education was removed except for the primary schools maintained or which received funding from the federal government and the *Colégio Pedro II*. The dualism in Brazilian education persisted. The Reis’ Act was never made effective (Duarte, 1986; SENETE/MEC, 1991; Soares, 1995; Vianna, 1970);
- 1928 – the Fernando de Azevedo reform intended to articulate VTET instruction with the other branches of Brazilian education but was only successful regarding to primary instruction (Arruda, 1990; Duarte, 1986).

Despite the advancements verified since 1909, VTET in Brazil did not change very much in terms of reach and status (Nascimento, 1987). It continued to be viewed as second class education (for the poor and other “unlucky ones”), to have few students (and even less graduates), and to get less support that it needed from all levels of public government. The context would only begin to change after the end of the “Old Republic” period.

As alluded before, in the 1920s, as urbanization and industrialization started to happen at a faster pace in Brazil, the country went through various socio-economic-

political changes which led to the “Revolution of 1930.” Brazil was gradually leaving the agriculture for export phase and beginning the national-developmental phase which was based on industrialization for meeting the internal demand and exporting manufactured products (Arruda, 1990; Ribeiro, 1993). Before the 1940s most of the industries existing in Brazil were involved in activities related to agriculture products processing (e.g., cotton, leather), textiles, shoe making, food processing (e.g., coffee, sugar, oil), and beverage making at the very beginning stage of mechanization (Silva, 1991).

The first Vargas administration (1930-1945) brought many changes to education as a whole. However VTET was deeply affected specially in the phase that is known as “*Estado Novo*” (1937-1945) - the dictatorial one.

In 1930, Vargas administration terminated the Service for the Remodeling of the Vocational-Technical Instruction, and established the Ministry of the Affairs of Education and Public Health (November 14; Decree No. 19,402) which was to devise a national policy for education and develop a National Education Plan for guiding the activities of the states and municipalities (Duarte, 1986; MEC, 1998; Plank, 1996). Also in 1930, it was established the Ministry of Labor, Industry, and Commerce (November 26; Decree 19,433) which would later become involved with VTET (MTb, 1998). The artisans’ apprenticeship schools were transferred from the former Ministry of Agriculture, Industry, and Commerce to the Ministry of the Affairs of Education and Health. It established a Vocational-Technical Instruction Office (January 5, 1931; Decree No. 19,560) whose responsibilities were “to direct, guide and supervise all services related to vocational-technical education” (SENETE/MEC, 1991, p. 8). Such initiatives were in consonance

with what was stated in the third item of a program for national reconstruction summarized in Vargas inaugural speech: “intensive diffusion of public instruction, principally the vocational-technical one” (Vargas, 1930, in Ribeiro, 1993, p. 104).

In terms of education, the 1931-1932 period was marked by the Campos reform (1931-1932), and the publication (1932) of the *escolanovistas*' main work “*Manifesto dos Pioneiros da Educação Nacional*” (Manifesto of the Pioneers of the National Education). Francisco Campos was the first Minister of the Affairs of Education and Health (Göller, 1996; Plank, 1996; Ribeiro, 1993). While the former organized secondary (academic), commercial, and higher education at a national level, the latter proposed, among other things, that every Brazilian should have an integral education, common to all, but taking into consideration their natural aptitudes. That is, a single type of education, abolishing the existing dualism. Also crucial to the “*Manifesto*” was the end of centralism. It was determined that schools should meet the local needs (Göller, 1996; Plank, 1996; MEC/SENETE, 1991; Ribeiro, 1993).

The Campos reform (June 30, 1931; Decree No. 20,518) established commercial instruction divided into three stages: general education (3 years), vocational-technical programs (5 different modalities varying from 1 to 3 years of duration), and higher education (administration and finances, 3 years) (Göller, 1996; Ribeiro, 1993). It complemented the existing norms for industry and agriculture instruction (Göller, 1996).

The education program proposed in the “*Manifesto dos Pioneiros da Educação Nacional*” indicated that while primary education (7-12 years of age) was the same for all, secondary education (12-17) would be “flexible serving a clear social function ... having, on the top of a common general culture base (3 years), the sections of specialization for

activities of intellectual preference (humanities and sciences) or of manual and mechanical preference (courses of technical content)” (In Ribeiro, 1993, pp. 108-109). It was also stated in that education plan, the

development of the vocational-technical school, of secondary and higher education levels, as base of the national economy, with the necessary variety of types and schools:

- a) agriculture, mining, and fishing (extraction of raw materials);
 - b) industrial trades (preparation of raw materials [manufacturing of products]);
 - c) transportation and commerce (distribution of manufactured products];
- and according to methods and directives which may prepare skilled technicians and workers for all levels of the industrial hierarchy (In Ribeiro, p. 109).

So the integral, single type of education proposed by the *escolanovistas* should not only take in consideration the natural aptitudes of the students at primary and secondary education but also their preferences in the end of secondary education. Among those preferences were the vocational-technical ones which would be developed through “necessary variety of types and schools”, that is, vocational-technical education should be offered in appropriate environment and facilities.

The proposals of the *escolanovistas* served as “the framework for the chapter on education in the Constitution of 1934” (Plank, 1996, p.65). However the latter was short lived because in 1937 the “*Estado Novo*” regime began and immediately granted its own constitution which, in terms of education, had commonalities and differences with the previous one.

Also in 1934, besides the establishment of general guidelines for education by the new constitution, some initiatives in VTET were mandated by Decree No. 24,558 (July 3) (SEMTEC/MEC; 1994b). The most important were the “gradual expansion of industrial

instruction . . . , [the] establishment of new federal industrial instruction schools, and the official accreditation of state, municipal , and private vocational-technical schools” (SEMTEC/MEC, 1994a, p. 12) as long they followed the federal regulations regarding to VTET instruction and allowed federal inspection.

Except for the legislation passed during the 1930-1937 period and the proposals presented by then, the situation of VTET in Brazil did not change significantly when compared to the “Old Republic” period. It still continued to be viewed as second class education, to have few students, and to get less support than it needed from all levels of public government, even at the federal level.

In 1937, with the *coup d'état* by Vargas, many of the proposals made by the *escolanovistas* that had been implemented were affected or reversed, including decentralization and the citizens right to public education (Göller, 1996; Ribeiro, 1993; Plank, 1996). While “the Constitution of 1934 had established the obligation of the State to provide education for all citizen, assigning priority to the universalization and democratization of schooling,” (Plank, 1996, p. 65) the Constitution of 1937 (granted by the “*Estado Novo*” regime)

emphasized [that] the State’s [first] obligation [in education is] to provide basic [(primary)] education and vocational training to the “less favored classes” [italics added], and otherwise deemed public action to be supplementary to the efforts of families and private agencies including the Catholic Church. Public Agencies were to intervene only in cases where private agencies failed to provide sufficient opportunities (Plank, p. 66).

To implement its view, the “*Estado Novo*” regime took a series of major actions, some of them directly connected to VTET. World War II (1939-1945) made it necessary for the country to substitute manufactured goods and qualified human resources for

industry (especially technicians) that became difficult to be imported, at least during that period (Arruda, 1990, Silva, 1991). The most relevant actions related to VTET were:

- 1937 – (January): the Ministry of the Affairs of Education and Public Health was restructured and renamed to Ministry of Education and Health (MEC, 1999);
- 1937 – federal artisans’ apprenticeship schools were renamed to industrial lyceums, funding to vocational-technical education was increased, the new constitution mandated that manual works must be taught at all primary, secondary and normal schools, and cooperation between industry and the Public Government regarding to industrial instruction was established (SENETE/MEC, 1991);
- 1939 – (May 2): the establishment of a national system for industrial apprenticeship (paid by industry and integrated to the Ministry of Education and Health activities) was recommended by the Decree-Law No. 1,238 (Arruda, 1990; Nascimento, 1987; SEMTEC/MEC, 1994b);
- 1940 – (July 26): the enactment of the norms for the instalation and operation of industrial apprenticeship programs by Decree-Law No. 6,029 (Nascimento, 1987; SEMTEC/MEC, 1994b);
- 1942 – (January 22): the National Service for Industrial Apprenticeship (Serviço Nacional de Aprendizagem Industrial [SENAI]) was established by Decree-Law No. 4,048 (which was amended on July 16 by Decree-Law No. 4,481) to provide industrial training (to students belonging to the less favored classes, age 14-18, who should be employed as their apprentices)

with its organization and management given to the National Confederation of Industry. Funding was to come from a monthly contribution paid by the industries based on their payroll. The establishment of SENAI is very much connected to the efforts of industry leaders (Euvaldo Lodi and Roberto Simonsen) to convince industry entrepreneurs and the federal government to establish an industrial apprenticeship system run by industry inspired in the experience of the Railway Center for Vocational Instruction and Selection (Centro Ferroviário de Ensino e Seleção Profissional [CFESP]) located in São Paulo which had been in operation since the 1930s (Arruda, 1990; Duarte, 1986; Kuenzer, 1991; Nascimento, 1987; Plank, 1996; SEMTEC/MEC, 1994b; SENETE/MEC, 1991; Silva, 1991; Vianna, 1970);

- 1942 – (January 30): the Organizational Act for Industrial Instruction was granted through the Decree-Law No. 4,073 which established that the first phase of vocational training be composed of basic industrial instruction (train artisans, age 12-17, 4 years of duration, taught at industrial vocational schools, previous primary education required), mastership instruction (2 years plus externship, correspondent to the basic industrial programs), craftsmanship instruction (provided at craftsmanship schools), and apprenticeship instruction (provided at apprenticeship schools). That act also established partial equivalence of secondary industrial instruction with the secondary (academic) instruction, that is, while the former could lead only to college programs related to the industrial secondary programs

if complementary studies were undertaken, the latter could lead to any college programs. Only in 1953, what was meant by complementary studies were explicated, as well as the college programs that the graduates from secondary industrial could apply for: engineering, industrial chemistry, architecture, mathematics, physics, and drawing (Act No. 1,821, October 24). Decree-Law No. 4,073 was part of the Capanema reform (Arruda, 1990; Duarte, 1986; Kuenzer, 1991; Nascimento, 1987; SEMTEC/MEC, 1994b; SENETE/MEC, 1991; Silva, 1991; Vianna, 1970);

- 1942 – (April 9): secondary (academic) education (destined to the elite) was restructured through the Organizational Act for Secondary Instruction (Decree-Law No. 4244) whose first phase changes from 5 (fundamental) to 4 years (gymnasium), and the second one from 2 (complementary) to 3 years (collegial: classic or scientific. The same decree-law also stated that there were other forms of secondary education (for the rest of the population): agriculture; industrial, commercial, military, and normal which might lead to college (see previous paragraph). The same piece of legislation also established that the second phase of industrial instruction would train technicians, lasting 3 years, and being taught at industrial vocational-technical schools (the students were required to have completed the first phase of industrial instruction) as well as that the instructors and administrators (for industrial schools) training would be done in industries lasting one year. The modifications in secondary education were part of

the Capanema reform too (Arruda, 1990; Duarte, 1986; Göller, 1996; Ribeiro, 1993; SEMTEC/MEC, 1994b);

- 1942 – the industrial lyceums maintained by the federal government became either industrial vocational schools (less industrialized areas: North, Northeast, Centerwest) or industrial vocational-technical schools (more industrialized areas: Southeast; South) - Decree-Law No. 4,073 (Silva, 1991);
- 1943 – (December 28): beginning of the reform of the commercial instruction (1943-1945); the Organizational Act for Commercial Instruction was granted through Decree-Law No. 6,141 that reorganized commercial instruction at secondary and higher education levels (also part of the Capanema reform). Secondary commercial education was divided in a basic phase of 4 years, vocational-technical education into 3 years, with 5 branches: accounting, business administration, commerce and advertising, secretarial services, and statistics (Arruda, 1990; Duarte, 1986; SEMTEC/MEC, 1994b; SENETE/MEC, 1991).

The “*Estado Novo*” regime impacted VTET substantially. This time not only legislation was passed but also the offer of VTET expanded significantly. Many more students were enrolled in VTET, it got more support (from the federal government and business and industry) and was also offered at secondary education level. However it was not in the way envisioned by the *escolanovistas*. Overall, the reforms introduced by the “*Estado Novo*” regime (which were inspired by the German education model) consolidated the separation of education for those who would become leaders from the

one for those who would be led. Despite having helped the industrialization efforts being held in Brazil, they contributed to maintain the view of VTET as a second class education (Arruda, 1990; Nascimento, 1987; Plank, 1996; Ribeiro, 1993).

The pressure for democracy due to the end of World War II and the loss of political support by Vargas caused the end of the “*Estado Novo*” regime in 1945. It was the beginning of the “Democratic-Populist” period which lasted from 1945 until 1964. Brazil was still an agrarian country, however the national-developmentalism phase was already under way (Arruda, 1990; Ribeiro, 1993). During the 1940s the industries which manufactured popular consumer goods were joined by government sponsored initiatives in steel, oil, and equipment (“*Estado Novo*,” 1998). In the 1950s and 1960s, the industry expansion would continue but from 1955 on it would rely significantly on international capital which would begin to play a stronger role in Brazilian economy (Ribeiro, 1993). Besides areas already alluded to, investments were also made in the following base industries: mechanical, electrical, communications, transportation which supported the efforts done in other industries such as cars and household appliances manufacturing. While before the 1940s the industrial mechanization level was incipient in Brazil, after 1940s they became more and more dependent on the electrical-mechanical equipment which required a more specialized workforce (Silva, 1991). However the need for the latter was not only a result of the production technical base becoming more complex. There was also need for more qualified personnel due to the increased difficulty of the management of operations caused by the diversification of products made in Brazil and their production scale.

In 1946, as democracy was restored, a new constitution was written. The Constitution of 1946 provided new general principles for Brazilian education, but the replacement of the Capanema Reform only happened in 1961 with enactment of the Directives and Basis of National Act (LDB; Act No. 4,024); that process encompassed over 15 years of discussions in the Brazilian Congress (Göller, 1996; Oliveira, 1996; Plank, 1996; Saviani, 1996a, 1996b, 1998a).

Besides the writing of the Constitution of 1946 and the beginning of the discussions about the LDB, the 1945-1950 period (Eurico Dutra administration) would also witness the following initiatives which impacted VTET:

- 1946 – (January): the Ministry of Education and Health was reorganized but kept its denomination (MEC, 1999);
- 1946 – the establishment of the National Service for Commercial Apprenticeship (Serviço Nacional de Aprendizagem Comercial [SENAC]), at the request of businesspeople, to provide training for commerce and services activities being its organization and management was given to National Confederation of Commerce (Arruda, 1990; Duarte, 1986; SEMTEC/MEC, 1994b; SENETE/MEC, 1991);
- 1946 – (August 20): the enactment of the Organizational Act for Agriculture Instruction regarding to agriculture instruction activities at secondary level (Decree-Law No. 9,613). They were organized in the same way of the other secondary instruction programs (lasting seven years divided in two phases which would last four and three years respectively), and they were not equivalent to secondary (academic) programs in terms of

“admission for higher education programs, except for the agronomy and veterinary medicine ones” (SENETE/MEC, 1991, p. 9; see also Arruda, 1990; Duarte, 1986; SEMTEC/MEC, 1994b);

- 1950 – (March 31): the enactment of Act No. 1,076 which stated those who “completed the first phase of commercial, industrial or agriculture [instruction], according to the legislation in effect, had the right to enroll in [the second phase of secondary (academic) instruction] ... as long as they took the exams regarding to the courses belonging to the first phase of secondary instruction not present in the curriculum they had studied” (In Nascimento, 1987, p. 12) - the practical results of such “equivalence” were ineffective due to the difficulty of meeting the demands of the law. Those who wished to eventually go to college would drop, if they could, first phase secondary (vocational-technical) instruction to enroll in the first phase secondary (academic) program causing the former to lose students (Duarte, 1986; Nascimento, 1987; SENETE/MEC, 1991).

The second Vargas administration (1951-1954) and the transitional period afterwards was a politically turbulent period, and from the economy viewpoint, it was a continuation of the national-developmentalism phase based on expansion of industry but without the participation of multinational companies. No major changes happened related to VTET in the first half of the 1950s during Vargas administration. From that period stood out:

- 1953 – (March 12): Act No. 1,821 established that the graduates of vocational-technical (agriculture, commerce, industry) or normal secondary

instruction could apply for any higher education program as long as they took complementary exams in secondary (academic) courses not existing in the vocational-technical or normal curriculum. The practical results of such “equivalence” were same as the ones of Act No. 1,076 of 1950 (Arruda, 1990; Nascimento, 1987; SENETE/MEC, 1991);

- 1953 – (July): the Ministry of Education and Health was reorganized and became the Ministry of Education and Culture (MEC). The public health function was separated from education while the culture function gained relevance (Duarte, 1986; MEC, 1999).

The Kubitschek administration (1956-1961) was much more politically stable than the Vargas and the transitional ones that followed. However, it was a very active period from the economy viewpoint: investments on roads, energy, and transportation were made, Brasília was built, the production of equipments, durable consumer goods, and chemical products was emphasized - the production of automobiles in Brazil started at that time (Ribeiro, 1993; SEMTEC/MEC, 1994b; SENETE/MEC, 1991). It was a continuation of the national-developmentalism phase based on expansion of industry but with substantial participation of foreign capital which contributed for the gradual denationalization of Brazilian economy (Ribeiro, 1993).

In order to adequately prepare the VTET schools to provide a properly trained workforce for the Brazilian industry, legislation was passed in 1959 setting regulations which were mandatory for the federal schools and the SENAI but optional for the state, municipal, and private schools - Act No. 3,552; February 16 (In SEMTEC/MEC, 1994b; SENETE/MEC, 1991).

The new legislation required the federal vocational-technical schools to offer short term intensive industry training for workers, apprenticeship programs (at least 20 months), and basic (4 years) and vocational-technical (4 years or more) secondary level industry instruction. The apprenticeship regulations were also mandatory for SENAI schools while the higher level secondary industrial programs were to be provided in the federal schools located in the more industrialized centers (SEMTEC/MEC, 1994b; Arruda, 1990). It is important to state that in addition to providing apprenticeship and training programs since the 1940s, SENAI started to offer secondary level industry instruction in the 1950s (SENETE/MEC, 1991).

Act No. 3,552 of 1959 maintained the existing partial equivalence between secondary industrial instruction and secondary academical instruction which would only become total in 1961 with the enactment of the LDB (Article 25, in SEMTEC/MEC, 1994b).

Particularly at the federal level, Act No. 3,552 of 1959 granted the federal schools with pedagogical (instruction, curriculum, and offer of programs), and administrative (management, personnel, and financial) autonomy so that they could be responsive to industry needs. Such autonomy was not limited as the curriculum had to include certain subjects, and as MEC still would provide the funding and verify if the funds allocated had been properly used (Arruda, 1990; SEMTEC/MEC, 1994b).

The two following federal administrations, Quadros' and Goulart's, opted for continuing the national-developmentalism political model but changed the economic orientation, that is, a development not or at least less dependent on foreign capital. Goulart proposed reforms (agrarian, banking, tributary, fiscal, and economic, among

others) which “did not aim to transform Brazil in a socialist country” but “tended towards making viable the Brazilian capitalism, on different grounds, taking it from its backwardness and giving it more autonomy” (Bandeira, 1977, in Ribeiro, 1993, p. 156). Those interested in the maintenance of the economic development based on foreign investment conspired to end Goulart’s administration which happened with the *coup d’état* of March 31, 1964.

During Janio Quadros’ administration (inaugurated in February 1961 and ended with his resignation in August 1961) basic secondary industrial programs were renamed as industrial gymnasiums in order to try to change the existing negative attitude toward them by giving them a denomination equivalent to the secondary (academic) gymnasiums. Such initiative was part of a set of others related to VTET to be implemented during Quadros’s administration. However most were not due to the short life of the latter (Cunha and Mehdeff, 1993, in Kirschner, 1993). The most relevant facts related to VTET during Goulart’s term have to be separated in two phases. During the parliamentarist phase (September 1961 - January 1963), LDB was enacted. During the presidentialist phase (January 1963 - March 1964), there was the establishment of the Gymnasiums Oriented for Work, and of the Intensive Program for Peoplepower Preparation for Industry, in addition to the approval by the Federal Council of Education of MEC’s proposal for the establishment of short term engineering programs (operational engineering). Those would eventually provoke changes in the federal vocational-technical education schools (Castro, 1995; Cunha and Mehdeff, 1993, in Kirschner, 1993; Nascimento, 1987).

On December 20, 1961, after more than 15 years of discussions in the National Congress, the Directives and Basis of National Education Act [LDB] was finally enacted

becoming Act No. 4,024. Regarding to VTET the major modification was the complete equivalence of all branches of secondary technical instruction with the secondary academic part allowing the students enrolled in the former to apply for any higher education program if they wished to (Arruda, 1990; Duarte, 1986; Kuenzer, 1991; Nascimento, 1987; SENETE/MEC, 1991; Vianna, 1970). According to Arruda (1990), such equivalence

in a certain way, caused not only the enrichment of the curricular structure of the [former] industrial apprenticeship schools, by the inclusion of general culture and technical contents in the same curriculum, but also the diversification of the clientele, starting a process of elitization of those schools (Chapter 1, Section 1).

Arruda (1990) stated that the federal vocational-technical schools became gradually elitized after full equivalence was granted as the number of students that belonged to middle income families passed those from low income ones (“the worker class” as she put it). As there are fewer slots available than candidates, entrance exams have been held (those who belong to middle income families have done better than those from low income families). Specifically after the decline of non federal public schools during the military regime, students were interested in the federal technical schools not so much for the technical content to be learned but due to the good quality of the academic instruction also provided, which increased their chances of being admitted to higher education programs (Arruda, 1990; Nascimento, 1987). The changes introduced by Decree No. 2,208 and MEC Executive Order No. 646, both of 1997 (to be discussed later), were an effort to prevent the use of the federal vocational-technical schools solely for obtaining good academic instruction.

In order to expand the preparation for work in Brazil, two initiatives were taken by the public government in 1963: the establishment of the Gymnasiums Oriented for Work (Ginásios Orientados para o Trabalho [GOTS]), and of the Intensive Program for Peoplepower Preparation for Industry (Programa Intensivo de Preparação de Mão-de-Obra Industrial [PIPMOI]) (Cunha and Mehdeff, 1993, in Kirschner, 1993; Duarte, 1986). Those were inspired in the success being achieved by “the Senai [schools] and, in part, by the [federal] vocational-technical schools” (Cunha and Mehdeff, 1993, in Kirschner, 1993, p.12).

Still in 1963, MEC established an agreement with the USAID which aimed at improving the preparation of peoplepower for meeting the needs of the expanding Brazilian industrial capability - the agreements between Brazilian and US agencies involved the provision of equipments, financial and technical assistance from the latter to the former and had been happening since 1946 being intensified after 1964 (the World Bank would have a significant participation then) (Silva, 1991). During the military regime such agreements would play an important role in the changes to be made in Brazilian education including VTET.

Before the end of the Goulart administration, MEC presented a proposal for the establishment of short term engineering programs (operational engineering) which was approved by the Federal Council of Education through the Expert Opinion No. 60 of February 1963 (Nascimento, 1986; SEMTEC, 1994b). Such programs were later (1965) set to last three years, having at least 2,200 contact hours (theoretical and practical) and their students would be prepared for working in industry as managers and supervisors (Nascimento, 1987; SEMTEC/MEC, 1994b). Operational engineering programs would be

of importance for VTET in Brazil because eventually they would lead to the offer of VTET programs in Brazil at the technical level and beyond generating major changes not only in the federal vocational-technical schools but in other VTET providers as well.

If compared to the *Estado Novo* regime who had a single administration the “Democratic-Populist Republic period (1945-1964) had four major ones (Dutra’s, Vargas’, Kubitschek’s, and Goulart’s), however as to VTET, there was a continuation of what had been started in the former, that is, legislation was complemented (and later updated), the offer of VTET continued to expand, secondary level technical instruction was gradually made equivalent to secondary academic one, and the first steps to establish post secondary VTET were taken - such continuation aimed to support the national-developmentalism model which had been started in the first Vargas administration and which was only substituted by the interdependence one during the military regime.

While the full equivalence of all secondary level programs granted their graduates equal opportunity under the law to pursue higher education studies if they wished to that gradually turned the secondary technical instruction schools in mere way of getting good academic quality education necessary to go to college to more and more students rather than preparing people interested in working, at least for some time, as secondary level technicians. The S system schools and equivalent ones were the ones that really prepared the majority of those who would work in business and industry but for positions below secondary level technicians. As the secondary instruction slots were very small if compared to the people in population in the proper school age, in practice the separation of education for those who would become leaders and from the one for those who would be conducted continued. As to VTET as a whole, the initiatives implemented in the 1937-

1964 period were important because they not only played a part in the process of economic development of Brazil but also set the basis for the provision of VTET in Brazil.

The option of President Goulart for keeping the national-developmentalism policy but with less dependence on foreign capital while at the same time pushing for the transformation of the Brazilian economic structure into a modern, just, and human one led to a political situation which caused the *coup d'état* of 1964 (Ribeiro, 1993). It was the beginning of the “military regime” period which lasted from 1964 until 1985. The Brazil of 1964 was a much more industrialized country than the agrarian Brazil of 1945, and such industrialization that was going to be consolidated in the 21 years of the military regime.

The “interdependence” political doctrine that substituted the “national-developmentalism” doctrine would support the existence of three major economic players in the Brazilian economy: the government owned companies (“*estatais*”), the Brazilian owned private businesses, and the multinational companies (Evans, 1979). From 1968 to 1974, substantial public and private investments were made in infra-structure, agribusiness, and the following industries: heavy, transformation equipment, and durable goods. (“Industrialização,” 1998). The oil crisis and the increase in the international interest rates of the 1970s affected substantially the performance of the Brazilian economy, beginning a crisis which lead to the recession of the 1980s. During the latter, among other things, the Brazilian economy stagnated, the inflation rate rose to 235% a year (1985), and services passed industry as a percentage of the GDP while agriculture stabilized around 10% (“Brasil,” 1996; “Brasil,” 1997; “Industrialização,” 1998). Throughout the 1964-1985 period business and industry not only expanded and diversified but also their operations

became more complex from the administrative and technical points of view. That had a significant impact on the number of the workers needed and the skills they were required to possess.

As alluded before, in order to implement their view on how Brazil should be, the military regime made significant changes in education, so that it could back the efforts of quick economic growth in conjunction with minimum social and political unrest.

Still in the 1960s, several important initiatives related to VTET were implemented. Three military administrations happened during the period: the Castelo Branco administration (April 1964 to March 1967), Costa e Silva administration (March 1967 - August 1969), and the Military Junta administration (August-October 1969) - the latter due to an incapacitating illness that struck Costa e Silva. It was a time of political unrest, and tough political and economic government initiatives (“Regime militar de 1964,” 1998).

During the Castelo Branco administration (April 1964 to March 1967), the initial actions to prepare VTET for the changes to be implemented in Brazilian economy took place:

- 1964 – School of Engineering Technology at Oklahoma State University [OSU] at the request Ministry of Education and the Ford Foundation analyzed VTET programs in Brazil, identified a shortage of engineering technicians in the country, and recommended the development of programs to prepare them (Gill, 1991; Nascimento, 1987);
- 1964 – it established the Center for Integration Enterprise-School in São Paulo which aimed at setting the necessary conditions for better interaction

- between schools and business and industry. Later other centers were established in other states (Cunha and Mehdeff, 1993, in Kirschner, 1993);
- 1964 – Centro de Educação Técnica in Guanabara (now Rio de Janeiro state) and São Paulo states were established. Those two were the first of the various VTET education centers established in Brazil in the 1960s which would operate under the technicist concept of education for curriculum development, personnel training, and technical support. Others were: the Fundação de Educação para o Trabalho de Minas Gerais [Utramig] in 1965; the Centro de Educação Técnica do Nordeste [Cetene] in 1967; the Centro de Educação Técnica da Amazonia [Ceteam] in 1968; Centro de Educação Técnica da Bahia [Ceteba] in 1968; and the Fundação Centro Nacional de Aperfeiçoamento de Pessoal para Formação Profissional [Cenafor] in 1969) (Cunha and Mehdeff, 1993, in Kirschner, 1993; Duarte, 1986);
 - 1965 – federal VTET schools got their present denomination “Escolas Técnicas Federais [Federal Vocational-Technical Schools]” - they gradually stopped offering basic secondary level industrial instruction and concentrated their efforts on vocational-technical secondary level industrial programs (Nascimento, 1987; SENETE/MEC, 1991);
 - 1965 – (August 17): Federal Vocational-Technical School at Rio de Janeiro (at that time ETF-RJ, now CEFET-RJ) received an \$800,000 grant from the Ford Foundation to establish a “Center for the Development of Technical Education” with the technical support from Oklahoma State

University. The support under that grant lasted for five years (Gill, 1991; Nascimento, 1987);

- 1966 – (March): classes of the three-year engineering technology program (named operational engineering in Brazil) were started at ETF-RJ. The degrees would be granted by the engineering college at the University of Brazil (now Federal University of Rio de Janeiro). The initial programs were in electrotechnics, electronics, and mechanics (Gill, 1991; Nascimento, 1987; SENETE/MEC, 1991);
- 1967 – (January): the Congress promulgated a new Constitution in part related to education which set the initial framework for the implementation of the initiatives based on “the educational economicism.” It would be substantially modified two years later so that the federal government had additional powers to implement its view for Brazil (Göller, 1996; Horta, 1996; Ribeiro, 1993; Saviani, 1996a, 1998b);
- 1967 – (February): the Ministry of Education and Culture was reorganized but kept its denomination (MEC, 1999);

The second military administration, Costa e Silva’s (March 1967 - August 1969), continued several initiatives started in the previous administration. The major initiatives related to VTET during such period are described below:

- 1967 – (May 19): the agriculture vocational-technical instruction which at that time was under the Ministry of Agriculture was turned over to the recently reorganized Ministry of Education and Culture (Decree No. 60,731). The federal agriculture vocational-technical schools did not have

the same degree of autonomy as the industrial schools which only would happen in 1993 (Duarte, 1986; MEC, 1998; SENETE/MEC, 1991; SEMTEC/MEC, 1994b);

- 1968 – (December 20): Act No. 5,540 reformed higher education altering the LDB of 1961 (Act No. 4,024) - the articles 18 and 23 of the former opened the possibility for Brazilian higher education institutions to offer technical programs for graduating associate of applied sciences (“tecnólogos) and operational engineers (“engenheiros operacionais”) (Bastos, 1991; Duarte, 1986; Nascimento, 1987; SEMTEC/MEC, 1994b);
- 1968 – Program for the Expansion and Improvement of Instruction (Programa de Expansão e Melhoria do Ensino [PREMEN]) was established, targeting primary and secondary education – specially the aspects of initiation to work and to technology (Cunha and Mehdeff, 1993, in Kirschner, 1993; Duarte, 1986). It supported the creation of various vocational-technical schools around the country which were passed on to the states without any previous analysis or planning of the consequences of such an act. This proved to be disastrous as the schools were not able to operate properly. Such experience has been a source of information for the analysis of a polemical proposal that now and then resurges: turning the federal vocational-technical schools to the states control (Cunha and Mehdeff, 1993, in Kirschner, 1993; Duarte, 1986). The PREMEN was terminated in 1982 (Duarte, 1986);

- 1969 – (April 18): Decree-Law No. 547 authorized the federal vocational-technical schools to offer short term higher education technology programs including the operational engineering programs (Gill, 1991; Nascimento, 1987; SEMTEC/MEC, 1994b);
- 1969 – (August 1): studies were initiated to establish operational engineering programs in other federal vocational-technical schools (escolas técnicas federais [ETFs]) at São Paulo (São Paulo state), Belo Horizonte (Minas Gerais state), Curitiba (Paraná state), Salvador (Bahia state), and Recife (Pernambuco state) (Gill, 1991; Nascimento, 1987).

During the short period of existence of the Military Junta administration (August-October 1969), two initiatives would affect VTET in Brazil for the future:

- 1969 – (October 6): the Abreu Sodré administration of the state government of São Paulo established the Technological Education State Center of São Paulo (Centro Estadual de Educação Tecnológica de São Paulo [CEETEPS]) through a decree-law. That educational institution was created as an autarchy which had the purpose of providing vocational-technical and technical education. It was inspired in the format of the Colleges of Advanced Technology and Junior Colleges of the USA and on the Higher Education Technology Colleges (Institutes Supérieures de Technologie) of France (Motoyama, 1995; Vargas, in Motoyama, 1995);
- 1969 – (October 10): Constitutional Amendment No. 1 was granted by the military junta which gave the military administration the authority to legislate in several areas through decree-law. Some of the modifications of

the legislation related to VTET were made through them (“Constituições,” 1998; Rama, 1987; SEMTEC/MEC, 1994b).

Medici administration (October 1969 - March 1974) was the period of the “political toughness” and the “economic miracle” - the latter lasted until 1973 (“Regime militar,” 1998, p. 152). While the higher education reform (Act No. 5,540/68) was the main initiative in education of the military administrations of the 1960s, the Medici administration was responsible for the introduction of the reform on primary and secondary education (Act No. 5,692/71). That latter impacted VTET directly and was also part of a general strategy for education in Brazil as it was discussed in the previous section of this chapter.

Act No. 5,692 or “*Lei da Reforma do Ensino de 1o. e 2o. Grau*” (Act of the Reform on 1st Degree [1-8 grade] and 2nd Degree [9-11/12 grade]) was made effective on August 11, 1971. It was analyzed by many authors such as Göller (1996), Plank (1996), Rama (1987), Ribeiro (1993), Saviani (1996b, 1998a), and Souza and Silva (1997). The major change mandated was the existence of only one type of school in Brazil where students would get not only the academic contents but also technical ones. The teaching of the latter would begin already on 5-8 grade period as initiation for work and in particular cases even before. At secondary level, all students should join one of the vocational-technical programs (“*habilitações*”) that should exist at their schools in order to graduate either as assistant technician (3 years) or technician (4 years). Act No. 5,692 mandated the end of the distinction between academic and “technical” schools (which had been claimed before without success), however according to Plank (1996), it was enacted in order to ease the demand for higher education and to expand the peoplepower for

middle-level positions in the market place. The single school initiative did not work and was made optional in 1982 through Act No. 7,044. Among the various reasons for the failure are cultural, economic, educational, and social issues. As the VTET schools were the closest thing to the proposed single school model, they were affected less by the legislation implemented than the academic schools (the latter mostly pretended that they taught students a profession).

Other relevant initiatives of the period were:

- in the 1970s – the preparation for work at gymnasium level at the secondary schools was terminated and was pushed to a higher level, ending an initiative, that according to Castro (1995), “had begun to make sense” (p. 133);
- 1970 – (May 19): the CEETEPS started its activities with programs in the areas of civil construction and mechanics (Vianna, in Motoyama, 1995);
- 1971 – (February): the Ministry of Education/the World Bank I agreement (MEC/IRDB I) was signed - the agreement involved a loan of \$21 million to be used for implementing actions in ETFs among them: a) the establishment of six operational engineering centers at the federal vocational-technical schools located in Rio de Janeiro, São Paulo, Paraná, Minas Gerais, Bahia, and Pernambuco (the centers to be located at the ETFs in São Paulo, Bahia, and Pernambuco were not implemented due to a reversal in MEC’s policy regarding to operational engineering programs and to unsettled matters at the Education Federal Council); b) the expansion of facilities and equipments at eight industrial ETFs, as well as

the development of human resources for them; c) the expansion of facilities and equipments at 13 agriculture ETFs, as well as the development of human resources for them.

As part to the human resources development efforts 40 instructors were sent to OSU to get masters of science degrees, in various specialties. The project was expected to last five years but due to federal government internal problems (specially at MEC), it lasted nine years (Gill, 1991; Nascimento, 1987; SENETE/MEC, 1991);

- 1971 – (June 21): Department of Secondary Instruction (Departamento de Ensino Médio [DEM]) of MEC created the Program for the Development of Secondary and Short Term Higher Education Instruction (Programa de Desenvolvimento do Ensino Médio e Superior de Curta Duração [PRODEM]) to be the executive body of the MEC/IRDB I project. PRODEM was absorbed by PREMEN in 1976 (Duarte, 1986; SEMTEC/MEC, 1994b);
- 1973 – (July 9): it was established the National Coordination for Agriculture Instruction (Coordenação Nacional do Ensino Agrícola [COAGRI]) through the Decree No. 72,434 to operate under the Department of Secondary Instruction (Departamento de Ensino Médio [DEM]) of MEC - it was terminated in 1986 (SEMTEC/MEC, 1994b; SENETE/MEC, 1991);
- 1973 – (August): Ministry of Education and Culture was reorganized but kept its denomination (MEC, 1999);

- 1973 – CEETEPS kept the acronym but was renamed Centro Estadual de Educação Tecnológica Paula Souza (Roquete, in Motoyama, 1995).
- 1973 – Department of Higher Instruction (Departamento de Ensino Superior [DAU]) of MEC began to implement Project 19 (part of the I Sectorial Plan for Education and Culture, 1973-1975) which pushed for the offer of associate of applied sciences programs around the country - DAU's activities eventually collided with the DEM's ones (operational engineering programs) resulting in the termination of the latter in 1976 (Bastos, 1991b; Nascimento, 1987);

Geisel administration (March 1974 - March 1979) was a period marked by the end of the “economic miracle”, the “substitution of imports” policy, and the beginning of the “gradual return to democracy.” At the VTET domain the high marks were the implementation of many technical programs to graduate associate of applied sciences (“*tecnólogos*”) and operational engineers (“*engenheiros operacionais*”) in public and non-public institutions and the establishment of the SENAR and federal technological education centers (Bastos, 1991b; Nascimento, 1987; SEMTEC/MEC, 1994b). A closer look at the period reveals:

- 1976 – National Service for Rural Occupational Preparation (Serviço Nacional de Formação Profissional Rural [SENAR]) was established as an autarchy linked to the Ministry of Labor to provide training for agriculture activities. Later its organization and management was given to the National Confederation of Agriculture (Duarte, 1986; MTb, 1998);

- 1976 –(January 30): CEETEPS was incorporated to the just established Universidade Estadual Paulista “Júlio Mesquita Filho” [UNESP] but with the special autarchy status (Roquete, 1995, in Motoyama, 1995).
- 1976 – (July 6): Act No. 6,344 established the Technological Education Center of Bahia (Centro de Educação Tecnológica da Bahia [CENTEC]) which would prepare associate of applied science graduates (*tecnólogos*) - it was connected to the DAU-MEC (Bastos, 1991b; SEMTEC/MEC, 1994b);
- 1977 – industrial engineering programs (lasting 5 years) were authorized to be offered and the operational engineering programs were terminated - the latter had the opposition of the DAU-MEC and of the national federation of engineers (Nascimento, 1987; SEMTEC, 1994b; SENETE/MEC, 1991; Spagnolo & Castro; 1995);
- 1978 – (March): the Ministry of Education and Culture was reorganized but kept its denomination (MEC, 1999);
- 1978 – (June 30): Federal VTETs that offered operational engineering programs (Rio de Janeiro, Minas Gerais, and Paraná) were upgraded to “Centros Federais de Educação Tecnológica [CEFETs] (Federal Technological Education Centers)” through Act No. 6,545.

In addition to continue to prepare secondary level industrial assistant technicians (3 year programs) and technicians (4 year programs) as they had been doing since 1971 (since Act No. 5,692 was made effective), the CEFETs could also offer:

- a) associate of applied sciences programs (*tecnólogos*);

- b) industrial engineering programs (*engenheiros industriais*);
- c) teacher training programs (for courses in the industrial technology domain to be taught in secondary level and associate of applied sciences programs);
- d) graduate programs in industrial technology areas;
- e) extension, improvement, and specialization programs in industrial technology areas.

The CEFETs were also authorized to perform research and extension in industrial technology areas (Nascimento, 1987; SEMTEC, 1994b; SENETE/MEC, 1991);

The transformation of 3 ETFs to CEFETs that happened in the Geisel administration was the beginning of a new era for the federal VTETs. It “accidentally” inaugurated a policy that has continued over time (not without interruptions) which has its supporters and detractors (Cunha and Mehdeff, 1993, in Kirschner, 1993; Nascimento, 1987; Spagnolo & Castro, 1995). It also marked the beginning of the use of the terminology “technological education (*educação tecnológica*)” instead of “vocational-technical education (*educação técnica*)” to name the activities of the federal schools/CEFETs by MEC officials, publications, and documents (SENETE/MEC, 1991). According to the proponents of technological education, it is said to include basic development for professions (not clearly defined), secondary level development for professions (assistant technicians and technicians), short term higher education development (associate of applied sciences), industrial engineering, graduate programs in technology areas, teacher training for courses in the technology part of technological education institutions, and research and extension in the technology area (SEMTEC/MEC, 1994a). Technological education is a concept not easy to sell or understand. Maybe

because of that, it is substantially criticized outside of the domain of MEC and federal schools (see “Ministério da Ciência e Tecnologia ... [MCT],” 1995). The LDB of 1996 uses the terminology “vocational-technical education and training (*educação profissional*)” but not “technological education (*educação tecnológica*)” (LDBE96, 1997, Articles 39-42, p. 35). The implications of that will be addressed later when the present status of VTET in Brazil is covered.

During last military administration, (Figueiredo’s, March 1979 - March 1985), the economy worsened and the democracy continued its gradual come back. The first half of the 1980s was also the time the technology base of business and industry began change in Brazil, particularly due to electronics and computer science (Silva, 1991). However, there were not significant modifications in VTET. The most relevant fact related to VTET in the period happened in 1982. The single school model was made optional through Act No. 7,044 after agonizing for years (Duarte, 1986; SENETE/MEC, 1991; SEMTEC/MEC, 1994b). In practice, regular high schools could openly continue to be concerned only with the academics while the VTET could proceed on preparing secondary level technicians which got both the technical and academic contents in the same school. Another fact of importance was MEC’s substantial “loss” of interest in supporting the implementation of associate of applied sciences programs after 1979, however the latter expanded even without such support (Bastos, 1991b; SENETE/MEC, 1990; Spagnolo & Castro, 1995).

At the federal technological schools system domain, two developments which started in the beginning of the 1980s would impact significantly the system later: the offer of secondary level technicians programs for adults that had already completed secondary education (at MEC’s request), and the use of (micro)computers for administrative and

academic purposes at the schools. Another pioneer initiative at the federal technological system that was implemented during the 1980s in one of the ETFs (Paraíba) is still to be retaken, that is, the use of distance education methodologies for preparing secondary level technicians.

The military regime tried to implement the single secondary school model in Brazil which would terminate the model of academic and vocational-technical secondary schools that was in place when the *coup d'état* happened in 1964. Due to lack of proper support, poor implementation, and lack of interest from many of the stakeholders, the effort was unsuccessful and the single school model was made optional in 1982. The educational model that remained would only go under major changes in the second half in the 1990s, beginning in the first Cardoso administration.

The modifications in the higher education laws in 1968 allowed the offer of technical programs in universities, colleges, and federal VTET schools. Some of the latter were upgraded to technological education centers opening a new frontier to the federal VTET system.

The military regime began and ended with political and economic crisis. The national-developmentalism model was substituted for the interdependence one which for some time produced positive results. The Brazil of 1985 was a developing country with almost 90% of its GDP from manufacturing/mining and services (half each). Its wealth distribution was the worst of the planet which made the country for a few and not for the majority or all Brazilians.

Since the end of the military regime until 1998, four federal administrations happened: the Sarney administration (March 1985 to March 1990), the Collor

administration (March 1990 to September 1992), the Itamar Franco administration (September 1992 to January 1995), and the Cardoso administration (January 1995 to January 1999) - the latter was re-elected for an additional term. The first, the third, and the last were the ones that most impacted VTET.

Sarney administration (March 1985 - March 1990) was a period of reorganization of Brazilian life. In a scenario of economic turbulence which, among other things, affected significantly jobs and salaries, five important initiatives that impacted VTET either took place or started to take place: the writing of a new Constitution, the beginning of the discussions for a new Education Act, the implementation of the PROTEC program, the establishment of SENAT, and the creation of Deliberative Council of the Workers' Support Fund. Before all that, still in 1985, the Ministry of Education and Culture was again reorganized and became the Ministry of Education (still MEC) - the culture function was separated from education one (MEC, 1999).

The Constitution began to be discussed in the Brazilian Congress in 1985 and was promulgated in 1988. It has a chapter on education, culture, and sports which set the base for the activities in those areas. It has already been discussed in the previous section of this chapter but it is important to stress two points particular to VTET. "Preparation for work" is said to be one of the goals to be reached by education in Brazil and the pluriannual national plans for education to be implemented have to provide for the former (CF/88, 1996, Articles 205 and 214). Those pluriannual national plans for education (each for a ten-year period) have to be sent by the Federal Government to Brazil's Federal Congress so that they eventually become law. Therefore "preparation for work" is

constitutionally mandated to be among the goals to be met by Brazilian education which was not the case of the previous constitution and its amendments.

The approval of the Constitution of 1988 did not mandate any changes in VTET in general and particularly for the federal technological education system but indicated that proper attention should be provided to “preparation for work.” The federal technological education schools and centers continued to be federally supported but now and then a Minister of Education or a congressman proposed to transfer the schools to state governments (that still holds true to these days). If such action had been taken, it would terminate the federal technological education schools because the state governments could not even properly fund their educational systems, let alone properly support vocational-technical schools which need more funding than regular ones (that also remains true to these days) (see Costa, 1997, and SEMTEC/MEC, 1996c). Some states have had their own networks of VTET schools which, maybe with the exception of São Paulo state one, have been mostly in bad shape.

A new Education Act (LDB) began to be discussed in the Brazilian Congress two months after the promulgation of the Constitution of October 5, 1988 but proposals for it started to be developed by educators since, at least, the end of 1987 (Saviani, 1998a). Only in December 1996, during the Cardoso administration, the Federal Congress approved a new LDB which became law on the 20th. The changes introduced by the latter on Brazilian VTET will be addressed later.

In 1986 the major initiative of Sarney administration in VTET began: the “Program for the Expansion and Improvement of Technical Education (Programa de Expansão e Melhoria do Ensino Técnico) [PROTEC]” which intended to build 250 new

vocational and vocational-technical schools to be operated by either public governments (federal, state, or local) or by non public organizations (SEMTEC/MEC, 1994b; SENETE/MEC, 1990, 1991). Despite the need for new vocational and vocational-technical schools, this program, which is still under way, has had some problems among them: the places where the new schools were located had more to do with political choices rather than with technical ones; there was money to build them but no guarantee of the funds and personnel to operate them; and due to several reasons, their construction costs has been higher than it should be and it has been taking longer than expected to build them (see Cunha and Mehedff, in Kirschner, 1993; Frigotto et al., 1992, in Rosa, 1996; SENETE/MEC, 1990). Overall, according to SENETE/MEC (1990), during the Sarney administration “the implementation [of the program] was mostly deviated from its [original] goals and executed without the proper technical supervision” (p. 4). Despite the problems faced by the project, it has the merit of trying to expand the training opportunities for the Brazilian population as it was spread all over the country.

In 1988 the National Service for Transportation Apprenticeship (Serviço Nacional de Aprendizagem de Transportes [SENAT]) was established to provide training for transport on tires activities with its organization and management given to the entrepreneurs of the transport on tires area (SEFOR/MTb, 1997a). It joined the S System (SENAI/SESI, SENAC/SESC, SENAR) which, as alluded to before, is run by business and industry and supervised by the federal government.

In 1990 the Deliberative Council of the Worker’s Support Fund (Fundo de Amparo do Trabalhador [FAT]) was created through Act No. 7,998 of January 11 (MTb, 1998). The FAT is a public fund managed by the Deliberative Triparty Council (Ministry

of Labor, workers, and employers), which among other activities, finances the Public System of Employment in Brazil run by the Ministry of Labor in conjunction with the States Secretariats of Work (Different Existing Funds for VTET, in Description of Brazilian Education, Appendix L). The FAT is a major source of funding for training activities in Brazil.

Besides the five “broader range” initiatives alluded to above, it is important to point out three developments that occurred at level of the federal technological education system during the Sarney administration. The ETF of Maranhão state was upgraded to a CEFET (Act No. 7,863 of October 31, 1989) (SEMTEC/MEC, 1994b; Rosa, 1996; Silva, 1991). Several ETFs (Campos, Mato Grosso, Pará, Pelotas, Pernambuco, Rio Grande do Norte, and São Paulo) sent projects to MEC requesting upgrade to CEFET but were not granted that (Silva, 1991). The agriculture and industrial federal schools were encouraged to offer programs beyond their original domains jumping into the services and health areas (Silva, 1991). The transformation of the Maranhão school into CEFET was an isolated case and not part of an overall policy of “cefetization” which would only be implemented during the end of the first Cardoso administration.

The Collor administration (March 1990 - September 1992) was turbulent and a short period of Brazilian life which terminated with the president’s impeachment. The Collor administration inherited economic problems from Sarney’s, did not get to solve them, and passed them along to the Itamar administration. Meanwhile it generated two developments that would change the Brazilian life of the present including VTET: the push for the modernization of the economy and the opening of the Brazilian economy to international competition (“Governo Collor,” 1998).

The major initiatives related to VTET during the Collor administration was the establishment of the “National Secretariat for Technological Education (Secretaria Nacional de Educação Tecnológica [SENETE]) directly under the Minister of Education, the “Brazilian Service for the Support to Micro and Small Enterprises (Serviço Nacional de Apoio às Micro e Pequenas Empresas [SEBRAE]”, and the continuation of the PROTEC project (SEBRAE, 1996; SENETE/MEC, 1991).

SENETE was directly under the Minister of Education (it was the first time VTET, or for MEC, “*technological education*,” had this status) and was put in charge of policy development, administration, coordination and supervision of technological education for Brazil so that the country be “prepared to face the challenges of the 21th century” (SENETE/MEC, 1991, p. 11). Despite its preeminence in MEC’s structure, SENETE did get the support its proponents and administrators wished to get. The creation of SENETE provided more visibility to VTET, however, it did not result in any major changes in terms of policies, funding or improvement in extent and quality of the services provided. SENETE was transformed into the Secretariat for Secondary and Technological Education (Secretaria de Educação Média e Tecnológica [SEMTEC]) during the beginning of Franco administration. However, the last administration of SENETE remained at SEMTEC.

In 1991 the Brazilian Service for the Support to Micro and Small Enterprises (Serviço Nacional de Apoio às Micro e Pequenas Empresas [SEBRAE]) was established to provide not only training mainly related to entrepreneurship (micro and small businesses) but also to aid micro and small businesses to strengthen and consolidate in addition to inducing the opening of new businesses (SEBRAE, 1996). It originated a

previous government agency which was much more limited in its functions (SEBRAE, 1996). It is run through a partnership of public government and business and industry and funded by a compulsory contribution of on the top the companies pay-roll (SEBRAE, 1996). It is the youngest member of the S System.

The Itamar Franco administration (September 1992 - January 1995) began under political and economic turmoil and despite a rather difficult start, ended in political and economic stability. At the federal level, the major initiatives related to VTET were the transformation of SENETE in SEMTEC (secondary education was merged with VTET education under a single agency, 1993), the continuation of PROTEC project (new federal technological education schools were formally established - see Act No. 8,670 of June 30, 1993), the beginning of the implementation of an international project for reequipping the federal schools (the negotiations for the Metrimpex project were started by SENETE), the organization of a management information system about the federal technological education system, the transformation of ETF of Bahia into a CEFET (Act No. 8,711 of September, 1993), the upgrade of the agri-vocational-technical schools to the same legal status of the ETFs (Act No. 8,731 of November 16, 1993), and the formal organization of the National System of Technological Education (Act No. 8,948 of December 8, 1994) (SEMTEC/MEC, 1994b). The actions listed above and the publications originated from SEMTEC in 1994 (SEMTEC/MEC, 1994a, 1994b, 1994c) suggest that its administrators had hopes of continuing the implementation of the “technological education” ideas, at least, at the federal schools/CEFETs. However, the Cardoso administration had other views on how VTET should be organized. The changes implemented in VTET by Cardoso’s team will be addressed later.

Act No. 8,948 of 1994 was of special importance for the federal system because it not only formally established the National System of Technological Education (which included the federal, states, and municipal systems), but also enabled the vocational-technical schools under SEMTEC to be upgraded to CEFETs depending on criteria to be set by MEC (In SEMTEC/MEC, 1994b). In addition to those, non public systems might join the technological education system, and a National Council of Technological Education was to be established (In SEMTEC/MEC, 1994b). The latter has not been put in operation as of 1998, and it does not seem to be of interest for the Cardoso administration. According to SEMTEC/MEC (1994c), Act 8, 948 of 1994 was the central piece of legislation for the implementation of the “CEFET model” in Brazil which is detailed in two SEMTEC/MEC publications (1994a, 1994b). The model devised was an improvement of the federal system existing then with emphasis in its verticalization (SEMTEC/MEC, 1994a, 1994b).

It is important to state that the termination of the Federal Council of Education in 1994 by the Franco administration and its replacement by the National Council of Education increased MEC’s power not only over VTET but also on education as a whole. However, as the Franco administration was in its final days, it was going to be the Cardoso administration the major beneficiary of such move.

Besides the developments at the federal level, an important event happened at the São Paulo state level. In January 1994 the Paula Souza system [CEETEPS] expanded through the addition of 82 state vocational-technical schools (35 agri-vocational-technical schools besides to 47 others that offer programs for industry, commerce, and services)

(Motoyama, 1995). The Paula Souza system has been the most important initiative in VTET run by state administrations in Brazil.

While economic policies started in the Franco administration continued over the first Cardoso administration, the same was not true regarding to education. The first Cardoso administration (January 1995 - January 1999) began to implement major changes in all aspects of Brazilian education and VTET was not an exception. The previous section of this chapter has a description of what changes were made in Brazilian education until the end of 1998 except for VTET.

The changes in VTET began by modifications in the internal structures of the Ministry of Education and the Ministry of Labor. It is important to inform that by the time the new federal administration was sworn in, the same happened in all Brazilian states. So the states' secretariats of education and labor also had new administrations, despite many of the senior administrators at federal and state levels were experienced people.

SEMTEC remained as one of the secretariats at MEC. It was reorganized internally to meet the new government priorities (MEC, 1999). Most of the members of the past administration were replaced. SEMTEC began to work closely with the states and municipalities governments, with private and semi-public institutions and with the others ministries (specially the Ministry of Labor) to discuss the changes and initiatives to be put in place in secondary education and VTET (the terminology "technological education" was not favored by the new administration). The federal schools connected to SEMTEC would be among the first to be impacted by the new policies for secondary education and VTET.

At the same time MEC was restructured, the Ministry of Labor (“Ministério do Trabalho [MTb]”) was too. The Secretariat for Preparation and Development for Professions (“Secretaria de Formação e Desenvolvimento Profissional [SEFOR]”) was established (MTb, 1998). The latter originated from the Secretariat for Peoplepower which was created in the 1970s (SEFOR/MTb, 1995). SEFOR has been the branch of the MTb to deal with issues in the domain of VTET. SEFOR also began to work closely with the states and municipalities governments, with private and semi-public institutions and with the others ministries (specially the Ministry of Education) to discuss the changes and initiatives to be made in terms of VTET.

Both MEC and MTb were required by President Cardoso to work in co-operation on the matters related to VTET mainly through SEMTEC and SEFOR. Such move seems to be a first time occurrence. While MEC has been traditionally in charge of vocational-technical education, MTb has dealt with the training aspect of VTET. However, that seems to have changed already as can be noted in the publications “Reform of Vocational-Technical Education” released by SEMTEC/MEC (1996b) and “Public System of Employment and VTET: Implementation of an Integrated Policy” released by SEFOR/MTb (1996c).

Besides changing the structures of MEC and MTb, the federal government pushed for the enactment of legislation which enabled the changes to be made in education in general and VTET in particular. While the Constitution of 1988 already set the base for action to be taken in VTET, it was necessary to have a new LDB. Even before the approval of the new LDB, the federal govern got to pass legislation in Congress that not only formally established the National Council of Education but also making it less

powerful than the former Federal Council of Education granting more power to MEC (Act No. 9,131 of 1995, in Saviani, 1998b).

During 1995, SEMTEC/MEC held a series of meetings around Brazil to discuss proposals for “preparation for work” with representatives of MTb, other federal agencies, state and municipal agencies, the major providers of “preparation for work,” unions, enterprises, in addition to others.

On March 7, 1996, the Cardoso administration sent a bill to the House of Representatives which proposed a new organization for “VTET” in general and for the federal “network” of technological education [Bill No. 1,603] (Câmara dos Deputados, 1996). From March through December of 1996, the federal government debated the reform on VTET with its stakeholders in meetings promoted or participated by MEC officials around the country, and in public congress hearings also held around the country.

On December 20, 1996, the new LDB (Act No. 9,394) was enacted, almost two years after the beginning of Cardoso administration and eight years in Congress (LDBE96, 1997). The version approved was the one supported by the Cardoso administration (Saviani, 1998a). Acts No. 9,131 of 1995 and the new LDB enable any federal administration to implement the policies for education of its dreams.

The immediate result of the approval of the LDB was the withdrawal from the House of Representatives of Bill No. 1,603 of 1996. Such bill was the legal instrument to support the implementation of MEC/MTb’s policy for VTET which was based on the following premises:

- [VTET] is considered to be complementary to regular basic education and must have as [its] goal [the individual’s] employability.

- Employability must be understood [to include] not only the ability to get a job, but also [the ability] of keeping oneself in a labor market in constant mutation.
- Employability involves three interrelated factors: investments that generate labor, efficient intermediation services and workers' continuing education.
- These three factors result from the growing globalization and competitiveness of the economy. Modernization and restructuring processes begin in top notch sectors, but extend to all sort of enterprises - even to the informal market.
- It begins to be born, from that process, the exigence of a new worker profile, able not only of "doing," but also of "thinking" and "learning" continually.
- The construction of that profile requires, before all, quality basic education. It depends, also, from permanent VTET education, but always with beginning, middle and end - that is, focused on the market, guaranteeing the worker opportunities of entering and leaving the development process, during his professional [work] life (SEMTEC/MEC, 1996b, p. 7)

The Bill No. 1,603 of 1996 had been meeting significant resistance from educators, practitioners, and students which favored either the proposal of "technological education" or the proposal of "*politecnia*" and was bound to have a hard time in the Brazilian Congress (see Frigotto, 1997, and Saviani, 1998b).

As there was not anymore the legal need for a law to reorganize VTET in general and the federal network of technological, the federal government chose to mandate the

former through a Decree (No. 2,208 of April 17, 1997) and the latter through a MEC Executive Order (No. 646 of May 14, 1997) (In Saviani, 1998b). Such option was strongly criticized by those who oppose the Cardoso administration view on “preparation for work” (see Frigotto, 1997; and Saviani, 1998b). Frigotto (1997), one of the major proponents of “*politecnia*,” stated that the federal government acted “legally but not legitimately” (p. 7) because it imposed the reform instead of having it discussed with the “society” through the National Congress as it was being done in the case of Bill No. 1,603 of 1996.

According to the LDB of 1996, “preparation for work” (“qualification for work” and “development for work” in Articles 205 and 214, respectively, of CF/88, 1996) is referred to as “*educação profissional*,” translated in this work as “vocational technical education and training [VTET]”, and is a modality of education (LDBE96, 1997, Title V, pp. 27-42). There is no reference in the LDB of 1996 to terms such as “*politecnia*” or “*educação tecnológica*.”

For the LDB of 1996, VTET is a lifelong process of “development of aptitudes for the productive life” integrated to “the different forms of education, work, science, and technology” (LDBE96, 1997, Article 39, p. 35). It is open to students “enrolled or graduated from fundamental, middle, and higher instruction as well as to the workers in general, young or adult” (LDBE96, 1997, Article 39, Paragraph 1, p. 35).

While Act No. 5,692 of 1971 made “*qualificação para o trabalho* (train [non-skilled persons] for work)” (Article 1, in Peres, 198-, p. 17) as one of the goals of “1st and 2nd Degrees Instruction (1-11/12 grades)”, the LDB of 1996 states that Basic Education (new name for “1st and 2nd Degrees Instruction”) “has as finalities . . . and provide the

means to progress in work and further studies” (LDBE96, 1997, Article 22, p. 27-28). In the LDB of 1996, there is no reference to mandatory graduation as assistant technician or technician in some “*habilitaçaõ* (vocational-technical program)” in the end of Basic Education, as it was mandated by the Act No. 5,692 of 1971 for “1st and 2nd Degrees Instruction” and made optional through Act 7,044 of 1982 (Souza & Silva, 1997). VTET is required to be “developed in articulation with regular instruction or by different strategies of continuing education” (LDBE96, 1997, Article 40, p. 35). How such articulation is supposed to happen was defined through the Decree No. 2,208/97 which stated that VTET programs are to have their own curriculum independent of basic education curriculum, that is, it will not be provided as part of basic education curriculum as it could be done before (see Acts No. 5,692/71 and 7,044/82, in Peres, 1993; Decree 2,208/97, in Presidência da República [PR], 1997a; Souza & Silva, 1997).

The mandatory termination of the combined (but not integrated) academic/vocational-technical programs, particularly at the secondary level, is perhaps the main point of the disagreement between MEC and the proponents of “technological education” and “*politecnia*.” In a simplistic way, it can be said that while those who defend “technological education” require that theoretical/practical programs oriented to the labor market should be offered at vocational-technical schools but the “regular” schools should not be mandated to have them, the proponents of “*politecnia*” defend that schools should be public, free, lay, unitary, and politechnical. For the latter, ideally there should not be any specific preparation for occupations/careers before the end of secondary education and the educative process should combine “theoretical development, physical education, and education for technology” (Ayala, 1989, p. 26). The proposals of “technological

education” and “*politecnia*” have many commonalities but are not the same thing. For an overview on “technological education” and “*politecnia*” refer to Appendix K, Frigotto (1997), and MCT (1995). For “technological education,” see Bastos (1991a), Nascimento (1987), SEMTEC (1994a, 1994b, 1994c), and SENETE, (1991). For “*politecnia*,” look at Kuenzer (1991, 1995, 1998), and Machado (1989).

Despite the termination of the combined programs, VTET can still be delivered at regular instruction schools, besides at specialized institutions or at the workplace (LDBE96, 1997, Article 40-42). Regarding specifically to specialized institutions (vocational-technical schools and other VTET providers), the LDB of 1996 states that they, “in addition to their regular [italics added] programs, will offer special and informal [italics added] ones, which must be open to the community, being the enrollment for them conditioned to the [student] learning ability and not necessarily to [his/her] level of schooling” (LDBE96, 1997, Article 42, p. 35). The Decree No. 2,208/97 details how the present MEC administration “interpreted” that which will be addressed later.

Finally, the LDB of 1996 mandates that the knowledge individuals obtained through any VTET strategy may be assessed, accounted for, and certified - for work or continuation of interrupted studies purposes (LDBE96, 1997, Article 41). That is very important because it will provide a much needed flexibility for VTET programs and individuals particularly in the case of secondary level technicians programs. Those who graduate from the latter are entitled to diplomas that when properly registered will be valid nationally (LDBE96, 1997, Article 41, Paragraph 1).

While some (e.g., Carneiro, 1998; Souza & Silva, 1997) understand as the dispositions of the LDB of 1996 regarding “preparation for work” as appropriate for the

times we live, others (e.g., Frigotto, 1997; Kuenzer, 1998; Saviani, 1998a) disagree. The disagreements seem to center on how “preparation for work” should articulate with “academic education,” when “preparation for work” should begin, and the level of detailing of the LDB of 1996 on “preparation for work”. The debates on “preparation for work” have continued and those who oppose the dispositions of the present reform keep fighting to revoke them as soon as possible, what would not be difficult if they had support from MEC. Remember that the present reform was mandated just by decrees and ministerial orders.

As alluded to before, the Decree No. 2,208 of April 17 of 1997 reorganized “*educação profissional*” or “VTET.” This and the following paragraphs describe and comment what mandates such decree) (PR, 1997a). Building on the dispositions of the LDB of 1996 (Articles 39-42), it states that the goals of VTET are:

- I. promote the transition between the school and the world of work, preparing youngsters and adults with general and specific knowledge and skills for performing productive activities;
- II. enable the preparation of professionals, able to perform specific activities in the workplace, whose schooling is correspondent to middle [secondary], higher [college, post secondary], and graduate [college, post undergraduate] levels;
- III. specialize, improve, and update the worker’s technological knowledge;
- IV. train non-skilled persons [*qualificar*], train for workers’ for different occupations of theirs [*reprofissionalizar*], and update workers’ skills [*requalificar*], young or adult, independent of their schooling, so that they can join [the work opportunities available in the market] and perform better [their functions] at the workplace (Article 1, in PR, 1997a).

The goals for VTET listed above should be operationalized through courses/programs which belong to one of three following levels levels: training (*básico*), vocational-technical (*técnico*), and technical (*tecnológico*).

While the vocational-technical and technical levels are formal modalities of education, the training level is a non formal modality of education. So all the existing VTET programs which do not meet the regulations established through Decree No. 2,208/97 for vocational-technical or technical programs are in the domain of training.

VTET courses/programs at the training level are open to anyone independent of his/her previous schooling (however, the students should be able to attend them).

Vocational-technical level programs require that the applicant be enrolled or have completed middle instruction (secondary education). Technical level programs demand that those willing to enroll have graduated from either from middle instruction or from vocational-technical instruction. While previous schooling is not a requirement for training level courses/programs, vocational-technical and technical programs demand minimum schooling. Individuals may enroll in a vocational-technical program after having begun middle instruction but the completion of the former is only allowed after completion of the latter.

While VTET at the training level cover courses/programs which should aim to train non-skilled persons, update workers' skills, and train workers' for different occupations of theirs, VTET at vocational-technical level should prepare secondary level technicians (*técnicos*), and VTET at technical level should prepare associate of applied sciences (*tecnólogos*). While the completers of courses/programs at the training level are entitled to get certificates occupational training, the completer of the other two levels of VTET get diplomas.

The duration of courses/programs at the VTET training levels is variable, and their curriculum is not submitted to the public government regulations. The courses/programs

curriculum must be “compatible with the technological complexity of work, with the level of technical knowledge [of the student], and to the student’s level of schooling” (Decree No. 2,208/97, Article 4, in PR, 1997a). All VTET public and non profit educational institutions which get public funding must offer courses/programs at training level for not only students of basic education public and private schools but also to workers.

VTET at vocational-technical level was separated from middle education each having their own curriculum. As alluded to before, vocational-technical programs can offered in parallel or sequentially to the middle instruction but not in a combined program as before. However, the VTET courses which are included in the diversified part (25% of the total) of the middle instruction curriculum can count as part of a vocational-technical program that an individual may decide to take later.

The curriculum for the vocational-technical programs are being redone and will have 70% percent basic part (defined by the normative bodies of each instruction system for the VTET institutions under them) and a 30% specific part (defined by each VTET institution individually). The vocational-technical programs basic curriculum defined by the normative bodies of the existing instruction systems in Brazil (see Education in Brazil) will include a list of courses, their minimum duration (1560 contact hours including a 360-hour internship in business and industry, see MEC, 1998a), basic contents, skills, and competencies to be mastered. Such curriculum will be developed having as major guidelines the national curricular parameters (minimum workload per program, minimum contents, basic skills and competencies per career cluster) to prepared by MEC in conjunction with the National Council of Education [CNE]. MEC will have to set up mechanisms for the development and permanent update of the national curricular

parameters for each career cluster. Those mechanisms will have the participation of instructors, entrepreneurs, and the workers from each career cluster. The curriculum development process was more decentralized if compared to before. The federal government gave power away to non federal instances and to the VTET institutions themselves.

The curriculum of vocational-technical programs will be organized in courses (as before) which may be grouped in modules (not possible before). At the completion of each module the students will get a certificate (not possible before). Courses and modules can be taken at different VTET institutions in an intermittent way (before that was not possible). Programs whose curriculum is organized in modules have to be completed in at most five years time (not possible before). Courses and modules taken in an specific vocational program may be counted towards another (not possible before). The accredited VTET school which issued the certificate for the last module of the curriculum of a vocational-technical program taken by a student will also issue the diploma of secondary level technician if the candidate proves he/she has already completed middle instruction (not possible before). The level of flexibility for the students to take the programs is much more than previously. Before if a student had to interrupt a program and could not return sometime later, he would not get any certificate stating his having received technical training in an specific area. It was the diploma or nothing.

Students can be exempt of enrolling in courses and modules of vocational-technical programs for which they already have certificates of competency. Such certificates will be granted to those individuals who pass in correspondent exams to be

held by the federal and states systems of education. Such possibility did not exist before and allows flexibility for the students to get training at the vocational-technical level.

Though not mandated at the level of Decree No. 2,208 of 1997, according to MEC (1998a), students enrolled in vocational-technical programs have to take a mandatory supervised internship as part of the curriculum to be completed (as it was before the reform). The internship workload must not be less than a school semester and must be constituted by “social, occupational and cultural learning activities ... which are made available to the student by the participation in real situations of life and work, under the responsibility of the school” (MEC, 1998a http://www.mec.gov.br/EnsPes/Modalid/mo_prof.htm).

Programs whose curriculum are experimental (that is, not backed by the national curricular parameters) may be implemented as long as their curriculum are previously authorized by the normative bodies of the instruction system to which the VTET institution belong. After the program implementation is evaluated by MEC (in conjunction with the CNE), if the program is approved, it will be accredited and its diplomas will become valid nationwide. Such determination was much more limited before. A new program could be started only after being authorized at the federal level. Now there more flexibility for trying new curricula which can be authorized at a lower level of public government.

The courses that are included in the curriculum of vocational-technical programs will be delivered by teachers, trainers, or teachers/trainers assistants who must be selected taking in consideration mainly their professional experience. They must either have teacher training or get it while in-service through regular teacher training programs or through special “pedagogical development.” Before the present reform only those who had higher

education diplomas could be hired to teach in vocational-technical programs but now that changed because a higher education diploma is not a pre-requisite anymore to teach in vocational-technical programs (it was like this before the 1980s). The teacher training options indicated will be described in legislation to be enacted by MEC (in conjunction with the CNE). Those teacher training programs for vocational-technical instructors were offered before, but not as something permanent as it is mandated now.

The dispositions of Decree No. 2,208 of 1997 about the technical programs are minimal. In the past they have been addressed in specific pieces of legislation enacted by the higher education area of MEC (presently Secretariat for Higher Education or *Secretaria de Educação Superior* [SESU]) in conjunction with the CNE. Besides what has already been stated in previous paragraphs, the decree alluded to above only indicates that VTET at the technical level (associate of applied sciences programs or *cursos superiores de tecnologia*) “must meet the demands of the various sectors of the economy, including specific areas” (Article 10, in PR, 1997a). This inclusion of technical programs at the VTET domain is something new in Brazilian education. It is still to be seen if they will remain as they have been structured so far and to which MEC area they will be subordinated: continue under SESU or be under SEMTEC (the LDB of 1996 do not list them among the higher education programs or anywhere). As they officially still are under the jurisdiction of SESU despite what the Decree No. 2,208/97 states, the details about them will not be addressed here, however many institutions, clearly in the domain of VTET, already provide them (e.g., federal VTET schools).

Despite not being demanded on Decree No. 2,208 of 1997, the VTET providers (mostly the schools and centers) interact with business and industry in order to arrange for

the students' internships and jobs, and to offer courses/programs for updating and refreshing their employees' knowledge and skills (MEC, 1998a). Such relation is also used to obtain equipment donation too. While the S System providers have made extensive use of business and industry input regarding to the offer of programs and the development/update of their curriculum, that is not standard practice at most of the public VTET providers which are slow in their responsiveness to business and industry needs. The level of cooperation between public schools and centers and business and industry has been a matter of dispute among the proponents of the various models for Brazilian education in general and "preparation for work" particularly.

After having presented an overview of the new organization of VTET in Brazil according to the reform introduced by the LDB of 1996 and the Decree No. 2,208/97, it is the moment of knowing what are the providers of VTET in the country. It is not an easy task due their heterogeneity what contributes to the difficulty of finding accurate data about them (INEP/MEC, 1998). Despite its variety, the provision of VTET is below what is needed by the country, as only five million of youngsters and adults have access to VTET courses and programs per year (INEP/MEC, 1998). Besides preparing those who are going to join the labor market by the first time, there is also the need of continuing education of those already in the labor force which in 1996 was composed of approximately 74 million workers, who have spent less than four years at school (but whose schooling is not equivalent to 4th grade) being 30% of them functionally or totally illiterate (IBGE, in SEFOR/MTb, 1997a; INEP/MEC, 1998).

SEFOR/MTb (1997a) classified the providers of VTET in Brazil in seven major groups. Despite some of them are named systems, they do not operate as systems

“because the agencies of VTET in the Country are far from operating in a systemic way, articulated among themselves or to national policies” (SEFOR/MTb, p. 9).

Such groups are a product of the conditions below:

- federative organization of the country, with three levels of Government - federal, state and municipal - combining a high degree of political and bureaucratic centralization of the Federal Government, with a wide margin of economic and executive decentralization in the state and municipal governments;
- ample diversity of institutions and organisms, public and private, involved in or responsible for VTET in the Country, without an effective national coordination;
- an historical experience with Institutions of Development for Professions [Instituições de Formação Profissional - IFPs], funded by compulsory contributions, under the private management of entrepreneurs, as it is the case of Senai, Senac, Senar and Senat (SEFOR/MTb, 1997a, p. 9).

The VTET providers are “of several kinds, combining ample diversity of organizational, managerial, pedagogical and funding models, as well as stakeholders” (SEFOR/MTb, 1997a, pp. 9-10). The seven groups of providers are the following:

1) public VTET systems, 2) the S system, 3) public and private universities [and other higher education institutions], 4) unions, 5) business and industry, 6) NGOs, and 7) other private VTET providers.

The public VTET systems include “the federal, state, and municipal VTET systems which are estimated to have around 12,5 mil school units around all the country. In this group, the best structured subgroup is the federal system of vocational-technical education” (SEFOR/MTb, 1997a, p. 10) which will be addressed later. The best known and organized state system is the São Paulo system (the Paula Souza system [CEETEPS]). In 1994 it had 96 vocational-technical schools and seven technology colleges (the FATECs graduate associate of applied sciences or *tecnólogos*) located in 80

municipalities, which offered 38 different programs for over 84 thousand students (Motoyama, 1995; Müller, Fo., 1994, in Vargas, 1994). No accurate information could be found about the other state or municipal systems, however it is known that they exist and that they probably are not in good shape due to funding, management, and pedagogical problems. In addition to those, the programs in public systems are out of tune with the labor market. Most of the state and municipal VTET schools do not operate as systems but as isolated VTET providers with, in some cases, some central coordination.

The S System includes:

the National Services of Apprenticeship and of Social Service funded by compulsory contributions on the top of the pay-roll, to know: SENAI/SESI (manufacturing), SENAC/SESC (commerce and services, except for banks); SENAR (agriculture); SENAT/SEST (transport on tires); SEBRAE (all sectors, for serving micro and small companies). Altogether, these institutions have more than 7 thousand schools and training centers, covering, only in the part of education and development for professions, around 3 million of enrollments (not including medical and social appointments) (SEFOR/MTb, 1997a, p. 10).

The great majority of the courses/programs offered by S System institutions are classified at the training level of VTET. The number of students enrolled in vocational-technical and technical programs provided by SENAI/SESI, SENAC/SESI, SEBRAE have been less than 1% of their total enrollments (Kirschner, 1993; SEBRAE, 1995; SENAI, 1995; SENETE/MEC, 1991). SENAR and SENAT do not have their own VTET schools and centers. They buy the training they identify as needed from other providers.

Despite having a strong reputation, the S System, like the public ones, has been criticized regarding to its funding, management and pedagogy (Castro, 1995; Frigotto, 1997; SEFOR/MTb, 1997a). However, they are much more focused and agile to meet business and industry needs than the public systems (Castro, 1995; Cunha and Mehedff, in

Kirschner, 1993; SENETE, 1991; SEFOR/MTb, 1997a). Like the federal VTET system, the S System is going through a phase of restructuring (see SENAC, 1995 and SENAI 1994). Which major changes they will go through, if any, are still to be defined by the federal congresspeople, the federal government, business and industry, those who work at the S System besides other stakeholders.

Many public and private universities and other higher education institutions are providers of VTET (INEP/MEC, 1998; MEC, 1998a; Motoyama, 1995; SEFOR/MTb, 1997a). Technical programs are provided through all sorts of higher education institutions. Various federal and state universities have vocational-technical schools attached to them. In addition to that, VTET courses/programs at VTET training level are provided as extension services to communities they serve. There are over 850 higher education institutions in Brazil and there is not enough information on how many of them provide courses/programs in the domain of VTET.

According to SEFOR/MTb (1997a), the other four groups of providers are:

- schools and centers funded and operated by workers' unions;
- schools and foundations directly funded and operated by entrepreneurial groups (besides the contributions they make to the S System, or making use exemption of part of the contribution due to the S System);
- religious, community, and educational non governmental organizations, which provide services to poor communities; it is estimated that there are 2 thousand of former that provide services in VTET;
- non regulated VTET [training level], which is provided mainly in the urban centers and/or by mail; it is estimated that there are more than 10 thousand units in all the country (p.10).

While the VTET providers that offer vocational-technical and technical programs have to offer them in formal bases in order to obey the dispositions of the LDB of 1996 and complementary legislation, the VTET providers that only offer training level courses and

programs operate in non formal bases (MEC, 1998a; SEFOR/MTb, 1997a). The legal requirements for each case are specified on Decree No. 2,208/97 and have already been addressed before.

Among the public providers of VTET is the “federal technological education system” which is the target of the present study. When the terminology “technological education” began to be used by MEC officials and why it has happened, has already been described before. Despite that since 1995 MEC and MTb have been using the terminology “*educação profissional*” for designate “VTET in general,” MEC’s Executive Order No. 646 of May 14, 1997 (which set the dispositions for the federal system regarding to the reform on VTET) and Decree No. 2,406 of November 27, 1997 (which details the Act No. 8,948/94) use the terminology “*educação tecnológica*.”

Act No. 8,948 of 1994 in its Article 1 states that:

It is instituted the National System of Technological Education [italics added], integrated by the technological education institutions [italics added], linked or subordinated to the Ministry of Education and Sports and congener systems of the States, Municipalities, and the Federal District.

§ 1 - The participation of the private network in National System of Technological Education may happen, after consultation with the deliberative higher bodies.

§ “2 - The act of instituting the National System of Technological Education has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector.

§ 3 - The coordination of the National System of Technological Education will be done by the Ministry of Education and Sports, which will establish the procedures for its implementation, operationalization and functioning, respected the characteristics of formal and non formal education and the autonomy of the instruction systems (In SEMTEC/MEC, 1994b, p. 49).

However, as alluded to before, the LDB of 1996 does not use the terminology “*educação tecnológica*” but “*educação profissional*.” As posterior legislation to the LDB of 1996 keeps making reference to the Act No. 8,948/94, it is a clear indication that the latter was not revoked by the LDB of 1996, at least not completely. So both terminologies are valid which sometimes lead to situations of conflict. While MTb does not use the terminology “*educação tecnológica*” at all, MEC refers to the federal technological education schools and centers as the “federal network of technological education” (its ministerial orders/publications do not use the word “system” – e.g., MEC’s Executive Order No. 646/1997 and MEC, 1998a). MEC’s attitude toward both terminologies is revealed in two passages from MEC’s homepage (http://www.mec.gov.br/EnsPes/Modalid/mo_prof.htm):

MEC supports and operates a network of VTET schools (*rede de escolas de Educação Profissional*) . . .

and

The federal network of technological education (*rede federal de educação tecnológica*) will have a time period of four years to absorb the changes of the vocational-technical instruction.

So while for MTb there is only VTET (*educação profissional*), MEC uses the latter as a general term and “*educação tecnológica*” as a term restricted to the federal network.

Unless a new Act is passed changing Act No. 8,948/94, there are “technological education institutions,” and the terminology “technological education” should be used when referring to, at least, the federal institutions. Other shady areas are the “National System of Technological Education” and the “National Council for Technological Education” which are mandated to be implemented by Act No. 8,948/94 but until the end

of 1998 they were non existent. Either both were revoked by Act No. 9,131 of 1995 (MEC's and CNE's attributions and how they are related to each other) and the LDB of 1996, as some conclude, or the federal government is not obeying the law. As there has not been anyone taking the matter to court yet, the proponents either understood it as having been revoked by the legislation alluded to or they feel the fight was not worthy of fighting.

Act No. 8,948 of 1994 was detailed through Decree No. 2,406 of November 27, 1997 (PR, 1997b) which also took in consideration the dispositions of the LDB of 1996 and what was stated in the Decree No. 2,208/97 and MEC's Executive Order No. 646/97. Act No. 8,948 of 1994 had its Article 3 expanded through the Provisional Act No. 1,651-42 of April 7, 1998 (PR, 1998). The legislation alluded to in this paragraph form the backbone of the dispositions of the VTET reform regarding to the federal technological education schools/centers and the following paragraphs will take them in account unless stated otherwise.

According to SEMTEC/MEC (1996c), in 1996 the federal technological education institutions [FTEI] were 96 schools and centers plus 26 branch campuses serving around 110 thousand students enrolled in vocational-technical, technical, industrial engineering, and graduate programs (not included those who enrolled in training level programs) spread around the country. They are federally owned, maintained, and operated (MEC, 1998a). Despite most of their funding coming from the federal level, they can have other sources of income which are complementary to the former. Among them is provided paid training at all VTET levels when such training is not supported by federal funding which is not always easy to determine.

There are five types of FTEIs that belong to MEC: the federal agri-vocational-technical schools (*escolas agrotécnicas federais* [EAFs]), the federal vocational-technical schools (*escolas técnicas federais* [ETFs]), the decentralized instruction units (*unidades descentralizadas de ensino* [UNEDs]), the federal technological education centers (*centros federais de educação tecnológica* [CEFETs]), and the schools linked to the federal universities (*escolas vinculadas às universidades federais* [EVUFs]) (MEC, 1999).

According to MEC's chart, the EAFs, ETFs, UNEDs, and CEFETs are directly linked to the Minister of Education and Sports but are supervised by SEMTEC (MEC, 1999). The EVUFs are subordinated to the federal universities which are supervised by SESU and linked directly to the Minister of Education and Sports (MEC, 1999). The UNEDs are either subordinated to ETFs or to CEFETs (SEMTEC/MEC, 1996a). The EAFs, ETFs, and CEFETs are federal autarchies and have administrative, patrimonial, financial, didactic and disciplinary autonomy which in practice is not absolute as they are part of MEC (this has already been discussed before) (SENETE/MEC, 1991). The following description of the five types of federal VTET institutions originate from MEC (1998a), SEMTEC/MEC (1996a, 1996b, 1996c), SENETE/MEC (1991).

In 1996, at the federal level, there were 46 agri-vocational-technical schools, 19 vocational-technical schools, 26 decentralized instruction units, 5 technological education centers, and 26 VTET schools linked to universities which are located around the country.

The federal agri-vocational-technical schools are mostly located in rural areas. In 1991 they (37 then) had an average area of 2,500,000 m² of agricultural land with 15,000 m² of built facilities. In 1995, the majority of them offered two vocational-technical programs which included the secondary level academics: agriculture/animal raising

program and home economics one. Besides those, there were nine other programs (in agriculture and animal sciences, health and computer science areas) which were offered by the schools (which also included the academics). In order to be able to offer such programs (particularly those belonging to agriculture and animal sciences), the EAFs operated as educational farms and most of the students lived as interns at them. A typical vocational-technical program taught in them lasted around 3,900 contact-hours.

According to 1991 data, the schools had an average of 360 students (only those enrolled in academic/vocational-technical programs), 32 instructors, and 61 support staff (the administrators belong either to the teaching or to support staff). Besides providing vocational-technical programs, the EAFs offered other services: one EAF had a technical program (wine making), many of them provided preparatory courses for vocational-technical programs, VTET training level courses and programs, and extension services.

The federal vocational-technical schools have their main campus mostly located in the capitals of the states but their UNEDs are placed in other cities (in the same state of the main campus). In 1995 they had an average area of 68,431 m² with 33,039 m² of built facilities. In 1995 the ETFs offered over 40 different vocational-technical programs in the following areas: industrial, commerce, health, hospitality, mining, besides others (the majority were related to industry). Most of its vocational-technical students were enrolled in academic/vocational programs rather than in the vocational-technical programs that were offered to those who had completed secondary education. The academical/vocational-technical programs taught at the ETFs between 2,560 and 5,197 contact-hours while the vocational-technical programs took between 720 to 3,280 contact-hours. The schools had an average of 3,160 students (only those enrolled in

vocational-technical programs), 236 instructors, and 249 support staff (the administrators belong either to the teaching or to support staff). Besides providing vocational-technical programs, some ETFs had technical programs, all of them provided VTET training levels courses and programs as well as extension services.

The main campuses of the federal technological education centers are located in the capitals of the states but their UNEDs are placed in other cities (in the same state of the main campus). The five CEFETs were former ETFs (Bahia, Maranhão, Minas Gerais, Paraná, and Rio de Janeiro). In 1995 despite the CEFETs offered programs at technical, undergraduate and graduate level, most of their students is enrolled in their vocational-technical programs (about a five to one rate). Therefore, the figures on the ETFs may be used to describe them too. The undergraduate programs provided by the CEFETs were in industrial engineering and VTET teacher development. Their graduate programs were either related to industrial technology areas or to technological education, and research on technological issues was performed by their faculty and students. Besides what has already been indicated, the CEFETs also offered training level courses and programs, and provided extension services to business and industry.

As alluded to before, the UNEDs are extensions of the ETFs or CEFETs. They are located in other cities than the capitals of the states. In 1995 they offered academic/vocational-technical programs but some of them also provided courses/programs at the VTET training levels as well as extension services. The UNEDs originated from the PROTEC project which was initiated during Sarney administration and still has not been completed yet.

The schools linked to federal universities do not have the autonomy of the EAFs, ETFs, and CEFETs being directly subordinated to the universities rector's offices. In 1995 they offered vocational-technical programs in one or more of the following areas: agriculture and animal sciences, industrial, commerce, health, hospitality, mining, besides others. They also provided VTET training level programs and extension services. However they were much less structured than the EAFs, ETFs, and CEFETs which got direct support from MEC and not indirectly as it was the case of the EVUFs.

Before the Cardoso administration was inaugurated, there was significant debate about whether the FTE schools and centers were being effective as VTET institutions or if they were being used mostly as pathways to get to college what some agree with (see Arruda, 1990; Castro, 1995, Kuenzer, 1991, Nascimento, 1987). However there was not enough hard data either to support any of those views or other perceptions regarding to the VTETs which could neither be confirmed or denied. During 1995 and 1996 SEMTEC/MEC (1996c) conducted an assessment of the ETFs which revealed their profiles (data covered the 1993/1995 period). The study did not address the other types of FTE institutions, however due to their similarities it is reasonable to extend the results on the ETFs to all of them having in mind that the other types of FTE institutions have their own peculiarities. The findings were:

- 1) much higher level of institutional performance if compared to the other public education systems (its significant internal efficiency contribute for the perception that the ETFs provide quality instruction);
- 2) middle to high level of qualification of the ETFs teaching and supporting staff [as alluded to before, administrators are chosen from them];

- 3) most of teaching staff worked 40 hours per week (91%) for the schools while more than half (65%) had the schools as their single employer (those figures are the higher among the secondary level schools networks of the country);
- 4) the ETFs network was the only secondary level schools network where the students spent the day at school [not counting the EAFs and CEFETs] because they were required by curricular and extra curricular activities;
- 5) the schools facilities were well cared for and relatively well equipped, which made them model public institutions in their communities;
- 6) high application rate (average 8.6 applicants per slot, in some cases more 15 applicants per slot) which demanded the holding of entrance exams;
- 7) an average of 70% of the ETFs vocational-technical programs graduates got an immediate job which confirmed the trust of the employers on the vocational-technical training provided at the ETFs;
- 8) as the ETFs are located mostly at the capitals, they have played an important role in providing qualified personnel for public and private companies fulfilling a social strategic function in the development of properly trained individuals and in the offer of quality instruction;
- 9) the migration rate to the school was almost none (less than 0.5% in the 93/95 period) which indicated that it is very difficult to enroll in the school through other means than the entrance exams;
- 10) the average students' families income was six minimum wages (approximately US\$720 in 1995) which contradicted the perception that

- the students belonged to high income families (the truth is: a substantial number of students belong to low middle income families);
- 11) approximately 40% of the instructors were 30/40 years old (such number is higher the national average age for federal civil employees);
 - 12) the student/instructor rate varied from 7.5 to 24.6 which indicated a lack of appropriate rational criteria to manage this indicator;
 - 13) the instructor/support staff rate is almost linear (1.03) which also is an indication of either inadequate or nonexistent criteria to manage this indicator;
 - 14) the teaching/support staff professional development was more a result of personal initiatives rather than of a global policy for the federal network;
 - 15) the growth of funding has not resulted in the correspondent expansion in enrollments, research, or extension services;
 - 16) there was a substantial mismatch between the number initial of enrollments for the various programs and their number of those who graduate as technicians [in 1993 and 1994 the average dropout rates were respectively 16% and 18% (1st to 2nd year), 12% and 13% (2nd to 3rd year), and 26% and 19% (3rd to 4th year)] - in the same period 6 schools graduated as technicians only 20% of the students who completed the fourth year of the program while 11 of them graduated less the 50% of them [to graduate as technicians, the students have to study four years at school and complete an outside internship];

- 17) the facilities were rather inappropriately allocated, that is, it was predominant the use of the existing facilities to middle activities rather than to end activities;
- 18) the programs were over dimensioned, having on average around 1,250 hours more than the legal minimum total hours per program (that not only delayed the entrance of the students in the labor market but also made the cost per student per year higher);
- 19) despite the budget problems faced by the schools (e.g., irregular release of budget installments), there has been an increase in the expenses with personnel and a decrease in enrollments;
- 20) varying cost per student per year (approximately between US\$2 and 8.4 thousand) being around in average US\$3.7 thousand (1993) and US\$4.3 thousand (1994) - it could not be known in which cases there was efficiency or inefficiency, however the varying costs per student per year were an indication that urgent studies on the matter are necessary;
- 21) substantial instruction space not used (including the 3 shifts) - addition 23,450 students could attend the schools (35 students per room) if such space were used;
- 22) vocational-technical programs once established are not discontinued even if there are no jobs for its graduates [the oldest programs were established in the 1960s, new programs have been added (only few per school)] - that revealed a lack of responsiveness from the ETFs to the labor market fluctuations;

- 23) extension activities have expanded, however the participants are mostly those already served by the schools;
- 24) the indefinición of administrative status of the UNED in relation to the ETFs caused problems related to personnel, funding, and management which impacted instruction what made difficult to establish and verify parameters of institutional efficiency - also, some of the UNEDs were over dimensioned for the cities they were built in;
- 25) the ETFs provided programs that ranged from traditional (e.g., accounting) programs to advanced ones (e.g., industrial computer systems) so it is necessary to verify whether those programs are really demanded by business and industry and to update quickly the curriculum of the remaining programs as well as offer of programs;
- 26) the ETFs provided qualified personnel to business, industry, and government agencies located locally, regionally and out of state but they needed to be not only more responsive to the labor market requests but also more articulated with the employers;
- 27) programs organized in semesters rather than in years took longer to be completed while the students' and instructors' data were more difficult to monitor - apart from this, there was no difference in the efficiency of both approaches;
- 28) the curriculum of the programs offered by the ETFs were properly taught providing the students with quality instruction, but a high number of the latter went directly to higher education rather than graduating as

technicians and working for some time as so - such demands an urgent re-analysis of the institutional mission of the schools, their institutional and pedagogical reorganization, and a new operational paradigm (management, decision making, evaluation, curriculum update, besides others);

- 29) the ETFs were highly regarded by the communities they served, however they can not be locked in a mood of self contemplation and forget about the changes in the world that are going on every day outside their walls - they need to be mode agile, more diversified, offer shorter programs whose curriculum are in tune with the needs of the labor market.

The profile of the ETFs described above is mostly a product of MEC's previous policies but the local administrators, instructors and support staff also contributed to it. The study that generated the former (SEMTEC/MEC, 1996c) justified, at least for MEC officials, the actions they had already been taking which aimed to redefine the strategy of the management of the federal technological education system:

- separate, from the conceptual and operational point of view, the VTET part from the academic one;
- provide more flexibility to the curriculum of the [federal] vocational-technical schools in order to make it easier for the adaptation of instruction to the changes in the labor market;
- promote the approximation of the VTET nucleus of the [federal] vocational-technical schools to the entrepreneurial world, increasing the flux of services between enterprises and schools;
- progressively, find appropriated legal forms to the autonomous and responsible operation of the [federal] vocational-technical schools and CEFETs and, at the same time, stimulate the partnerships for funding and management;
- establish specific mechanisms for the evaluation of the [federal] vocational-technical schools in order to promote the diversification of programs and the integration with the labor market (MEC, 1995, p. 22).

According to MEC's political-strategic planning document (MEC, 1995), the actions related the federal technological education system were part of a wider set of actions which intended to solve the following problems in middle instruction:

- the structure of middle instruction (curriculum reform);
- the funding;
- the expansion of the offer [of middle instruction];
- the consolidation and decentralization of the vocational-technical schools and CEFETs network (MEC, p. 19).

The solution of the problems above was told as necessary to “prepare the bases for the expansion of the offer of middle instruction and the improvement of the quality of instruction” (MEC, p. 19).

The strategy for the federal technological education system was in consonance with the major goals MEC was willing to achieve, that were,

- priority of the federal government to the mandatory 1st degree instruction [now fundamental instruction];
- the valuing of not only the school and its autonomy, but also of its responsibility to the students, the community, and the society;
- the promotion of management modernization not only at all levels and modalities of instruction, but also of the management bodies;
- the utilization and the dissemination of modern educational technologies;
- progressive transformation of MEC in an effective body of public policies development, coordination, and follow-up in the educational area, and the consequent reduction of MEC's executive role;
- the articulation of policies and efforts among the three levels of the federation, in order to obtain more effective results (MEC, 1995 p. 4).

It is important to observe that apart from the federal technological education system, VTET was not addressed by MEC's strategic plan which already used terminology still to be approved by the LDB of 1996. As MEC's strategic plan addressed specifically only fundamental instruction, middle instruction, higher instruction, and special education, it is an indication that the policies for VTET as a whole were developed later.

As alluded to before, the Cardoso administration policies for VTET in general were developed through a partnership between MEC and MTb. Besides the legislation reformed VTET already referred to, both MEC and MTb also worked towards the development and implementation of two major “executors” of their policy for VTET: the National Plan for VTET [PLANFOR] and the Program for the Reform of VTET [PROEP] (see SEFOR/ MTb, 1996c; and SEMTEC/MEC, 1996b, 1998). Despite MEC and MTb, through SEMTEC and SEFOR, respectively, worked together in the “big design” of both projects, MTb has been formally in charge of detailing PLANFOR and running its execution while MEC has done the same regarding PROEP. The adaptation (“modernization” as it was called) of the “federal network of technological education” is under the proposal for the establishment of a “network of VTET Centers” around the country which has also been a goal of MEC/MTb.

The major goal of National Plan for VTET or “*Plano Nacional de Educação Profissional* [PLANFOR]” has been to increase the employability of the peoplepower (by improving their basic [i.e., reading, writing, math], specific [“technical”], and management [“self”] abilities) while at the same time widening the offer VTET at training level for those 14 and older (see MTb, 1995, 1997; SEFOR/MTb, 1995, 1996a, 1996b, 1996c, 1997a, 1997b; and SEMTEC/MEC, 1996b). The PLANFOR has been run by the SEFOR/MTb, funded by the FAT (Workers’ Support Fund), and has intended to gradually increase the offer of VTET at training level reaching 15 million Brazilian workers (20% of the Economically Active Population) by 1999.

The PLANFOR began in 1996 and ends in 1999, having its implementation through national, state, and emergencial programs. The development, implementation, and

management of those programs has involved MTb and MEC, and the following actors: state secretariats for labor and education (including their councils), S System, other VTET providers, unions and professional associations, enterprises and educational foundations, and governmental organizations and non governmental organizations. The PLANFOR was developed according to the public policy for labor and income generation of MTb, and as the Cardoso administration was re-elected for an additional term, there is a significant possibility of its continuation until 2002.

The Program for the Reform of VTET or "*Programa de Reforma da Educação Profissional* [PROEP]" has had the goal of enabling the implementation of the reform of VTET through the support to actions which integrate education with labor, science and technology (see "Ensino Receberá," 1998; Inter-American Development Bank [IDB], 1998; MEC, 1996; SEMTEC/MEC, 1998; Weber, 1998a, 1998b). PROEP began to take shape in 1996, has been run by MEC, and its funding comes from an IDB loan (50% of the total resources), and from MEC and FAT moneys (the other 50%) - the total is US\$500 million, to be spent until 2003. PROEP has been open to the participation of federal VTET institutions, to state secretariats of education and to communitary schools (those established through partnerships among public levels of government or public and non public organizations).

PROEP started to operate in 1996 and has been funding preliminary studies regarding the development of state plans for the reform and expansion of middle instruction and VTET, reform and expansion of the facilities of existing VTET federal and state institutions, construction of VTET Centers to be run by States/Municipalities and Communities (partnerships); acquisition of technical-pedagogical and management

equipment; acquisition of materials for the teaching/learning process; teaching and support staff development (administrators either come from one group or another), and services and consulting for developing studies on the technical-pedagogical and management areas. The PROEP has been developed according to public policy for education of MEC, and is expected to get an extra \$5 billion (US) until 2002 (an additional loan from the IDB would account for half of the funding, the remainder would come from the Brazilian federal government).

As alluded to before, among other initiatives, PROEP is to support the establishment of a network of VTET centers which is one of the goals of the federal policy for VTET (refer to SEFOR/MTb, 1996c, 1997a; SEMTEC/MEC, 1996b). Such network is to originate from the expansion and restructuring of the existing federal, states, and municipal VTET networks, public and private. The core idea is to optimize the use of the existing facilities, which in addition to the new ones, should enlarge the VTET opportunities for the Brazilian population so that the employability its citizens be increased. Such centers are to provide services to

wider sectors of the population (low schooling youngsters, workers at any age, unemployed from the formal and informal sector), enterprises and other educational agencies (SEMTEC/MEC, 1996b, p. 12).

The services to be provided should include

short, middle, and long term general [academic] and vocational-technical [VTET at the secondary level] education; *qualificação* and *requalificação* [VTET at training level] programs to be offered continually and in a modular format; technological and cultural extension, advisory and consulting services ([to] laboratories, workshops, farms); counseling, intermediation and placement in the labor market (SEMTEC/MEC, p. 12).

The centers' management is to be triparty (government, entrepreneurs, and workers) and decentralized. The funding is to come from

public and private resources, from MTb and MEC, in conjunction to the progressive search for self support of [the centers'] activities, through the diversification of the clientele and the products/services (having in mind, e.g., enterprises and other consumers which can, at least, refund the centers for the the services they provide) (SEMTEC/MEC, p. 12).

According to SEMTEC/MEC (1996b), in 1996 there were already a few projects either in the planning stage (Paula Souza system, Santa Catarina state public VTET schools, and MEC's technological education system) or in implementation (SENAI) which had as goal to establish networks of VTET centers through the expansion and restructuring of their existing networks of VTET institutions. As the focus of this research is on the federal technological education system, it is necessary to address what has happened to it during the first Cardoso term.

After the enactment of Decree No. 2,208 of April 17, 1997, which reorganized VTET in Brazil, in less than one month (May 14), MEC issued Order No. 646 which addressed specifically the federal technological education [FTE] system. Such order indicated what was expected from the FTE schools and CEFETs in the context of the reform of VTET (MEC, 1997a).

Starting May 26, 1997, the FTE schools and CEFETs had 120 days to alter their internal regulations to adapt to MEC Order No. 646/97, but were given four years to implement what was mandated in the VTET part of the LDB of 1996, the Decree No. 2,208/97 and in MEC Order No. 646/97. The four-year period can be extended for at most an additional year if the committee (representatives of the ETFs, EAFs, ETVUFs, CEFETs, and SEMTEC) in charge of supporting, following, and evaluating the

implementation of the reform in each institution decide to grant it. Such implementation had to be described in a plan which has been prepared by each institution. That plan had to take in consideration the material, financial, and human resources of the each institution.

The FTE institutions have had to increase their enrollments by offering: vocational-technical programs for students which are enrolled in regular middle instruction schools and for those who have already completed middle instruction (the latter may take it either through the presential or through the non presential formats), specialization and improvement courses/programs for those who have already completed middle instruction, and training level VTET courses/programs for youngsters and adults in general, independent of their schooling.

Since the beginning of the 1998 school year, the joint vocational-technical/academic programs were not allowed to enroll students, but the FTE institutions could offer middle instruction separated from the vocational-technical programs. The maximum number of slots for middle instruction was fixed in 50% of the joint programs total slots open to new students in the beginning of the 1997 school year. While the students who enrolled for starting middle instruction in 1998 (and after) did not have to take the vocational-technical contents (because they did not enroll for combined vocational-technical/academic programs), those already in the pipeline have had to opt to remain in the previous format or migrate to the new one.

As most of the EAFs and agri-vocational-technical ETVUFs are located in rural areas where in some cases there are no middle instruction schools around, and also due to the types of methodologies used in this kind of programs, those institutions were allowed

to continue to offer middle instruction to all their agri-vocational-technical students if the schools they viewed as necessary.

In at most five years' time, the FTE institutions must have increased the number of beginning slots for vocational-technical programs (such number may include the middle instruction slots if they will be being offered) by at least 50% over the total number of beginning slots for joint programs in 1997.

The offer of vocational-technical and training level programs by the FTE institutions must be made according to the demand for peoplepower surveyed from the productive sector, workers' unions, employers' unions, and social and economic development agencies that belong to the states and municipalities governments, in addition to others sources of information.

In order to be able to accomplish what is stated in the previous paragraph, the FTE institutions, in articulation with SEMTEC and the state and municipal social and economic development agencies, must implement permanent mechanisms for consulting those interested in the development of human resources. Such mechanisms must not only match the offer of courses and programs to the demands of the labor market but also identify new profiles of workers requested by the employers. MEC Order No. 646/97 mandates that such mechanisms must include a programs graduates' follow-up system and another for keeping track of the job offers for the various programs.

The FTE intitutions may be authorized to offer special programs for VTET instructors' pedagogical development, and will be accredited to certify competencies in the VTET domain. Such accreditation will be granted based on the proposals presented by the FTE institutions.

MEC Order No. 646/97 also indicated that until the new national curricular parameters [NCP] for the vocational-technical programs are defined (such enterprise has been in motion at least since 1996 but by the end of 1998 the NCPs had not been formally in place yet), the determinations established for them by the former Federal Council of Education (now National Council of Education) remained valid (they were: Expert Opinion No. 45/72, and those that followed it). Also, until the detailing of the Article 82 of the LDB of 1996 is released, the present regulations regarding “internships” are still valid.

One last point to stress regarding to MEC Order No. 646/97 is that, it states that the FTE institutions are to become “Reference Centers” in order to support the process of expansion of VTET in Brazil as is stated in Provisional Act No. 1,549-29 of April 15, 1997. Such expansion is being done in partnership with the states, municipalities, and non governmental organizations. In order to be able to support such expansion, the FTE institutions will have their laboratories restructured. That will be funded by the PROEP (and possibly a new version of the METRIMPEX project). No new technological education institutions will be maintained and operated by the federal government, in addition to those already implemented by March 17, 1997 (PR, 1998, Provisional Act No. 1,651-42). The federal government may fund the construction and the equipment for new VTET institutions but their construction, maintenance, and operation must come from the partnerships that will run them which may involve the states, municipalities, Federal District, productive sector, and non governmental organizations.

Besides the initiatives already described which impacted the federal technological education “system” during the first Cardoso administration, there were others that were

more specific. The PROTEC project (expansion of VTET network) continued (but later as part of PROEP), the METRIMPEX project (international project for reequipping the federal schools) was concluded (but there have been talks for a new project), another management information system about the federal network was implemented (not a continuation of the one started during Franco administration), two administrators' (from SEMTEC, schools and CEFETs) development projects were developed by the Oklahoma State University (one completed, the other not for funding problems), the Total Quality Management project (in implementation since 1992 under the guidance of Christiano Ottoni Foundation) project proceeded, and the students' follow-up project was retaken. Also relevant was the increase in international cooperation related to VTET through partners such as Mercosul Educational Organization of American States (REDELET project - PMET), UNESCO, ILO, IDB, the World Bank, in addition to various other partners (foreign government agencies, educational institutions, etc). Other specific projects could have been listed here (such as the evaluation of the ETFs, and the reform on the curriculum of vocational-technical programs), however they have already been alluded to in previous paragraphs.

In December 1998 twelve ETFs were warned by SEMTEC that during the December 1998/January 1999 period they were going to be upgraded to CEFETs. All 19 ETFs had already been transformed into CEFETs by Act 8,948/94 but they depended on implementation decrees to become CEFETs. According to the proposal for National Plan for Education sent by the Brazilian federal government to the Brazilian Congress in 1998, one of the objectives to be reached by MEC in the next 10 years is the duplication of the number of CEFETs every five years (INEP/MEC, 1998). As more than five (the present

number of CEFETs) but not all 19 ETFs are to become CEFETs in this first round, it seems that MEC pushed hard in its policy of “cefetization,” however it did not go all the way in a single shot.

Despite the federal government having debated the reform of VTET with its stakeholders in 1995 and 1996 in meetings promoted or participated by MEC officials around the country, and in Congress public hearings also held around the country, the proponents of *politecnia* and technological education claimed that the discussions were not enough, that the reform was imposed, and that it does not serve the needs of the country (see Cunha, 1997, in Frigotto, 1997, and Saviani, 1998b; Frigotto, 1997; Kuenzer, 1997, in Saviani, 1998b; Kuenzer, 1998; Saviani, 1998b).

Those educators viewed the reform as part of a federal government strategy for having public government responsible only for fundamental education but not its other levels and modalities which contribute to reinforce the structure of classes that exist in Brazilian society because public government is not guaranteeing the same opportunities of education for all. For them the reform is a return to the situation before the LDB of 1961 (two tracks of schooling, not completely interconnected). They defend that the reform should have as focus the citizenship rights of the Brazilians and not the financial logic of the markets. Overall they asserted that the principle of equality, all Brazilian must have “equal conditions for having access and permanence to/at school [education]” (CF88, 1996, Article 206, p. 99) was substituted for the principle of equity, that is,

public investment is only justified for the most competent; because, according to [the World] Bank, as not everybody has the competence to continue the studies, and as there are not enough jobs for all, the logic of rationality mandates that resources are not wasted, particularly in more

expensive [levels and] modalities, such as development for professions [VTET] and higher education (Kuenzer, 1998, pp. 18-19).

The World Bank is seen by those educators as the international agency that has been pressing the Brazilian federal government to reduce the public funds (as a percentage of the GDP) which according to Frigotto (1997) is the opposite to what happened in the 1980-1995 period in developed countries such as the United States of America, England, France, Italy, and Sweden.

As Fernando Henrique Cardoso was re-elected as President of Brazil in 1998, his administration will have four additional years to implement its view on VTET. The objectives to be reached in the next 10 years are stated in the proposal for the National Plan for Education sent to the Federal Congress in the beginning of 1998 (INEP/MEC, 1998). The section on VTET has 16 objectives. Three of those objectives are said to depend basically on the federal government, five to depend on the federal government in association with the states, municipalities or civil society organizations, and eight to depend on the states, municipalities, and the civil society organizations but not the federal government.

The objectives that are said to be dependent basically on the federal government are:

- 1) establish, within two years, an integrated system of information in partnership with governmental agencies and private institutions, that guide the educational policy to satisfy the needs of initial and continuing development for work;
- 2) double, every five years, the number of Technological Education Federal Centers (CEFETs), through the transformations of the present Federal Vocational-Technical Schools;
- 3) modify, within a year, the present norms that regulate the development of instructors for this modality of instruction [VTET], in order to take

advantage of and value their professional experience (INEP/MEC, 1998, pp. 46-47).

The objectives that are said to depend on the federal government in association with the states, municipalities or civil society organizations are:

- 1) implement, in five years, the reform of Middle Instruction and VTET, obeying the directives established by the Ministry of Education and Sports, according to the Decree No. 2,208, of April 17, 1997;
- 2) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of VTET at training level, independent of the schooling level of the participants, so that the needs of those that are excluded from the labor market can be met;
- 3) integrate the offer of courses/programs at the training level of VTET, whenever possible, to the offer of programs which allow the students who did not complete Fundamental Instruction to obtain equivalent development;
- 4) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of VTET at vocational-technical level for the students enrolled in them or for those who graduated from Middle Instruction;
- 5) establish, with the collaboration among the Ministry of Education, the Ministry of Labor, the CEFETs, the higher education VTET schools, the National Apprenticeship Services [S System] and private enterprises, programs for the development of instructors for Technological Education and Development for Professions [VTET] (INEP/MEC, 1998, p. 47).

The objectives that are said to depend on the states, municipalities, and the civil society organizations but not the federal government are:

- 1) establish the permanent review and adjustment of the VTET courses/programs at the training, vocational-technical, and technical levels to the exigencies of the labor market through the collaboration with entrepreneurs and workers in the schools themselves and in levels of government;
- 2) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of permanent VTET for the population the the productive age and that need to readapt itself to the new exigencies and perspectives of the labor market;
- 3) generalize, in five years, the offer of preparation for work courses in the Middle Instruction programs [curriculum];
- 4) transform, gradually, the units [institutions] of the federal vocational-technical network in public centers of VTET and guarantee, that until the

- end of the decade [2000?], that at least one of those centers in each unit of the federation [state] may serve as a reference center for all VTET network, particularly regarding to the development of instructors and methodological development;
- 5) establish partnerships among the federal, states, and municipalities systems and private enterprises, for widening and encouraging the offer of VTET;
 - 6) encourage, through public and private resources [funding], the production of distance education programs that widen the possibilities of permanent VTET for all the population economically active;
 - 7) reorganize the network of agri-vocational-technical schools, in order to guarantee that they accomplish the role of proving VTET specific and permanent to the rural population, taking in consideration its level of schooling and the peculiarities and potencialities of the agriculture activities of the region;
 - 8) establish, along with the agri-vocational-technical schools and in collaboration with the Ministry of Agriculture, courses/programs at the VTET training level geared to the improvement of the technical level of the practices in agriculture and of environment preservation, within the perspective of the self sustainable development (INEP/MEC, 1998, pp. 47-48).

Those who oppose the proposals of the Cardoso administration also prepared their proposal for the National Plan for Education (*Plano Nacional de Educação* [PNE]) (see Bollmann, 1998; and Saviani, 1998b). The final version of the alternative proposal was approved in the II National Congress of Education, held in Belo Horizonte (Minas Gerais state) in November 1997, and presented at the Federal Congress in December of the same year. The section on VTET has seven directives and nine objectives. Differently from the proposal sent by the federal government to the Federal Congress, it is not explicitly stated in the alternative plan who is responsible for implementing what.

The directives of the alternative proposal for the PNE are:

- 1) reintegrate, still in 1998, VTET to the regular system of public instruction, increasing the funds in the budget particularly destined to this modality of education;
- 2) guarantee and increase, progressively, the offer of VTET, free and of quality, in the fundamental, middle and higher levels in the public systems of instruction;

- 3) revoke the Act No. 9,192/95 (which regulates the choice of the university administrators); the MEC Order No. 715/96 (which regulates the choice of federal vocational-technical and *profissionais* [?] schools administrators), guaranteeing free, paritary, and participative elections, and the ratification of their results; the Decree No. 2,208/97 (which reforms VTET and vocational-technical and technological instruction, guaranteeing ample debate about the pathways of VTET);
- 4) articulate the [human] development agencies, professional associations [in Brazil, those are not restricted to the professions that require a higher education degree], unions, employment agencies, and government to debate and reorient the policy for education and development for professions;
- 5) implement, in all instances, democratic forms of management with the paritary participation of the government, workers, and entrepreneurs;
- 6) research and encourage alternative forms of education for the workers;
- 7) guarantee, in the time frame of two years, the constitution of Paritary Councils (workers, governments, and entrepreneurs) for the management of the development for professions agencies (SENAI, SENAC, SENAR, SENAT), or others initiatives, aiming the fiscal control and the formalization of systematic processes of definition and evaluation of the services provided (PNE, 1998, p. 146).

The objectives present in the alternative proposal for the PNE are:

- 1) program, starting from 1998, public qualification for professions courses/programs articulated with illiteracy programs, for youngsters and adults that did not have access or did not complete their schooling in the proper age, including the students with special educational needs;
- 2) carry out, in 1998, the mapping and diagnose of the situation of the formal and informal VTET network in order to reorient the policy and support the decision making [regarding VTET];
- 3) guarantee, starting from 1998, a progressive increase in the public slots for development for professions, in all levels and modalities;
- 4) guarantee slots, courses/programs and or activities of public development for professions specific for students with special educational needs;
- 5) begin, in 1998, programs of continuing development for instructors and employees of the technical and administrative areas who work in VTET, privileging the areas of work and including themes related to ethnicity and gender;
- 6) begin, in 1998, to carry out Forums and Seminars to debate the project of organization of the National Network of VTET (*Rede Nacional de Educação Profissional* [RENAP]), of the Public Centers of VTET (*Centro Públicos de Educação Profissional*) and of other initiatives, proposed by organizations, institutions, and unions;

- 7) keep the Federal and States Vocational-technical Schools and CEFETs in their present formats, until a new proposal is concluded;
- 8) define, in the time fram of a year, a new proposal for VTET, linked to regular instruction, not dualist, to be discussed with society, establishing, *a posteriori*, objectives and deadlines for its implementation;
- 9) assure not specialized instructors, as well as human, material, and financial resources adequate and necessary for the maintenance of quality of the courses/programs provided (PNE, 1998, p. 147).

The Cardoso administration plan and the alternative one show that while there is agreement that VTET is necessary, there are disagreements regarding to policy development for VTET, the relation of VTET to the various levels of education (basic and higher), its organization, its funding, its management, the terminology related to VTET aspects, the role of public government in VTET, and the purpose, organization, funding, and management of the public and private institutions and networks of VTET besides other differences. As alluded to before, the Cardoso administration will have additional four years to implement its view. However, in 2003, if the new federal administration agrees with what has been proposed in the alternative plan, the Cardoso reform may be legally undone just by decrees and executive orders, the same way it was mandated. One thing is very important however, independent of what format is adopted, it has to work in order to be able of remaining in place. Unfortunately, even what is to be successful may be a matter of dispute too.

This section of the chapter provided an overview of VTET in Brazil from its beginnings until the end of 1998 with emphasis in the federal technological education system which is the focus of this study. In the next section, the VTET systems of the United States, Germany, France, and England are addressed. The developments in VTET in those countries have inspired initiatives taken in the VTET domain in Brazil throughout

its history. In order to complete the context for our study it is opportune to take a look at the present status of VTET in those countries.

Vocational-Technical and Training in Selected Countries

Throughout Brazilian history, Brazil received the influence of several countries. In the colonial times Portugal was the major force, however for some time Spain ruled over Brazil, and for some time the Dutch controlled the Northeast of Brazil. From the beginning of the 19th century on, England and France would become relevant reference points for Brazil, what would also happen to Germany and the United States of America later in the 20th century. As the first public initiatives in VTET in Brazil date back from the 19th century, what has been happening in England, France, Germany, and United States in such area has been of interest for Brazilian public government officials, educators, practitioners, and entrepreneurs. Many developments in Brazilian education in general and in VTET specifically were inspired in what had been happening in those countries (e.g., the “*escola nova*” movement, the reforms under Vargas’, the reforms under the military administrations, etc.). As globalization advanced, other educational experiences have been observed around the globe, however those which seem to have had more influence over Brazilian VTET have been the developments in England, France, Germany, and United States of America.

This section of Chapter II will provide an overview of the current major aspects of the VTET in those four countries (England, France, Germany, and the United States of America). It will be paraphrased from general and specific sources. The former, which covers the four countries, are Almanaque Abril (1998), Castro (1995), Center for

Occupational Research and Development [CORD] (1994), Centre for Educational Research and Innovation [CERI/OECD] (1998), Compton's Interactive Encyclopedia (1998), HABITAT (1996), IBGE (1997b), INEP/MEC (1998), International Labour Office [ILO] (1998), MEC/MEFP/SCT-PR (1991), Organisation for Economic Co-Operation and Development [OECD] (1997), The Economist (1998), The World Almanac and the Book of Facts (1998), The World Bank (1997), and United Nations Development Programme [UNDP] (1998), UNESCO (1998) . The latter will cover one or more countries and will be listed in the beginning of each sub section. The data present on every country general profile referred to 1995 unless stated otherwise.

England

In addition to the general sources, the section on VTET in England was paraphrased from Birbring (1991), Department for Education and Employment [DfEE] (1999a, 1999b), Employment Department [ED] (1994), Gutek (1997), Lasonen (1996), National Council for Vocational Qualifications [NCVQ] (n.d.a, n.d.b, 1994a, 1994b, 1995a, 1995b), Parkin (1997), Scottish Qualifications Authority [SQA] (1997), Spours and Young (1996), The European Centre for the Development of Vocational Training [CEDEFOP] (1999), and Young and Spours (1996). Despite the country profile provided below covers the United Kingdom (of which England is part along with Northern Ireland, Scotland, and Wales), the VTET information will refer specifically to England. It is appropriate to say that

while the education and training systems of England, Wales and Northern Ireland are broadly similar, the education system in Scotland has always been a completely separate system with its own laws and practices.

Differences in education and training across Britain [United Kingdom] are particularly marked in the school systems. At the higher education level and for training, this is less so (DfEE, 1999a, online).

The information on VTET (and on education in general) reflect their status by the end of 1998 unless stated otherwise.

The “United Kingdom of Great Britain and Northern Ireland” is a parliamentarist monarchy. Its administrative division includes England and Wales (are administered as a unit and have 39 and 8 counties, respectively), Scotland (9 regions), and Northern Ireland (26 districts). In addition to those, there are other types of administrative units (several island dependencies and Gibraltar). The United Kingdom [UK] has a land area of 241,600 km² (2.9% of Brazil’s) where in 1995 lived a population 58.1 million people (36.5% of Brazil’s). Such figures represented a population density of 240 inhabitants/km² (Brazil’s was 19) while the expected annual population growth for the 1995-2015 period is 0.1% (Brazil’s is 1.1%). As it can be seen, the UK has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be almost none until 2015 which is not the case of Brazil.

In 1995 the United Kingdom had the 14th best quality of life of the planet with an HDI of 0.932 (Brazil’s was 0.809, rank: 62nd). Despite both countries are located in the high human development band (above 0.8 until 1.0), the differences in the quality of life from UK to Brazil can be noticed through the indicators provided below.

Most of the United Kingdom population (89%) lived in urban areas (in Brazil, 78%) and had a life expectancy at birth of 76.8 years (Brazil’s was 66.6). The adult literacy rate in the UK was 99.0% (in Brazil, 83.3%), the number of students per 100,000 inhabitants was 3,126 (in Brazil, 1,094), while the expected number of years of formal

schooling was 16.3 (in Brazil, 11.1). That is, a more urban, longer living, and educated population.

Presently the United Kingdom already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 19.5% (0-14), 12.4% (15-24), 48.0% (25-60), and 20.1% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.

The World Bank classified the United Kingdom as a high-income country (Brazil, upper-middle-income country) whose GDP was US\$1,106 billion (Brazil's, US\$ 688 billion) which was distributed as follows: 2.0% in agriculture, 27.1% in industry, and 70.9% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively). The real GDP per capita was PPP\$19,302 (Brazil's was PPP\$ 5,928) for an average annual rate of inflation of 2.8% (Brazil's was 72.5%). United Kingdom was a richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy. While the United Kingdom's GDP was 1.6 times than Brazil's, the real GDP per capita was 3.3 times Brazil's what theoretically means that there was more wealth per person in UK than in Brazil, however, as the Gini coefficient for the UK was not located no comments could be made regarding the wealth distribution.

In 1994 the public expenditure on formal education in the United Kingdom was 4.9% of the GDP (in Brazil, it was 4.5% in 1995) while the public expenditure on education during the 1993-1995 period was 11.4% of the total government expenditure (in Brazil, it was 17.7% in 1989). While the figures are for different periods, it should also be noted that although Brazil had a higher percentile in the latter, the Brazilian GDP is

smaller than the UK's one and the Brazilian population is bigger, so probably proportionally less is spent per person on education in Brazil than in the UK.

The last aspect to be addressed before a description of the present status VTET in the United Kingdom is provided, is its labor force. In 1997 fifty percent of the UK population was part of its labor force (in Brazil, 46%). Its distribution was as follows: 2% in agriculture, 21% in industry, and 77% in the services area (in Brazil, 16%, 22%, and 62%, respectively). In 1996, the total unemployment rate was 8.2% (in Brazil, 5.4%). Compared to Brazil, which has much more arable land and can grow crops most of the year, UK had a very small part of its population working in the agriculture sector. Its workforce was a slightly larger percentage of the population than in Brazil, and it is substantially more engaged in the industrial and services areas than Brazil's. The high total unemployment rate in UK has been common to the other European countries since the 1980s and results a great deal from increased global competition and technological change which among other things caused "the collapse of the youth labour market in the UK" (Lasonen, 1996, p. 59).

The brief description of the United Kingdom set the context for better understanding the VTET system of the England what will be done in the following paragraphs.

England has a tradition of national control over education and training. Since July 1995, the Department for Education and Employment (a resultant merger of the former Employment Department and Department for Education) has been in responsible for developing and administering policies on education, training, and employment in England, being aided in performing such tasks by six other ministries. The central government

duties include helping “to set the framework for the education and training systems”, working “with other local and central bodies to implement those policies”, and providing funding “for many of the public bodies involved in education and training” (DfEE, 1999a, online).

The present national administration’s main goals regarding to education and training are:

- to support economic growth and improve the nation’s competitiveness and quality of life by raising standards of educational achievement and skills;
- to promote an efficient and flexible labour market by enhancing choice, diversity and excellence in education and training, and by encouraging life long learning (DfEE, 1999a, online).

Education is compulsory from 5 to 16 years of age and the schools have to teach a national curriculum which is divided in four key stages - among the courses to be taken by the student in the fourth stage (14-16) is a technology one. Over ninety percent of English students go to free state [public] schools which according to its purpose, ownership, funding, and administration are categorized in five types (county, voluntary, grant-maintained, specialist, and special schools). Funding comes from the Local Education Authorities [LEAs] for county, voluntary, and special schools. The grant-maintained ones get their funding directly from the central government (Funding Agency for Schools). The specialist schools are made possible by the Specialist Schools Programme which “enables secondary schools to develop a strength in a particular area [technology, sports, languages, and arts], often in partnership with an employer with an interest in the same specialism, while still delivering a broad and balanced education through national Curriculum” (DfEE, 1999a, online).

After 16 years of age, education is no longer compulsory, however around 70% of the students remain in education while the others either go to work or are guaranteed a place in the public government's training programs. The three main routes or the "triple-track" system for young people at the age of 16 who wish to continue their education or get training are:

- continuing academic studies, either at school or a Further Education-sector college;
- studying, or continuing to study, for a broad vocational qualification, such as the General National Vocational Qualification [GNVQ]..., usually full time at a Further Education-sector college [but frequently involves short work placements];
- work-based training leading to a National Vocational Qualification [NVQ] ... or its equivalent. This can take the form of an apprenticeship, employment with "on-the-job" training or vocational training through Youth Training, Modern Apprenticeships or Accelerated Modern Apprenticeships These may include part time study at a further education college (ED, 1994, p. 18).

The qualification opportunities listed above are also open to all adults who can use them also for updating their skills. While the first route is in the domain of academic education, the two last ones are part VTET. The latter are addressed below.

The comprehensive framework of NVQs was established as a result of the effort to rationalize UK's diverse system of vocational qualifications. The organization in charge of introducing the NVQs was the National Council for Vocational Qualifications [NCVQ] which was created in 1986 for such purpose. The NCVQ involved employers, trade unions, education representatives and members being its role "to approve and accredit qualifications and the bodies that award them" (ED, 1994, p. 8). Such bodies are "City and Guilds, the Royal Society of Arts (RSA) Examinations Boards, the Business and Technology Education Council (now Edexcel BTEC), and Professional Bodies" (Parkin,

1997, p. 1) In 1997 the NCVQ merged with the Schools Curriculum and Assessment Authority [SCAA] to form a new body the Qualifications and Curriculum Authority [QCA].

The NVQs are organized in five levels. They are specific to occupations and are suitable for progression to/in employment. The NVQs are:

- based on standards, set by employers, which define the knowledge and skills needed in the workplace;
- a guarantee of competence to do the job;
- modular so that skills and knowledge common to many jobs can be recognised;
- free from restrictions about pace, place and method of learning; and accessible to all age groups, from school students to those nearing the end of their careers (ED, 1994, p. 5).

The GNVQs were introduced in September 1992 as an alternative to the academic and NVQs options and combine general and vocational education. There are presently three levels (Foundation, Intermediate and Advanced) of GNVQs. According to ED (1994), the GNVQs “are based on explicit standards and are of modular structure to allow credit accumulation” (p. 13). The NCVQ (now QCA) co-ordinated the efforts for the development of the initial GNVQs, and presently sets the criteria to be conformed by new GNVQs which must then be approved by Ministers. According to Parkin (1997), those “criteria determine the purpose, structure, and form of the GNVQs and the type of assessment systems that must be used” (p. 4). The GNVQs awarding bodies are City and Guilds, the Royal Society of Arts (RSA) Examinations Boards, and the Business and Technology Education Council (now Edexcel BTEC). Besides preparing for employment in a range of related occupations, the GNVQ route is an alternative way to further and higher education.

Training is provided by many private and public providers which are encouraged to be responsive to market needs by the funding structures in place (the free market philosophy prevails). Training is mostly provided and paid for by employers for their employees. The public government participates in the training efforts by providing guidance and funding an institutional framework through which decisions regarding to training are made. The public government also funds the work-based training for young people, unemployed people and other priority groups (handicapped and special needs).

Broad vocational qualification are mostly provided through further education efforts which are decentralized, operating through the following principles: autonomy, accountability, responsiveness, and quality. Further education [FE] offered by a wide variety of institutions: sixth forms schools and sixth form colleges, general further education colleges, agricultural and horticultural colleges, art and design colleges, and specialist institutions. They are self governed (organization, finance, and management) and their governing boards include representatives from business and industry. The 446 further education institutions are funded by public government (Further Education Funding Council). Those colleges vary not only in size but also in their offer of courses/programs, some of which are provided in conjunction with local employers. The larger colleges offer a variety of courses/programs for both youngsters and adults allowing them to get academic, vocational, and professional qualifications in most areas. Courses/programs can be full-time, part-time, or by distance. Full time 16- to 18-year-old students (UK, or EU) are not usually charged, however the other may be charged at the convenience of the colleges.

In England, schools, colleges, and universities are mandated by law to provide careers information and guidance for students, and the Employment Service [ES] (a public government executive agency) is responsible for job and training placement services. The former is done “to raise their [students] awareness of training, and career opportunities and to help them to prepare for life” (DfEE, 1999a, online). The latter “runs a network of over 1,000 Jobcentres throughout Britain” which “submit . . . people to training programmes and provide a range of other assistance for unemployed people, geared to improving their job finding skills” (DfEE, 1999a, online).

England along with the other members of the European Community have taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial vocational training, exchanges of trainees, students, business and decision-makers. Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development Fund. Other international partners of UK in VTET projects have been: UNESCO, the Commonwealth, OECD, ILO, and the Council of Europe.

The VTET present status is a result of

continuing change and reform in the UK over the last 30 years in attempts to, rationalise the many qualifications that exist and to attract young people towards more appropriate programmes, both for them and for the nation, than more academic and general education provision (Parkin, 1997, p.1).

However,

the traditional English impopularity of vocational qualifications has remained, despite the considerable sums of money being spent on marketing and implementation (Young & Spours, 1996, p. 71).

Despite the achievements of the “vocational qualifications” parts of the “triple track” system, many of their aspects have been criticized by educators and employers particularly since 1995. The proponents of a unified system have been arguing for its implementation however, this does not seem bound to happen in the near future.

France

In addition to the general sources, the section on VTET in France was paraphrased from Bonnes (1991), CEDEFOP (1999), Lasonen (1996), Levrat (1996), Levrat and Lazar (1996), Metge and Bascle (1994), Ministère de l'Education Nationale de la Recherche et de la Technologie [MENRT] (1999), and Nascimento (1988). The information on VTET (and education in general) reflect their status by the end of 1998 unless stated otherwise.

The French Republic (“*République Française*”) is a semi-presidentialist republic. Its administrative division includes 22 regions containing 96 departments. In addition to those, there are other types of administrative units (overseas departments, overseas territorial collectivities, and overseas territories). France has a land area of 550,100 km² (6.5% of Brazil's) where in 1995 lived a population 58.1 million people (36.5% of Brazil's). Such figures represented a population density of 106 inhabitants/km² (Brazil's was 19) while the expected annual population growth for the 1995-2015 period is 0.2% (Brazil's is 1.1%). As it can be seen, France has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be almost none until 2015 which is not the case of Brazil.

In 1995 France had the 2nd best quality of life of the planet with an HDI of 0.946 (Brazil's was 0.809, rank: 62nd). Despite both countries are located in the high human development band (above 0.8 until 1.0), the differences in the quality of life from France to Brazil can be noticed through the indicators provided below.

Most of France's population (75%) lived in urban areas (in Brazil, 78%) and had a life expectancy at birth of 78.7 years (Brazil's was 66.6). The adult literacy rate in France was 99.0% (in Brazil, 83.3%), the number of students per 100,000 inhabitants was 3,617 (in Brazil, 1,094), while the expected number of years of formal schooling was 15.4 (in Brazil, 11.1). That is, a slightly less urban, longer living, and more educated population.

Presently France already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 18.9% (0-14), 13.1% (15-24), 47.7% (25-60), and 20.3% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.

The World Bank classified France as a high-income country (Brazil, upper-middle-income country) whose GDP was US\$1,536 billion (Brazil's, US\$ 688 billion) which was distributed as follows: 2.6% in agriculture, 28.6% in industry, and 68.8% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively). The real GDP per capita was PPP\$21,176 (Brazil's was PPP\$ 5,928) for an average annual rate of inflation of 1.7% (Brazil's was 72.5%). France was a richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy. While the France's GDP was 2.2 times than Brazil's, the real GDP per capita was 3.6 times Brazil's what theoretically means that there was more wealth per person in France than in Brazil, however, as the Gini coefficient for France was not located no comments could be made regarding to the wealth distribution.

In 1994 the public expenditure on formal education in the France was 5.6% of the GDP (in Brazil, it was 4.5% in 1995) while the public expenditure on education during the 1993-1995 period was 10.8% of the total government expenditure (in Brazil, it was 17.7% in 1989). While the figures are for different periods, it should also be noted that despite Brazil had higher percentual in the latter, the Brazilian GDP is smaller than France's one and the Brazilian population is bigger, so probably proportionally less in spent per person in education in Brazil than in France.

The last aspect to be addressed before a description of the present status VTET in France is provided, is its labor force. In 1997 forty-five percent of France's population was part of its labor force (in Brazil, 46%). Its distribution was as follows: 3% in agriculture, 23% in industry, and 74% in the services area (in Brazil, 16%, 22%, and 62%, respectively). In 1996, the total unemployment rate was 12.1% (in Brazil, 5.4%). Compared to Brazil, which has much more arable land and can grow crops most of the year, France had a very small part of its population working in the agriculture sector. Its workforce was slightly smaller part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's. The high total unemployment rate in France has been common to the other European countries since the 1980s and results a great deal from increased global competition and technological change which among other things caused substantial "youth unemployment" (Levrat, 1996, p. 130).

The brief description of France set the context for better understanding its VTET "system" what will be done in the following paragraphs.

France's educational system historically had been under strong control of the national government but since 1982 there has been a growing decentralization which has

increased the roles of the regions and departments. The Ministry of National Education, Research and Technology continues in charge of policy development and of enforcing its execution (based on general principles established by legislation), and of guaranteeing the good provision and coherence of instruction (that means involvement with following aspects: delivering of instruction, curriculum development, school calendar, personnel (recruiting, development, management, and setting the number of employees per institution), educational institutions regulations, and evaluation). The regions administrations are responsible for the construction (and expansion), maintenance, and operation of the higher secondary schools, the departments administrations have the same duties regarding the lower secondary schools, and the local governments (“*communes*”) do the same in relation to primary schools (elementary and pre-school). The funding for personnel directly involved with the educational process in primary and secondary education comes from the national government however funding for the rest of the operation must come from the levels of government indicated above. VTET will be addressed later. Higher education has special status and its funding is done either by the national government or by collaboration by the national and regional levels of government (that is the case of the universities). There are private educational institutions but they are submitted to public government regulations.

Besides the MENRT (which is aided by a special minister in charge of the schooling instruction), other ministries are directly involved with education in France. According to MENRT (1999), “the Ministry of Agriculture and Fishing is responsible for agriculture instruction, the Ministry of Employment and of Solidarity plays an important role regarding to VTET, and the Ministry of the Youth and Sports and the Ministry of

Culture contribute to the organization of educational initiatives targeted at the youngsters” (online). During the first half of the 1990s, there was an attempt to merge the ministries of education and labor (the labor function was put under the Ministry of Education) however such attempt was not successful so the merger was terminated in 1995.

The Minister of ENRT also counts on a series of consultative bodies which have the role of informing, proposing, and advising him or her on educational issues.

Presently the actions of the French government regarding to education and development for professions must take in consideration two major acts: one about education and another about work, employment and development for professions (VTET).

According to Act No. 89-486 (Act of Orientation about Education), of July 10, 1989, education is the first national priority, and in a period of ten years the following goal had to be reached: “educate the entire age group to at least the level of the certificate of vocational aptitude (CAP) or of the certificate of technical education (BEP), and 80% at the level of baccalaureate” (MENRT, 1999, online).

Another piece of legislation (Act No. 93-1313, of December 20, 1993) which is relative to work, employment, and development for professions (VTET) indicated that “every young person must be given the opportunity to take up vocational training before he or she leaves the educational system” (MENRT, 1999, online).

Education is compulsory, free and secular from 6 to 16 years of age and the schools have to teach a national curriculum. It is divided in primary instruction (at *les écoles élémentaires*), lower secondary instruction (at *les collèges*), and one year of upper secondary instruction (if the student completes lower secondary instruction at 15).

Primary instruction lasts five years being divided in two cycles. The first cycle (fundamental learning) begins at pre school and also includes the first two years of primary instruction. The second cycle (deeper studies) includes the three last years of primary instruction. Most of the students (around 80%) complete primary education by the age of 10.

Lower secondary instruction has four grades (6th through 3rd) which since 1996 are divided in three cycles (for those who started lower secondary education after 1995). The first cycle (adaptation, one year) and the second cycle (central, two years) are common to all students. The curriculum of the two first cycles are common to all students however in the former there are few optional courses and different pedagogical approaches may be used to meet the needs for the students. The last cycle (orientation, one year) has three pathways, two taught at the *collèges* and one taught at the *lycées professionelles*. The options taught at the *collèges* are either general or technological. While the main differences between the two pathways are in the number of hours of the courses related to languages, history/geography/civil education, and physics/chemistry (heavier in the former) and technology (heavier in the latter) and in the pedagogical methods used, both have offer the same orientation for students. The option taught at the *lycées professionelles* are for the students who are interested in development for professions (VTET).

At the end of lower secondary instruction the students may get or not a diploma (*Brevet des collèges*) depending on their scores on the 4th and 3rd grades (changes are being studied for the 1999-2000 school year). If they have not scored high enough they get the School Certificate. The students' scores let the government know what knowledge

and skills they had acquired. Independent of getting the diploma or not, the students may proceed to an upper secondary school, the general and technological one or the development for professions (VTET) one. If they are already 16 years of age, they are entitled to get the Certificate of General Development (Certificat de Formation Générale) which indicates the end of compulsory education. If not they have to study an additional year at a *lycée* and after that they get the certificate.

Upper secondary instruction has 3 grades (2nd, 1st, and terminal) which are delivered in two types of schools: the General and Upper Secondary Schools (*les Lycées d'Enseignement Général et Technologique*) and the Development for Professions (VTET) Upper Secondary Schools (*les Lycées d'Enseignement Professionnels*). In 1994 more than 70% of the students went to general and technological upper secondary schools while around 25% of them went to development for professions (VTET) upper secondary schools. Both pathways lead to national diplomas (*baccalauréats*) which were officially considered to be the first higher education diplomas indicating the completion of 12 years of study. The programs at the *lycées* are free but not compulsory (for those who are older than 16).

The general and technological upper secondary schools have as goals to prepare their students for two types of baccalauréates (General and Technological) or the *Brevet de Technicien*. The General Baccalauréat (*Baccalauréat Général*) has three options: Literature (L.), Economics and Society (E.S.), and Science (S.). The Technological Baccalauréate (*Baccalauréat Technologique*) has four possibilities: Industrial Science and Technology (S.T.I.), Service Science and Technology (S.T.T.), Laboratory Science and

Technology (S.T.L.), and Health Care (S.M.S). There are also specific Technological Baccalaureates: Hotel Management and Techniques of Music and Dance.

While the first year (cycle of choice) of upper secondary school is common to all students (except for the electives which allow the students experiment career options), the last two (terminal cycle) are used to prepare them for the option they have chosen. The *baccalauréat* is the first higher education diploma in France. Those who do not pass the exams held to grant them may get a certificate of end of secondary studies depending on their scores. While the *baccalaureate* diploma allows access to higher education, the certificate does not permit so. In addition to that, the baccalaureates are very important in France because they increase significantly the chances of the individuals not only finding a job but also of getting a higher salary.

The preparation for the *Brevet de Technicien* provides a more specific vocational-technical education whose curriculum include the compulsory general contents in addition to the specific technological and vocational-technical ones. It allows the entrance the labor market or the continuation of studies in the technical area in higher education.

The development for professions (VTET) upper secondary schools prepare their students for to get either a Certificate of Vocational Aptitude (*Certificat d'Aptitude Professionnelle* [C.A.P.]) or Certificate of Technical Education (*Brevet D'Etudes Professionnelles* [B.E.P.]) or both. While the C.A.P. was a craft qualification, the B.E.P. was broader than the former. In the 1985-1994 period, students strongly preferred the latter over the former. It is relevant to say that in addition to going to vocational upper secondary schools, another relevant way of preparing for the C.A.P. was through the apprenticeship programs. Since 1985 students who had the B.E.P. (two years of study)

can proceed to get either a technological or a vocational-technical baccalaureate (*Baccalauréat Professionnel*) after two years of study (1st and terminal grades). In the end of 1998 there were 40 different vocational-technical baccalaureates. That baccalaureate also allow access to higher education. According to Levrat (1996), “ninety percent of the students with a Vocational-Technical Baccalaureate find a job in keeping with their training within six months after receiving their diploma” (p. 128).

In 1993 seventy percent of the students obtained baccalaureate diplomas. In 1994 fifty-nine percent of the total baccalaureate graduates got general diplomas, twenty-eight percent, technological diplomas, and thirteen percent, vocational-technical diplomas. The trend has been of stability in the numbers of students enrolled in general and technological programs, and of an increase in the number of those enrolling in vocational-technical programs.

Besides the long term university and college studies, those who have the right to pursue higher education studies (e.g., by having a baccalaureate diploma, but there other ways) may also apply for the technical programs which last two years (*les formations technologiques supérieures courtes en deux ans*). Those can be taken at technological institutes linked to the universities (*Instituts Universitaires de Technologie* [IUTs]) or at the upper secondary schools. The students' preparation developed in the former is broader than in the latter and degrees granted are different too.

The apprenticeship programs are open to those between 16-25. They are also under the responsibility of MENRT. The individuals who join such programs sign a contract of apprenticeship whose duration is at least equal to the period (one to three years) the option chosen lasts. They have theoretical instruction at Centers for the

Development of Apprentices (*Centres de Formation d'Apprentis* [CFA]) and work-based training at business and industry. Apprenticeships are funded by two sources: the apprenticeship tax (0.5% of the companies payroll) and the regional funds for apprenticeship. At the end of the programs, students get a diploma of professional (vocational-technical) or technological instruction or another title officially valid. Besides the apprenticeship programs, there are other work-based developments for professions opportunities named "alternate developments" such as the contract of orientation (22 and over), contract of qualification (26 and over), the contract of adaptation (26 and over) which are funded by the apprenticeship tax and other related ones. Since December 31, 1998, the competence of taking actions regarding development for profession (VTET) of the youngsters was handed by the national government to the regional ones.

In France, educational institutions have to provide careers information and guidance for students through their centers of documentation and information [CDIs]. The former have the support of the Centers of Information and Orientation (*Centres d'Information et d'Orientation* [CIOs]) (518 public offices). The CDIs and CIOs are supplied with the necessary information by the ONISEP (national office of information about instruction and profession which is part of MENRT) and its 28 regional offices.

Like England and the other members of the European Community, France has taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial vocational training, exchanges of trainees, students, business and decision-makers. Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development

Fund. Other international partners of France in VTET projects have been: UNESCO, OECD, ILO, the Council of Europe, and various nations (Brazil is one of them).

The VTET present status is a result of significant changes in the French educational system which have happened since 1985 which have as a major goal “to ensure that all school leavers have acquired at least some training qualifications” (Levrat, 1996, p. 130). However, despite the efforts made and the results achieved “the status of technology as a general compulsory subject remains low” but “academic recognition of work experience” (Levrat, p. 130) is now a fact.

Germany

In addition to the general sources, the section on VTET in Germany was paraphrased from Bremer (1996), Bremer and Heidegger (1996), CEDEFOP (1999), Lasonen (1996), Nascimento (1988), Schmidt and Foster (1997), Schröter (1995), and Tippe (1994). The information on VTET (and on education in general) reflect their status by October 1997 unless stated otherwise. The site of the Federal Ministry of Education, Science, Research, and Technology (<http://www.bmbf.de/>) is an important source of updated information about the German educational system, however the researcher could not take advantage of it because the contents of the home page are only in the German language.

The Federal Republic of Germany (“*Bundersrepublik Deutschland*”) is a parliamentarist republic. Its administrative division includes 16 states (*länder*) with substantial powers. Germany has a land area of 349,270 km² (4.1% of Brazil’s) where in 1995 lived a population 81.6 million people (51.3% of Brazil’s). Such figures represented

a population density of 234 inhabitants/km² (Brazil's was 19) while the expected annual population growth for the 1995-2015 period is 0.0% (Brazil's is 1.1%). As it can be seen, Germany has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be none until 2015 which is not the case of Brazil.

In 1995 Germany had the 19th best quality of life of the planet with an HDI of 0.925 (Brazil's was 0.809, rank: 62nd). Despite both countries are located in the high human development band (above 0.8 until 1.0), the differences in the quality of life from Germany to Brazil can be noticed through the indicators provided below.

Most of Germany's population (87%) lived in urban areas (in Brazil, 78%) and had a life expectancy at birth of 76.4 years (Brazil's was 66.6). The adult literacy rate in Germany was 99.0% (in Brazil, 83.3%), the number of students per 100,000 inhabitants was 2,649 (in Brazil, 1,094), while the expected number of years of formal schooling was 15.1 (in Brazil, 11.1). That is, a more urban, longer living, and educated population.

Presently Germany already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 15.3% (0-14), 11.3% (15-24), 50.6% (25-60), and 22.8% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.

The World Bank classified Germany as a high-income country (Brazil, upper-middle-income country) whose GDP was US\$2,416 billion (Brazil's, US\$ 688 billion) which was distributed as follows: 1.1% in agriculture, 33.4% in industry, and 65.5% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively). The real GDP per capita was PPP\$20,370 (Brazil's was PPP\$ 5,928) in 1995 in Germany, for an average annual rate of inflation of 1.5% in 1996 in West Germany (Brazil's was 72.5%). Germany was a much richer country with a substantially more stable economy which had already moved much

farther than Brazil in direction to a services economy. While Germany's GDP was 3.5 times than Brazil's, the real GDP per capita was 3.4 times Brazil's what theoretically means that there was more wealth per person in Germany than in Brazil, however, as the Gini coefficient for Germany was not located no comments could be made regarding to the wealth distribution.

In 1994 the public expenditure on formal education in the Germany was 4.5% of the GDP (in Brazil, it was 4.5% in 1995) while the public expenditure on education during the 1993-1995 period was 9.4% of the total government expenditure (in Brazil, it was 17.7% in 1989). While the figures are for different periods, it should also be noted that although Brazil had higher percentiles in the latter, the Brazilian economy is smaller than Germany's and the Brazilian population is bigger, so probably proportionally less is spent per person in education in Brazil than in Germany.

The last aspect to be addressed before a description of the present status VTET in Germany is provided, is its labor force. In 1997 fifty percent of Germany's population was part of its labor force (in Brazil, 46%). Its distribution was as follows: 1% in agriculture, 32% in industry, and 67% in the services area (in Brazil, 16%, 22%, and 62%, respectively). In 1996, the total unemployment rate was 9.0% (in Brazil, 5.4%).

Compared to Brazil, which has much more arable land and can grow crops most of the year, Germany had a very small part of its population working in the agriculture sector. Its workforce was slightly larger part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's. The high total unemployment rate in Germany has been common to the other European countries since the 1980s and results a

great deal from increased global competition and technological change which among other things caused substantial youth unemployment.

The brief description of Germany set the context for better understanding its VTET “system” what will be done in the following paragraphs.

In Germany, the states (not the federal government) have the primary responsibility for the educational system). The federal government, through the Federal Ministry of Education, Science, Research and Technology (*Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie* [BMBF]) has control over only a few general matters such as the supervision of schools, religious instruction, the establishment of private schools, and VTET policy development, planning, research, and teacher training. The states’ role in education are an expression of their cultural sovereignty, while the involvement of the federal government in VTET is justified by the importance of VTET to the economy of the country . Almost 75% of the funding for German education comes from the states. The funding for VTET comes from the federal government, the states, local governments and the companies which share responsibilities.

At state level, the “Conference of State Ministers of Education [CSME]” meet regularly to coordinate educational policy, structure, curricula, and qualifications however the resolutions originated from the meetings are not mandatory for the states’ governments.

At the national level, the Federal Institute for Vocational Education [FIVE], which operates under the supervision of the BMBF, and the Federal Institute of Labor [FIL], which operates under a management board (employers, labor, and public corporations) are involved with VTET issues. While the former “advises the government on vocational

training, conducts research, and provides support services to vocational education”, the latter “is responsible for vocational guidance and placement, granting funds to create and maintain jobs, and for employment research” (CORD, 1994, p. 18). Both organizations have the participation in their boards and committees of representatives of the employers, employees, and public agencies. Besides the central office, the FIL has states offices, and local employment offices.

The Federal-State Commission for Education Planning and Research is the forum for addressing issues involving “the relationship between the educational system and the employment structure” (CORD, 1994, p. 18). Its members come from Science Council, the CSME, and FIVE.

At state level, there is a series of organizations involved with VTET: a state ministry (labor or economics), state vocational training committees, chambers of commerce, industry, trades and crafts, employer and labor unions, and companies’ committees of employee representatives. Each has its own attributions and they are a clear indication of the significant involvement of business and industry with VTET in Germany.

Education is compulsory, and free from 6 to 16 years of age. It is divided in primary school (*Grundschule*), and secondary level I (*Sekundarstufe I*). After 16, there is the secondary level II (*Sekundarstufe II*) which is free but not mandatory. The description of the German educational system to be given below applies to most states but there are some differences among the states.

Primary school lasts four years and is uniformly organized. Based mostly on their academic performance in the 3rd and 4th grades, the children are divided into three tracks at the end of 4th grade in order to get secondary level I education.

Secondary level I education's three tracks are: higher-level or grammar school (*Gymnasium*), middle-level or non-classical or modern school (*Realschule*), lower-level or main school (*Hauptschule*). Grammar school covers from 5th through 10th grade and is the primary pathway to university and polytechnical studies, and also allows entrance to the dual-system. Non-classical school covers from 5th through 10th grade and is a direct pathway to two-year technical schools and to the dual system but also allows indirect entrance to university studies (the student must fulfil the requirements of grammar school equivalency) or to polytechnical college (the student must have completed the two-year technical school to be able to apply). Main school covers from 5th to 9th grade and is a direct pathway to the dual system but also allows indirect entrance to two-year technical school (the student must fulfil the requirements of non-classical school equivalency) or to technical college (the student must have completed the two-year technical school to be able to apply).

At the end of secondary level I, students will engage in one of the options of secondary level II which will depend for every student on what kind of secondary level-I school he/she has completed. The Vocational Training Act or *Berufsbildungsgesetz* [BBIG] of August 14, 1969 require that students under 18 receive training in one over 300 recognized vocations if they do not choose or are not entitled to other educational opportunities.

The students who are interested in higher education take the senior classes of grammar school (*Oberstufe des Gymnasiums*) which lasts at least two years but can last more than three years in order to prepare to the grammar school examination (*Abitur*). The latter leads university studies or to a polytechnical college (*Fachhochschule*). While the

studies in the former last 4-5 years (at least), the studies in the latter last 4 years (including the practical semester). Both pathways grant engineering diplomas, however the universities engineers are prepared to work as researchers and in development activities in industries and government institutes while the polytechnics engineers are prepared to work in construction and production in industry. The polytechnics have been very successful in Germany particularly since the 1980s - they were established in 1970/71. By 1994 they comprised 20% of higher education, but the German government intends to increase their participation up to 40%.

As alluded to before, those who completed non-classical school or even main school may get to the polytechnical colleges too. In order to be able to apply for the latter, those who graduated from non-classical school have to study at a two-year technical school (*Fachoberschule*). It is a full-time school where besides the theoretical knowledge, the students get substantial practical expertise and exercise. This type of two-year technical school was established along with the polytechnical colleges in 1970/71. The individuals who have completed main school must get the non-classical school equivalency before applying to a two-year technical school. After completing that program, they can apply to a polytechnical college too.

Below the engineers, who are at the highest level of technological qualification below graduate studies, come the technicians and foremen (both at secondary level), assistant technicians (also at secondary level), and skilled (trained, expert) workers.

Technicians (a little more practically oriented) or a foremen (a little more practically oriented) come from either non-classical or main school. After secondary level I school, students join an apprenticeship where they get vocational training at a company

(industry or other fields) along with attending a part-time vocational school (*Berufsschule*) on one or two days per week for usually three years (dual vocational training system or *duale Ausbildung*). Post completion of vocational training, they must have a professional activity as trained worker for either at least two years (for those willing to become technicians) or at least three years (for those willing to become foremen). After getting the necessary work experience, the individuals study two years (to become a technician) or one year (to become a foreman) at a technical school (*Fachschule*). There is a substantial number of technical schools in Germany which offer programs in all technical professions. Besides the full time programs, some of the technical schools offer part-time programs too (usually last 4 years for technicians).

Assistant technicians come from either secondary level I grammar school or non-classical school. After secondary level I school, they get vocational training at a full time special vocational school (*Berufsfachschule*) for usually three years. The graduates of special vocational schools are entitled to work as assistant technicians in chemistry, biology, metallurgy, medicine, electrical or electronics engineering, industrial drafting, design, foreign language, social works, etc.

Skilled workers may come from secondary level I grammar school, non-classical school, or main school. After secondary level I school, students join an apprenticeship where they get vocational training at a company (industry or other fields) along with attending a part-time vocational school (*Berufsschule*) on one or two days per week for usually three years (dual vocational training system or *duale Ausbildung*). The graduates of part-time vocational schools are entitled to work in a large number of vocations which

are subdivided in trade groups (e.g., building, metal (including electro-electronics), wood, clothing, food, health and cleaning, and glass, paper and ceramics).

In general the offer of VTET in Germany for youngsters and adults is done by substantial number of not only VTET public and private institutions already alluded to but also by “industry, industrial training workshops, re-education centers, rehabilitation centers, chambers of commerce and industry, commercial associations, trade unions, etc.” (Nascimento, 1988, p. 161).

Like England, France, and the other members of the European Community, Germany has taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial vocational training, exchanges of trainees, students, business and decision-makers. Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development Fund. Other international partners of Germany in VTET projects have been: UNESCO, OECD, ILO, the Council of Europe, and various nations.

The German VTET system has its origins in the guilds in the twelfth and thirteenth century which introduced the work-based training. Later, in the sixteenth and seventeenth century, the religious and crafts-related schools introduced the school-based learning. VTET evolved to the present complex organization which if has achieved considerable success in training qualified personnel, also has significant problems of esteem for its participants who are considered to have a lower status than those on the academical track. Bremer (1996) indicated that several experiments have been made in Germany (e.g., in Bavaria, Brandenburg, and North-Wesphalia) to increase the educational opportunities to the German youth through more permeability between general education of vocational

training or through integrated vocational and educational qualifications which would help to at least minimize the parity of esteem problem.

According to Lasonen (1996), “the general German public still does not consider vocational training ‘educational’ in ideal or material terms” (p. 145), therefore whether the proposals alluded to above, particularly the integration one, have a future or not, is still to be seen.

The United States of America

In addition to the general sources, the section on VTET in the United States of America [USA] was paraphrased from Copa and Plihal (1996), Department of Education [USDE] (1999), Dias and Martelli (1993), Gutek (1997), Hartley, Mantle-Bromley, and Cobb (1996), Nascimento (1988), National Center for Educational Statistics [NCES/USDE] (1995), Secretaria de Política Educacional [SPE/MEC] (1995), Vaughan (1995), and Williamson (1995). The information on VTET (and on education in general) reflect their status by the end of 1998 unless stated otherwise.

The “United States of America” is a presidentialist republic. Its administrative division includes 50 states, the District of Columbia, and several administered territories. The USA has a land area of 9,573,110 km² (1.13 times of Brazil’s) where in 1995 lived a population of 267.1 million people (1.7 times of Brazil’s). Such figures represented a population density of 28 inhabitants/km² (Brazil’s was 19) while the expected annual population growth for the 1995-2015 period is 0.8% (Brazil’s is 1.1%). As it can be seen the USA has a land area slightly larger when compared to Brazil, but it is also slightly more crowded, and its population growth will be slightly less than Brazil’s until 2015.

In 1995 the USA had the 4th best quality of life of the planet with an HDI of 0.943 (Brazil's was 0.809, rank: 62nd). Despite both countries are located in the high human development band (above 0.8 until 1.0), the differences in the quality of life from the USA to Brazil can be noticed through the indicators provided below.

Most of the USA's population (76%) lived in urban areas (in Brazil, 78%) and had a life expectancy at birth of 76.4 years (Brazil's was 66.6). The adult literacy rate in the USA was 99.0% (in Brazil, 83.3%), the number of students per 100,000 inhabitants was 5,395 (in Brazil, 1,094), while the expected number of years of formal schooling was 15.8 (in Brazil, 11.1). That is, a slightly less urban, longer living, and more educated population.

Presently the USA already has an older population than Brazil's and by the year 2000, the estimated distribution is: 21.8% (0-14), 13.4% (15-24), 48.5% (25-60), and 16.3% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.

The World Bank classified the USA as a high-income country (Brazil, upper-middle-income country) whose GDP was US\$6,952 billion (Brazil's, US\$ 688 billion) which was distributed as follows: 1.9% in agriculture, 23.4% in industry, and 74.7% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively). The real GDP per capita was PPP\$26,977 (Brazil's was PPP\$ 5,928) in for an average annual rate of inflation of 2.5% (Brazil's was 72.5%). The USA was a much richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy. While the USA's GDP was 10.1 times than Brazil's, the real GDP per capita was 4.6 times Brazil's what theoretically means that there was more wealth per

person in the USA than in Brazil, however, as the Gini coefficient for the USA was not located no comments could be made regarding to the wealth distribution.

In 1994 the public expenditure on formal education in the USA was 4.9% of the GDP (in Brazil, it was 4.5% in 1995) while the public expenditure on education during the 1993-1995 period was 14.1% of the total government expenditure (in Brazil, it was 17.7% in 1989). While the figures are for different periods, it should also be noted that although Brazil had a higher percentile in the latter, the Brazilian economy is much smaller than the USA's and the Brazilian population is 60% of the USA's, so probably proportionally less is spent per person on education in Brazil than in the USA.

The last aspect to be addressed before a description of the present status VTET in the USA is provided, is its labor force. In 1997 fifty-one percent of the USA population was part of its labor force (in Brazil, 46%). Its distribution was as follows: 2% in agriculture, 22% in industry, and 76% in the services area (in Brazil, 16%, 22%, and 62%, respectively). In 1996, the total unemployment rate was 5.4% (in Brazil, 5.4%). Compared to Brazil, the USA has a very small part of its population working in the agriculture sector but makes a more intense use of mechanization which leads to a high agriculture output. Its workforce was slightly larger part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's. The USA total unemployment rate was low due to the strength of its economy and to a much less protective social security system than England, France, and Germany's.

The brief description of the USA set the context for better understanding its VTET "system" what will be done in the following paragraphs.

The primary responsibility for education in the United States of America belongs to the state governments which delegate some authority to the local education agencies. The federal government role is to provide guidance and support to state agencies and influence the offering of certain programs by providing funding to them. One of the areas of interest of the latter is VTET due to its importance in preparing qualified workers for the US economy.

At the national level, the Department of Education [USDE] is the main responsible agent for education in general, however in relation to VTET, it shares some responsibilities with the Department of Labor [USDOL]. According to CORD (1994), both “interpret and disseminate relevant legislation, monitor federal expenditures, provide national leadership, conduct research, and monitor compliance with federal laws,” and “make studies and report to public and the national Congress” (p. 21). In addition to that, “the Department of Labor is responsible for administering the federal training programs that it shares with the Department of Education” (CORD, 1994, p. 21).

The USDE and the USDOL are not the only ones involved with VTET at a national level. Other major players at the national level are educational associations such as the Association for Career and Technical Education (former American Vocational Association), the National Education Association, and the American Association of School Administrators. Besides those, there are “literally hundreds of associations, foundations, corporations, institutes, and others” (CORD, 1994, p. 21) that have an interest in VTET issues.

At state level, the state legislature, the board(s), and the department(s) in charge of the various levels of education take care of its several aspects which include developing

regulations, policy development, planning (including budgeting), technical support, educational statistics and other information, supervision, monitoring, and enforcement. The states are divided by the legislature in school districts which are governed by local boards who appoint a superintendent as the executive officer for running the district educational system. The local school districts are supervised by the states governments. Funding for K-12 education comes mainly from local real estate taxes and state taxes but the federal programs are funded by the national government. The administrative structure for education in the American states is not equal but is somewhat similar. States (like the local districts) may or may not participate in federal programs, but if so, they must comply with the federal regulations related to such programs.

As education is a primary matter of the states, the organization of their educational systems may vary from state to state. Elementary and secondary education has 12 grades and is free however their organization is not uniform among the states. Besides the public schools, there are private schools, charter schools, and home schooling too. Children begin 1st grade at 6 years of age and have to stay at school until they are 14 or 16 depending on the state. Elementary education may last six or eight grades. Secondary education may last six or four grades. The most common organization form is: elementary school (6 grades), middle high school (3 grades), and high school (3 grades). Two other formats are: elementary school (8 grades) and high school (4 grades), and elementary school (4 grades), middle high school (4 grades), and high school (4 grades). While in high school, students have the options of preparing for baccalaureate-degree programs, for two-year postsecondary programs, or for joining the labor market. It is at the high school level where vocational-technical education begins. Vocational-technical programs are

electives in schools, only in Oregon state are students required to take a course in careers and/or careers development.

According to the NCES/USDE (1995), secondary vocational[-technical] education is provided primarily through three types of public high schools:

- 1) comprehensive high schools (the typical U.S. high school);
- 2) area vocational[-technical] schools (regional facilities that students attend part of a day to receive occupational training); and
- 3) full-time vocational[-technical] high schools (schools that offer academic studies but focus on preparing students for work in a particular occupation or industry) (p. 4).

Besides providing vocational-technical education for high school students, the area vocational-technical schools [or centers as they are also named] “often enroll postsecondary (for credit) and adult (non credits) students” (NCES/USDE, 1995, p. 4).

The NCES/USDE (1995) also indicates that the secondary vocational[-technical] courses can be classified in three types:

- 1) consumer and homemaking education;
- 2) general labor market preparation; and
- 3) specific labor market preparation (p. 2).

While the first type of courses “prepare for students for unpaid employment at home”, the second type of courses “teach general employment skills - such as introductory typing or wordprocessing, industrial arts [now called technology], career education, and applied academic skills - rather than preparing students for employment in a specific occupation,” and the last one provide “students [with] the skills needed to enter a particular occupation” which belongs to one of

following occupational program areas: agriculture, business and office, marketing and distribution, health, occupational home economics [now family and consumer sciences], trade and industry (including construction,

mechanics and repairs, and precision production), and technical and communications (NCES/USDE, pp. 2-4).

In 1992, 97 percent of all public high school graduates “completed at least one vocational education course, and 87 percent completed at least one occupationally specific course,” however, “vocational coursework made up only 16 percent of the total coursework completed by high school graduates, down from 21 percent in 1982” (NCES/USDE, p. 7). Among the factors which contributed to such decline in vocational-technical enrollment are the “increasing high school graduation requirements over the 1982-1992 decade and the vulnerability of secondary vocational-[technical] programs to local economic conditions [loss of jobs for the existing programs and loss of educational funding for the schools]” (The National Assessment of Vocational Education [NAVE], in NCES, p. 7).

After high school, those interested in continuing studying may apply to baccalaureate-degree programs (4-year programs) at a college or a university, or to nonbaccalaureate-degree programs at one of the following institutions:

public 4-year institutions, private, nonprofit 4-year institutions; public 2- to 3-year institutions (community colleges); public vocational-technical institutes; private, nonprofit less-than-4-year institutions; and private proprietary (for-profit) institutions (NCES/USDE, 1995, p. 5).

Admittance criteria vary among the educational institutions however it is much stricter in the former than in the latter. The acceptance of the transference of credits from nonbaccalaurate programs making for the first two years of 4-year programs at colleges and universities vary among programs, colleges, and universities.

Post-secondary nonbaccalaureate-degree programs can be divided in academic and vocational-technical program areas. The academic area has the following program areas: “mathematics and sciences; letters, humanities, and communications; social sciences; art

and design; education; and others” (NCES/USDE, 1995, p. 6). Each of those program areas lead to a series of academic programs. The vocational-technical area branches in six programs areas:

agriculture, business and office, marketing and distribution, health, home economics [now family and consumer sciences], technical education [including the following sub areas: protective service, computers/data processing, engineering/science technologies, and communication technologies], and trade and industry” (NCES/USDE, p. 6).

Those program areas lead to a number of vocational-technical programs which are more advanced than its secondary counterparts. Students at postsecondary vocational-technical institutions may study for an associate degree or just take a one or a few courses.

According to NAVE, in 1990 the former represented “about 35 percent of all undergraduate postsecondary enrollments” (In NCES, p. 8) and about one half of the nonbaccalaureate undergraduate students.

After undergraduate studies (4-year programs), students (if they fulfill the requirements), may apply to professional schools (e.g., Law or Medicine) which may mean up to additional four years of studies or to graduate programs to get Master’s degree (one or two years), Doctoral degree (two to four years), or other graduate degrees (e.g., Specialist).

Federal law mandates that every state has a State Board of Vocational Education (which has a correspondent function to the State Board of Education) and a State Employment and Training Council. While the former is responsible for administering secondary vocational and technical education (including federal programs) within the state and supervising the administration of local vocational-technical districts, the latter plans and directs the programs funded by the federal Department of Labor. In some states

vocational-technical education is not under the State Department of Education. In those states (e.g., Oklahoma), there is a State Department of Vocational and Technical Education. Besides the state departments already alluded to, other state departments also are involved with VTET issues. They are the Departments of Labor, Agriculture, Commerce, and Economic Development.

Among the tasks of that the state departments in charge of vocational and technical education have to fulfill is the development of the federally mandated Five-Year Plan for Vocational Education. Each state's plan must describe how each of them is going to use the federal vocational education funds allocated to them (the former must be renewed when the time comes). The state departments must also prepare "reports to the state Governor, business community, and general public" (CORD, 1994, p. 22).

Like at the federal level, at state level, there are a number of non governmental organizations which have interests in vocational and technical education and influence its policy development. According to CORD (1994), they are "education associations, labor organizations, chambers of commerce and other business organizations, private research firms, special interest groups, and taxpayer and parents groups" (p. 22).

In some states, at the local level, vocational-technical education is under the local education boards, while in others there are separate vocational-technical education boards. There is also the possibility of local districts joining resources for constituting a joint vocational-technical area center which is under a joint board of vocational-technical education. In any case, an executive officer, the superintendent, is hired by the board to run the local or joint vocational-technical education system. The funding for the latter

comes mostly from state and local levels, however the federal programs are funded by the Union.

Like at the federal and state levels, at the local level, there are a number of non governmental organizations and individuals which have interests in vocational and technical education and influence its policy development. According to CORD (1994), they are “school administrative staff, teachers, students, parents, civic leaders, service organizations, labor unions, chambers of commerce, and youth organizations ” (p. 23).

In addition to the VTET programs already alluded to, there are other training opportunities. An important source of training are the initiatives sponsored by the Job Training Partnership Act [JTPA] which is a federal program. The latter fund training initiatives through the states administrations which are implemented by regional or local delivery agencies. Each of these agencies are advised by a Private Industry Council which is “composed of local business leaders, officials, organized labor, representatives of employment and economic development services, and of public education” (CORD, 1994, p. 21).

Like in Brazil and in the others countries already addressed, VTET in USA have been under pressure to reform in order to better perform. A series of reports including the Workforce 2000 (1987), The Forgotten Half (1988), America’s Choice: High Skills or Low Wages (1990), SCANS Report (1991), and others have addressed the various aspects of the VTET in the USA of the end of the 1980s and beginning of the 1990s, not only making a diagnose but also proposing changes. However, according to Hartley, Mantle-Bromley, and Cobb (1996), “there appears to be a lack of congruence between

public demands for change and education's willingness to acknowledge these demands" (p. 39).

Despite the disagreements between the VTET stakeholders, VTET in USA (and also education in general) are not static and many reform proposals have already been under experimentation (e.g., school-to-work models such as Career Academy, Occupational/Academic Clusters, Tech Prep, and Youth Apprenticeship, besides others), some for quite some time while others are more recent. However, authors like Copa and Plihal (1996) defend that instead of continuing to experiment with reform models which maintain "vocational[-technical] education as a collection of separate fields" (p. 97), there should be a shift to proposals that structure vocational-technical education "as a broad field of study" (p. 99). It is not known which proposals will work, if any, however none will be completely successful if VTET continue to be perceived as a second class education as in Brazil, England, France, and Germany.

This section of the chapter provided a summarized overview of the present (whenever possible) status of VTET in England, France, Germany, and the United States of America. In the two last sections, the case study method and the Delphi technique are covered. They provide the methodological framework for the development of this work. How the two research methods were employed to construct the present dissertation is a matter to be addressed on Chapter III.

Case Study Method

Case study is a design "frequently found in human and social science research" (Creswell, 1994, p. 11). Sigmund Freud and Jean Piaget, for instance, used the case study

research approach in much of their works (Erlandson, et al., 1993). It has been shown over time to be appropriate to deal with “individual, organizational, social, and political phenomena,” (Yin, 1994, p. 3) among them, those related to education.

When the case study method started to be used in the United States, first in sociological research, it was not differentiated from other types of qualitative approaches (Yin, 1994). As time went by, more and more research were done under and on the qualitative paradigm, so various research designs emerged more clearly, among them, the case study. Despite that, it is relevant to say that still there are not many sources specifically about the case study design.

The three following paragraphs provide definitions presented in key works that unveil the nature of the case study.

Wilson (1979) stated that the “case study is a process of research which tries to describe and analyze some entity in qualitative, complex, and comprehensive terms not infrequently as it unfolds over a period of time” (as cited in Spierer, 1980, p. 15).

Merriam (1988) defined “the qualitative case study . . . as an intensive, holistic description and analysis of a single entity, phenomenon, or social unit” (p. 16). She also stated that “case studies are particularistic, descriptive, and heuristic and rely heavily on inductive reasoning in handling multiple data sources” (p. 16).

Yin (1994) described case study research as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident,” and added that it

cope with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a

triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis (p. 13).

Case study, as one of the options available in qualitative research,

assumes that there are multiple realities - that the world is not an objective thing out there but a function of personal interaction and perception. It is a highly subjective phenomenon in need of interpreting rather than measuring (Merriam, 1988, p. 17).

Once determined what a case study is, the next step is to discuss when to use it.

Creswell (1994) stated that after the selection of the topic to be studied, the researcher needs to choose an overall paradigm - quantitative, qualitative, or a combination - for the study and after that, a research method. He also noted that the choice of a paradigm leads to a set of research methods that are associated with it. As criteria for selecting a paradigm over another, he cited: "researcher's worldview", "training and experience of the researcher", "researcher's psychological attributes", and "audience for the study" (p. 9). The options listed by Creswell (1994) as quantitative research methods are: experiments and surveys; as qualitative ones he indicates: ethnographies, grounded theory, case studies, and phenomenological studies. Such options may be used in a combined form for reasons of triangulation, complementarity, development, initiation, and expansion of a study as indicated by Greene et al. (1989) in Creswell (1994).

According to Yin (1994), the choice of a research strategy "depends upon three conditions: (a) type of research question, (b) control the investigator has over actual behavioral events, and (c) the focus on contemporary as opposed to historical phenomena" (p. 1). While "what" questions may lead to the selection of different research designs -

including case study - “how” and “why” questions mostly require the use of the latter (Yin, 1994). The less control the investigator has the more one needs a qualitative design (Merriam, 1988). Finally, if contemporary phenomena are to be studied various research methods can be employed what is not the case of historical ones when the design choices are very limited. Yin (1993), like Creswell (1994), also indicated that “depending on the circumstance,” (p. xi) a researcher may need to apply a combination of research strategies.

For Merriam (1988), which research strategy to use depends on four questions. Two are the same proposed by Yin: (a) what is “the nature of the research questions” and (b) what “amount of control” does the investigator have over the research situation (p. 9). The other two are: (c) what is “the desired end product” and (d) can “a ‘bounded system’ . . . be identified as the focus of the investigation” (p. 9). Merriam (1988) stated that the former “is linked to the nature of the research questions asked” (p. 9) and by the latter she understood as “a program, an event, a person, a process, an institutions or a social [which] . . . is an instance of some concern, issue, or hypothesis” (pp. 9-10).

Yin (1993) indicated that the case study method is the appropriate research design “when investigators desire to (a) define topics broadly and not narrowly, (b) cover contextual conditions and not just the phenomenon of study, and (c) rely on multiple and not singular sources of evidence” (p. xi). Merriam (1988) noted that the main concern of case studies when compared to qualitative research strategies is what Shaw (1978) called “interpretation in context” (p. 21) and viewed the qualitative case study design as “a particularly suitable methodology for dealing with critical problems of practice and extending the knowledge base of various aspects of education” (p. xiii).

Wilson (1979) reported four characteristics of case studies: “particularistic,” “holistic,” “longitudinal” and “usually qualitative” (In Spierer, 1980, p. 13). Cases studies are particularistic because they “focus on events in one particular setting;” they are holistic because they try “to capture the totality of the phenomenon;” they are longitudinal because they normally “tell a story over time;” and they are usually use “a variety of methods - both quantitative and qualitative - to collect information” (Spierer, pp. 13-14).

Merriam (1988) pointed out that “while a number of characteristics and the terminology may differ from source to source, a review of the works of Helmstadter (1970), Wilson (1979), Stake (1981), Guba and Lincoln (1981), and others suggested that there are four characteristics essential of a qualitative case study. Those characteristics are : 1) particularistic, 2) descriptive, 3) heuristic, and 4) inductive” (p. 11). She defined such characteristics as follows: “*particularistic* means that cases studies focus on a particular situation, event, program, or phenomenon” (p. 11); “*descriptive* means that the end product of a case study is a rich, ‘thick’ description of the phenomenon under study” (p. 11), “*heuristic* means that case studies illuminate the reader’s understanding of the phenomenon under study” (p. 13); and “*inductive* means that, for the most part, case studies rely on inductive reasoning” (p. 13).

Spierer (1980) proposed a format for developing evaluative case studies. It is composed of three phases and twelve steps. The first phase she named “the pre-fieldwork stage” (Spierer, p. 27), the second, “the fieldwork stage” (p. 47), and the last, “the analysis, verification, and synthesis stage” (p. 61). The “pre-fieldwork stage” include the following steps: 1) “setting boundaries;” 2) determining “the unit of analysis;” 3) “selecting a site(s);” 4) “establishing initial contacts;” 5) developing data collection [procedure];” and

6) organizing the data retrieval format (p. 27). Once the pre-fieldwork is completed, the fieldwork stage begins. The latter is composed of: 7) “staff training;” 8) “logistics of fieldwork operations;” and 9) “data collection” (p. 47). Finally, there is the “analysis, verification, and synthesis stage” which includes steps: 10) “analyzing data;” 11) “reporting findings;” and 12) “utilizing the case study findings” (p. 61). This format may not serve for performing all types of case studies, for this reason other proposals are presented below.

Yin (1994) stated that the case study method should go through “all phases of research - problem definition, design, data collection, data analysis, and composition and reporting” and listed four types of case study designs: “(a) single-case (holistic designs), (b) single case (embedded designs), (c) multiple-case (holistic) designs, and (d) multiple-case (embedded designs)” (Yin, p. 38). He described a three-phase approach for doing case studies - post problem definition. Phase one, he labeled “define and design;” phase two, “prepare, collect, & analyze;” and the last phase, “analyze and conclude” (p. 49). Phase one begins with theory development followed simultaneously by the selection of cases (if a multiple-case strategy will be used) and by the design of the data collection protocol. Phase two has two rounds. The first is conducting the case study - in multiple-case strategies, the researcher needs to return to the second step of phase one for replication purposes. The second is writing the individual report for each case. The last phase is a sequential one. The researcher draws case or “cross-case conclusions,” modifies “theory,” develops “policy implications,” and finally, writes the case or “cross-case report” (p. 49).

What Yin (1993, p. 111) noted as an exception, Merriam (1988) presented as the rule. Differently from the neat format described by Spierer (1980), Yin (1994) or Isaac and Michael (1995), Merriam (1988) made clear that “throughout the case study process, from designing the study, to data collection, to data analysis, there are no set procedures or protocols that one follows step by step” (p. 37). According to Merriam, “there are guidelines and the experience of others to help, but one must be able to recognize the ‘correct’ way to proceed will not always be obvious” (p. 37). Merriam (1988) reported that the issues to be dealt with while doing a case study include: identifying the research problem, defining the unit of analysis, selecting a sample within the case, conducting theory and literature reviews, deciding about data collection and performing it, analyzing the data collected and writing the case study report, however, there is no certainty in what order to perform them because “case study research . . . places the investigator in a largely uncharted ocean” (p. 37). Erlandson, et al. (1993) presented a similar opinion by stating that “there is no single format for reporting” (p. 163) case studies.

The case study method is being more and more used in research. Such acceptance has to do with dissatisfaction with the results obtained by utilizing other types research designs to study certain kinds of problems. Merriam (1988) noted that the case study method “offers a means of investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon, . . . results in a rich and holistic account of a phenomenon, . . . [and provides] insights and illuminates meanings that expand its readers’ experiences” (p. 32). She added that “these insights can be construed as tentative hypotheses that help structure future research; hence, case study plays an important role in advancing a field’s knowledge base” (p. 32).

As any other research approach, there are limitations for the case study method. Case studies are not easy to conduct and can get massive if their boundaries are not clearly defined. Length can be a problem not only to the researcher but also to the reader. For the former while conducting the case study and for the latter due to the difficulty in reading it. Time and money are other obstacles to be faced by those wishing to do case studies. The sensitivity and the integrity of the researcher are also points of concern in using the methodology. They are related to the training, experience, and ethics of the researcher. Other limitations discussed in literature relate to the reliability, validity, and generalizability of case studies. (Spirer, 1980; Merriam, 1988; Yin, 1994, Isaac & Michael, 1995). The last three issues are a matter of “much debate about how to interpret” them (Merriam, 1988, p. 34).

Despite the arguments over the strengths and limitations of the case study design, it has been frequently utilized in social science research. Such use has happened not only in “traditional disciplines (psychology, sociology, political science, anthropology, history and economics)” but also in “practice-oriented fields such as urban planning, public administration, public policy, management science, social work, and education” (Yin, 1994, p. xiii).

According to Merriam (1988), educational case studies can be classified based on “their disciplinary orientation, their end product, or by some combination of the two” (p. 29). The first type of classification include four types of case studies: ethnographic, historical, psychological, and sociological; the second, three: descriptive, interpretative, or evaluative. Bogdan and Biklen (1992) discussed “historical organizational case studies,” “observational case studies,” “life-history” case studies, “community [case] studies,”

“situational analysis,” “microethnographies,” “multicase studies,” and “comparative case studies” (p. 62-69). For Yin (1993), case studies can be “exploratory, descriptive, or explanatory” (p. 5) while also being either single or multiple. Even though there are different views existing in literature about how to classify case studies, what

makes [them to be] . . . in *education* is their focus on questions, issues, and concerns broadly related to teaching and learning. The setting, delivery system, curriculum, student body, and theoretical orientation may vary widely, but the general arena of education remains central on these studies (Merriam, 1988 p. 27).

Yin (1993) reported a number of well conducted case studies in education. Some of the topics analyzed include: “(a) educational innovation (Gross et al., 1971), (b) implementation of federal aid-to-education policy (McLaughlin, 1975), (c) excellence in high schools (Lightfoot, 1983; Yin & White, 1986); (d) the uses of evaluation findings in education (Aiken et al., 1979)” (p. 40), (e) “microcomputer implementation (Yin & White, 1985)” (p. 3), and (f) “‘special education’ . . . in four states”: Massachusetts, South Dakota, North Dakota, and New Jersey (Pyecha et al., 1988) (p. 21).

Researchers interested in vocational-technical education and training have been using the case study method too. Spierer (1980, p. 17) alluded to two case studies in that area: a multi-site case study conducted by the National Center for Research in Vocational Education “to identify and describe the factors associated with the differences in job placement rates as reported by states” (McKinney, Gray, and Abram, 1978), and another one involving “eight sites to identify and describe factors that affect placement rates in secondary vocational education programs” (McKinney et al., 1980). Merriam (1988, p. 30) reported a “case study done by Kline (1981) of a back-to-industry program for vocational instructors at a junior college.” Yin (1993, p. 8) discussed “a study of

local job training and economic development efforts.” A more recent example is a study of the vocational and technical education and training system of Turkey conducted by the Center for Occupational Research and Development with the final report being released in July, 1994.

The case study method has proven to be a valuable tool for investigators. Presently, there are key works on how to do case studies, and fortunately a growing number of texts on research paradigms and strategies include the case study method among the various designs proposed. As alluded to before, the case study design has been often used by researchers in traditional and practice-oriented fields, however, it still needs to gain more acceptance from educators. They have underutilized a dynamic research method which can help to provide significant advance in the educational field (Yin, 1993, 1994).

The Delphi Technique

Delphi is one of the existing methodologies for doing subjective/intuitive futures research. That is, “instead of relying on data and information,” such methodologies “mainly rely on the knowledge, experience, talent and intuition of the experts” (Masini, 1993, p. 78). Delphi was named after the most famous oracle in ancient Greece (Linstone, 1978; Whaley, 1995).

The Delphi technique was developed in 1954 by Gordon Resher, Olaf Helmer Palmer, and Norman Dalkey at the Rand Corporation (Weatherman and Swenson, 1974; Linstone, 1978; Masini, 1993). It was initially used for forecasting defense technology needs. After having been given a definite structure in 1964, it started to be “used for long-

term planning in the scientific and technological fields” (Masini, 1993, p. 107). Since its first application at the Rand Corporation, the Delphi method has been widely used in the United States, in Europe, and in Japan but not to the same extent in developing countries (Linstone, 1978; Masini, 1993).

There are many definitions of Delphi in the literature. Among them are Helmer’s (1967; in Weatherman and Swenson, 1974), Joseph’s (1974), Weatherman and Swenson’s (1974), Linstone and Turoff’s (1975; in Linstone, 1978), Delbecq, Van de Ven and Gustafson’s (1975; in Murry and Hammons, 1995), Jantsch’s (1976; in Masini, 1993), World Futures Society’s (1977; in Masini, 1993), and Phi Delta Kappa’s (1984). The essence of such definitions is the same, the differences among them being related to the nuances their proponents wanted to stress.

The definition for use in this study is Helmer’s. He stated that “the Delphi Technique is a carefully designed program of sequential individual interrogations (usually best conducted by questionnaire) interspersed with information and opinion feedback” (as cited in Weatherman and Swenson, 1974, p. 97).

Delphi relies on an idea that is very simple: many heads produce better thinking than a single one (Dalkey, 1969, in Morrison, Renfro, & Boucher, 1984; Kauffman, 1976). According to Dalkey (1969) such assumption is supported by “the argument that a group estimate is at least as reliable as that of a randomly chosen expert” (Morrison, et al., p. 47).

Kauffman (1976) viewed Delphi as a “combination of the poll and the commission approaches, preserving the advantages of each, while minimizing the disadvantages” (p. 104), and Linstone (1978) sees it as a “communication process” (p. 275).

Any of the two circumstances below allows Delphi to be used as a valid research method:

1. The problem does not lend itself to precise analytical techniques but can benefit from subjective judgements on a collective basis.
2. The individuals who need to interact cannot be brought together in a face-to-face exchange because of time or cost constraints. Further, a conventional conference tends to be dominated by particularly strong personalities or to give rise to undesired bandwagon effect. (Linstone, 1978, p. 275)

Weatherman and Swenson (1974) stated that the Delphi has four distinct characteristics: informed intuitive judgements, anonymous responses, controlled feedback and statistical group response. They detailed such characteristics as shown below:

1. The technique relies on the strength of informed intuitive judgement on topics for which reliable objective evidence cannot be obtained, using a panel of persons nominated for their acknowledged competence in the field.
2. Anonymity is deemed essential and is achieved through the use of questionnaires in which specific responses are not later associated with individual members of the group. The purpose of anonymous responses is to reduce undesirable aspects of group interaction, especially the influence of socially dominant individuals that occurs in face-to-face confrontation.
3. The statistical summary of previous round responses reported to participants serves several functions. [The] feedback is designed to produce a more carefully considered group response; it is supposed to hasten the development of consensus; and, in conjunction with the anonymity feature, it permits consensus to be reached without asking the group to arrive at a common opinion . . .
4. The manager of a Delphi study, through selection of panel and items, as well as through selection of feedback data, attempts to reduce irrelevancies ("noise") and to retain centralized control of the exercise (pp. 98-99).

Many authors provided descriptions of what they thought to be the ideal Delphi procedure and variations of the technique (Weatherman & Swenson, 1974; Kauffman, 1976; Linstone, 1978; Morrison, Renfro, & Boucher, 1984; Phi Delta Kappa, 1984;

Masini, 1993; Murry & Hammons, 1995; and Whaley, 1995). Such descriptions differ in the number of steps they present and in the number of details they provide. According to Linstone (1978), “it is not surprising that as the use of of Delphi has spread, many variations of the process have surfaced” (p. 275).

Whaley (1995) provided a list of ten steps that comprise the implementation of the Delphi Technique:

1. Choose a team of individuals to develop and monitor the Delphi.
2. Select members of the Delphi Panel. These individuals should be experts in the area under investigation. Depending on the scale of the investigation and resources available, there should ideally be between 10 and 25 respondents. The respondents may be local, regional, national, international, or any combination. This would depend on the area of exploitation, amount of time, and amount of money available for postage, etc. [Masini (1993) said the ideal number was 7 (p. 109). Weatherman and Swenson (1974) stated that “no optimal number of panels is dictated; however, a key variable in the use of the Delphi is a sufficient number of representative experts. Most studies tend not to elaborate on the manner in which the sample was drawn” (p. 104)].
3. Develop the first round of Delphi questionnaires. Typically, the first round allows more general responses which are then more specifically focused in the later rounds of questioning.
4. Test the questions for appropriateness - are you asking the right questions for your area of exploration? Be sure the wording of the questions is clear and easy to answer - respondents don't generally care for questions which require essays in response.
5. Send the first round of questionnaires to the chosen panel of experts.
6. Analyze the results of the returned questionnaires.
7. Based on the analysis, prepare a second round of questions with any necessary modifications such as narrowing the focus of the questions. If there are extreme responses from the first round of questionnaires, give the panel member(s) an opportunity to explain the response.
8. Send the second round of questionnaires to the panel.
9. Analyze the returned questionnaires (steps 7 & 8 repeated for as many rounds as you choose).
10. Prepare a report of the findings and/or conclusions (p. 24).

Whaley's Delphi procedure is very similar to Linstone's (1978) which described the original Delphi. Morrison, Renfro, and Boucher (1984) presented the procedure in 15

steps which according to them “may appear platitudinous, and virtually no one has ever followed all of them in a single Delphi. Yet the intrinsic quality and practical value of Delphi results are certain to be a function of the degree to which they are followed” (p. 51).

Phi Delta Kappa (1984) reported that among the advantages of using the Delphi technique are: it “often leads to consensus and defended minority positions”, “it is useful when the input of consultants is desired, and it can be used to obtain information from a large number of people” (p. 21). Phi Delta Kappa (1984) also indicated that the technique not only “focuses attention on the desired topic areas and permits a high degree of control by those conducting the survey” but also “has the advantage of usually being regarded as interesting and informative by the participants” (p. 21).

The use of Delphi is advantageous “where a poll is appropriate” because it is “usually a much superior form of poll; where a commission is appropriate, a Delphi may do essentially the same thing with much less expense and much less danger of domination by prestige or personality” (Kauffman, 1976, pp. 105-106). Delphi is possibly more successful when used as “an educational device and as an intragroup communication device” (p. 106).

According to the studies done on the technique, there are some limitations to the method. Phi Delta Kappa (1984) listed five major limitations to Delphi: “the clarity of the questionnaire or survey tool can affect the results;” “the willingness of the panel to reconsider their original opinions will determine whether a consensus can be reached;” “the Delphi technique can suppress extreme points of view by forcing a consensus, thereby limiting the range of the forecasts;” “the value of the results depends on the competency of

the participants;” and “the results of this technique are intuitive rather than scientifically obtained” (p. 21). Weatherman and Swenson (1974), Linstone (1978), and Masini (1993) discussed the limitations of Delphi extensively. The clarification of the latter, however, has not discredited the use of Delphi as a research tool, but rather allowed more certainty when it is appropriate to use the methodology and how it should be implemented.

After its initial use in forecasting technology and military problems, Delphi was used in futures research in many fields. Linstone (1978) stated that “the process has been applied to exposing priorities of personal values and social goals, explicating the pros and cons associated with potential policy options, evaluating budget allocations, examining the significance of historical events, and distinguishing or clarifying perceived and real human motivations” (p. 275).

According to Weatherman and Swenson (1974), there are several types of applications for the Delphi technique. They state that Delphi is mostly used as a “forecasting probe,” as a “strategy probe,” as a “preference probe,” as a “detector of perceptions of a current situation,” in addition to others (pp. 99-102).

The Delphi technique used as a “preference probe . . . has been more frequently reported in the educational literature” (Weatherman & Swenson, 1974, p. 100). In this type of probe, the questions about the future are posed “in terms of what ‘should be,’ rather than what ‘will be’” (pp. 100-101) differently from forecasting or strategy probes, and “a typical application of a Delphi study [as a preference probe] is in setting institutional goals” (p. 101).

Some earlier examples of the use of preference probes in education are: “Helmer’s study (1967) of priorities for use of federal education funds;” “Norton (1970) reports on

establishing goals in planning for a new university;” Cyphert and Gant’s (1970) study “to elicit preferences from the faculty of the Schools of Education at the University of Virginia and ‘other concerned individuals;” and University of Minnesota’s use of a Delphi study [Wayne, 1973] “as a needs assessment tool for determining organizational and administrative priorities” in special education administration (as cited in Weatherman and Swenson, 1974, p. 101). A more recent example of the use of preference probes in education is Godsey’s (1992) study “as to what services should be offered by college learning centers” in the United States in the year 2002 (p. 61).

Morrison, Renfro, and Boucher (1984), cited examples of the use of Delphi in policy and in planning studies and in higher education. Young’s (1978) study “to determine priorities for a program in family studies” is an example of the former, and Fendt’s (1978) one “for getting planning data to meet the needs for adult part-time students in North Carolina” (p. 51) is an example of the latter.

Godsey (1992) alluded to several studies using Delphi in education: Hopkins (1972) “used the technique for a state-level study of the future role of vocational and technical education in Oklahoma;” Tiedmann (1985), “to predict the future of higher education media services, provided decision making information for use in long-range planning by instructional technologists and academic administrators;” Baker (1988), “to survey experts in education, business and industry and Vocational Education to identify the essential criteria that characterized a technologically literate person;” Vela (1989), “to identify the responsibilities and competencies that would be required for counselors in the California community colleges in the 1990’s;” Burns (1989), “to validate the level of significance in practice of key components and characteristics of learning assistance

centers;” and Long (1991) who “used the Delphi process with professors of adult education to obtain consensus on the use of technology, research methodology and relationships with business and industry in determining continuing higher education” (pp. 28-29).

For more recent examples of the use the Delphi technique in education, we can allude to a national (USA) study conducted in 1992 by Murry and Hammons (1995) with the purpose of developing “a core set of management audit assessment criteria for evaluating the effectiveness of administrative personnel” and “to determine the most practical procedure for implementing a management audit program in a community college setting” (pp. 430-431). Another one performed by Reneau and Finch (1996) was designed “to determine vocational education’s potential contribution to the future economic development of Belize” (p. 10).

The Delphi method has proven to be a useful tool for researchers throughout the years. It has been frequently used in the search to the solution of problems in Education. In general, Delphi has been especially useful in cases of problems not suited to analytical techniques, in situations in which the use of objective methods is non practical due to the costs, geography, or scheduling involved, or on issues “in which there is excessive disagreement [about them] due to value sensitiveness” (Masini, 1993, p. 110).

Delphi has been often used in futures research, has evolved throughout the years, and there are no indications it will stop being used to help solving problems that are within its range of possibilities.

Summary

The Brazilian technological education system has its origins in the beginning of the 20th century and has been through many reforms since then. Presently it is owned, maintained, and operated by the Ministry of Education and Sports. During its past it has suffered the influence of national, regional, local, and international developments which continue to happen in the present.

Brazil is a country almost the size of the United States of America but with a smaller population which is growing a little bit faster. The Brazilian economy is about one tenth of the US economy, however it is the eighth economy in the World. The quality of life in Brazil is the 62th on the planet while the US quality of life is 4th. While the United States is the major world power and a developed country, Brazil is, maybe, the most powerful country of South America but still a developing country.

Both Brazil and the United States are federations being the latter forty-six years older than the former. They have a number of similarities but the development and present organization of their vocational-technical and education structures are more a display of differences.

The federal involvement over education in Brazil is much more significant than in the United States whose primary role in education belongs to the states. While Brazil has a federal network of VTET schools and centers, the USA has nothing of its kind.

The federal technological education system is spread throughout Brazil being part of a large structure of VTET providers around the country. Along with the Paula Souza System (São Paulo state), it is most known and respected presence in VTET in Brazil. The

S System is another very visible and respected present but it is semi public. None of the three however are perfect. In fact, the whole system of VTET in Brazil is under reform as a result of federal government determinations issued in the second half of the 1990s. While preparing the reforms the federal government consulted internal stakeholders (representatives of employers, labor, providers of VTET, public agencies, educators, practitioners, students, and other non governmental organizations) and studied what was happening in other countries (mainly, England, France, Germany, and the United States of America). The present reform is not a consensual one and can be undone just by decrees and executive orders or just by its wide non-acceptance as has already happened in Brazil with other educational reforms.

While the non federal systems of VTET have a larger flexibility for implementing the reform on VTET, the federal one has precise determinations about what should be done. As the Cardoso administration was re-elected for an additional term until 2002 and as those in charge of VTET at the federal level, including the technological education system, remained in their positions, it is unlikely that the present reform will be halted until the end of 2002.

The federal schools and centers will remain federal however the federal system will not be expanded. They will continue to provide secondary level VTET but not in a joint mode with “academic” education as before. They will be more responsive to the market needs, and effectiveness and increased coverage are the buzzwords. All federal school were required to provide non formal VTET which previously was optional. A number of the federal schools are being authorized to offer associate of applied sciences programs. A “cefetization” policy was initiated and in the end of 1998, twelve ETFs (federal

vocational-technical schools) were informed that they would be upgraded to federal technological education centers which are educational institutions which have wider attributions than the schools. As a whole, the federal technological education system is being reshaped to serve as references (along with other non federal providers) for VTET in Brazil.

CHAPTER III

DESIGN AND PROCEDURE

Introduction

The primary purpose of the study is to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country's needs in technological education by the year 2025.

The research and data available on vocational-technical education and training in Brazil is minimal if compared to what is available in the United States. There is not an adequate body of knowledge or pool of information on the Brazilian experience in the field available to be consulted by public policy makers in Brazil to support planning the federal technological education system beyond 5 years let alone 30 years, as policy makers develop a peoplepower training delivery system. The problem is that public policy makers in Brazil continue to make operational and policy decisions about the federal technological education system without an adequate knowledge base related to policy alternatives appropriate to the Brazilian culture.

The research question for the study is: What is the best strategy for the federal technological education system in Brazil to follow in order to contribute for the development of an appropriately trained civilian workforce for the first half of the 21st Century?

To answer the research question a futures-oriented study was developed making use of the case study method and Delphi technique in conjunction. An overview on the two methodologies was provided in the last two sections of the review of literature prior its summary. This chapter shows how the case study method was used to construct the sections on Brazil, Brazilian education, Brazilian VTET, and VTET in Selected Countries of the review of literature having twelve questions as conducting wire. It also depicts how the scenarios on Brazil in 2025 were obtained based in one process question. Finally there is description of the use of the Delphi technique in this study was developed around two questions which were present in all rounds of the survey that was conducted.

The sections of the review of the literature on Brazil, Education in Brazil, VTET in Brazil, and VTET in Selected Countries set the ground zero for the investigation about the future of the Brazilian federal technological education system. The review of literature on scenarios development projects and the Delphi study addressed Brazil and the Brazilian VTET by the year 2025. The adequate use of the findings allowed the research question to be properly answered thus meeting the purpose of the study. That is done in the last chapter through the conclusions and recommendations.

Once an overview of this chapter is provided, the first of the three sections of this chapter are going to be addressed.

The Case Study

Introduction

The case study method was used to provide “an intensive, holistic description and analysis of” (Merriam, 1998, p. 16) the Brazilian federal technological education system based on its, past, present, and possible trends. That was done as the review of literature of this work. Not only the description but also the analysis were extracted from the sources of information used in the case study, that is, the researcher avoided the most possible to express his own opinion to be the most impartial the possible, however the investigator admits that there are limitations to this impartiality, as the format chosen to the case study, the impossibility of having access to all existing sources, the amount of use of each of the sources, the quantity of sources expressing different views, and the weaving of the information collected to build the case study pose as a threat to such approach. However, the researcher believes that the case study that resulted functions properly as the review of literature which is meant set the appropriate base for dealing with the future of the Brazilian federal technological education future.

According to Wilson (1979), case studies have four characteristics, that is, they are “particularistic,” “holistic,” “longitudinal,” and “usually quantitative” (In Spierer, 1980, p. 13). By particularistic, it is understood that they “focus on events on a particular setting” (Spierer, p. 13); in this case, the federal technological education system [FTES] in Brazil. By holistic, it is meant that they try “to capture the totality of the phenomenon” (Spierer, p. 13); in this case, the FTES is seen through its different aspects through different views. By longitudinal, it is comprehended that they “tell a story over time”

(Spirer, p. 14); in this case, the FTES is described and analyzed by telling its history. By usually quantitative, it is implied that they use “a variety of methods - both quantitative and qualitative - to collect information” (Spirer, p. 14); in this case, the researcher used participant and direct observation (in different periods), and data mining in documentation (books, journals, reports, etc.) and archival records, plus conducting “informal” interviews (conversations with some of the present major players in the FTES).

While Spierer (1980), Yin (1994), or Isaac and Michael (1995) described a neat format for developing a case study, Merriam (1988) stated that “throughout the case study process, from designing the study, to data collection, to data analysis, there are no set procedures or protocols that one follows step by step” (p. 37). The procedure followed to develop this case study is addressed below.

Steps of the Case Study

1. Individuals to develop the case study. Researchers (Paulo T. C. Henriques under Garry R. Bice’s guidance)

2. Selection of the Unit of Analysis. The unit of analysis, the federal technological education system, originated from the dissertation topic.

3. Selection of the Site. The site, the Federative Republic of Brazil, also originated from the dissertation topic.

4. Setting Boundaries. In order to address the future of the FTES (italics added) resting in solid ground, the researcher decided that the case study should cover not only the past and present (first Cardoso administration, that is, January 1, 1995 until December 31, 1998) but also possible trends of the Brazilian FTES. It was also taken in consideration that the Brazilian FTET is a part of two structures: vocational-technical education and training, and the education in general - the former is to substantial extent part of the latter. It was also taken into account that education and training are inserted in the Brazilian socio-economic-cultural environment and have received influence overtime of the developments in education and training in England, France, Germany, and the United States of America.

Note: At first the researcher thought about including part of the futures “area” of dissertation in the case study, however, later it was found that it was better located in the “Findings” chapter.

5. Access to the Unit of Analysis. As the researcher has worked for the FTES in various capacities since February 1983, access to the unit of analysis did not present to be a problem. From 1983 to 1995, the researcher worked as instructor and administrator in a federal vocational-technical education school. From 1987 to 1994, the researcher worked as consultant to the Secretariat of Secondary and Technological Education [SEMTEC] of the Ministry of Education and Sports [MEC] for national and international projects in the vocational-technical education and training. From 1992 to 1995, the researcher was adviser to the planning chamber of the National Council of General Directors of the Industrial Federal Vocational-Technical Schools. In 1995 the researcher was adviser to the

SEMTEC/MEC. In the 1996-1997 period the researcher was MEC's coordinator of two administrators' development programs delivered by the School of Occupational and Adult Education, College of Education, Oklahoma State University - one program was completed, the other was interrupted due to funding problems. Since 1996 the researcher is licensed from the FTES to complete his doctoral studies.

6. Organization of the Case Study. Based on the information sources already available to the researcher prior to the beginning of the study, the researcher planned to have the following format for the case study:

- a) The Brazilian Education System;
- b) Vocational-Technical Education and Training Systems in Brazil;
- c) The Brazilian Federal Technological Education System;
- d) Selected Countries' Vocational-Technical Education and Training Systems:
The United States of America, France, Germany, and England and Others;
- e) The perspectives of International Labour Organization, the World Bank, and Inter-American Development Bank; and
- f) Brazil in 2025.

Sections a, b, and c would not only deal with the past, present, and trends, but also build on the previous one. Section d would address the present status of the VTET systems in the selected countries. Sections e and f would deal with part of the futures "area" of the dissertation which at first was envisioned as part of the case study.

Sections a through f were intended to be developed around 15 process questions:

- a) The Brazilian Education System.

- a.1) How is Brazilian education system structured?
- a.2) Why is Brazilian education structured the way it is?
- a.3) Is the present structure of the Brazilian education bound to change?
- b) Vocational-Technical Education and Training Systems in Brazil; and
- c) The Brazilian Federal Technological Education System
 - b.c.1) What are the vocational-technical and training systems existing in Brazil?
 - b.c.2) What is(are) the role(s) of each vocational-technical educational and training systems existing in Brazil?
 - b.c.3) How are the Brazilian vocational-technical education and training systems structured?
 - b.c.4) Why are the Brazilian vocational-technical education and training systems structured the way they are?
 - b.c.5) What are the strengths and weaknesses of the Brazilian vocational-technical education and training systems?
 - b.c.6) What are the change trends for the Brazilian vocational-technical education and training systems?
- d) Selected Countries' Vocational-Technical Education and Training Systems: The United States of America, France, Germany, and England and Others.
 - d.1) How are the vocational-technical education and training systems structured in the United States of America, France, Germany, and England (besides others if necessary)?

- d.2) Why are the vocational-technical education and training systems in the United States of America, France, Germany, and England (besides others if necessary) structured the way they are?
- d.3) What are the strengths and weaknesses of the vocational-technical education and training systems in the United States of America, France, Germany, and England (besides others if necessary)?
- d.4) What are the change trends for the vocational-technical education and training systems in the United States of America, France, Germany, and England (besides others if necessary)?

e) The perspectives of International Labour Organization, the World Bank, and Inter-American Development Bank.

- e.1) What are the views of the International Labour Organization, of the World Bank, and of the Inter-American Development Bank about vocational-technical education and training for the first half of the 21st Century?

f) Brazil in 2025.

- f.1) What are the optimist, pessimist and conservative scenarios for Brazil in 2025?

As the case study evolved, it became clear that some of the questions had to be rewritten to better guide the study or even abandoned because they could not be answered (despite the investment in time and money, the information needed to respond them either could not be found or the data available was outdated). Also it was noted that while some process questions proved to be not relevant to the study, other important ones were

missing. The final version of the organization of the case study along with the 12 process questions that provided direction to the construction of each of its sections are displayed below:

a) Brazil: An Overview.

a.1) What is Brazil?

b) Education in Brazil.

b.1) How is Brazilian education structured?

b.2) Why is Brazilian education structured the way it is?

b.3) Is the present structure of Brazilian education likely to change?

c) Vocational-Technical Education and Training in Brazil.

c.1) How is vocational-technical education and training structured in Brazil?

c.2) Why is Brazilian VTET structured the way it is?

c.3) Is the present structure of Brazilian VTET likely to change?

c.4) What is the Brazilian federal technological education system?

c.5) How is the Brazilian federal technological education system structured?

c.6) What are the strengths and weaknesses of the Brazilian federal technological education system?

c.7) What are the change trends for the Brazilian federal technological education system?

d) Vocational-Technical Education and Training in Selected Countries England, France, Germany, the United States of America

d.1) How is vocational-technical education and training structured in England, France, Germany and the United States of America?

Notes: a) the section “Brazil: An overview” was found necessary to “open” the case study; b) the section “The Brazilian Federal Technological Education System” was included in the section “Vocational-Technical Education and Training in Brazil” being the focus of the latter; c) the section “The perspectives of International Labour Organization, the World Bank, and Inter-American Development Bank” on VTET was excluded due to unfeasibility in developing it. Most of the publications about policies and related themes on VTET from those agencies (and others such as OECD, UNESCO, OAS) were either outdated or developed by authors who were said not to be speaking on behalf of such organizations. Despite the money (the researcher purchased the most recent publications about policies or related themes on VTET from such international agencies) and time spent, it was not possible to answer the question properly, particularly in relation the role of the national governments in VTET; and, d) the section “Brazil in 2025” was found to be better located in the “Findings” chapter.

7. Data Collection. The data collection did not happen in a single moment but in a series of moments that happened before and during the writing of the case study.

The data collection methods used by the researcher were participant (since 1983 the researcher works for the FTES) and direct (he has been to a substantial number of FTES sites and knows personally those who run SEMTEC/MEC and the FTES institutions) observation (in different periods), and data mining in documentation (books, journals, reports, etc.) and archival records, plus conducting “informal” or “open ended” interviews (conversations with some of the present major players in the FTES).

Before starting the doctoral program the researcher had already submitted a research proposal to the CAPES Foundation which is his sponsor. In such proposal, there was a list of references to be used at starting point for the research. It included documents (books, journals, reports, papers, magazine and newspaper articles, conferences proceedings) and archival records (institutional and personal) which the researcher had gathered since at least 1983, however the personal experience of the researcher was an asset too (besides Brazil and the United States, the researcher also had previous direct contact with VTET systems of Hungary, Italy and United Kingdom).

Throughout the doctoral program, the researcher continued to collect information in the United States, in Brazil (through the various trips he took during the graduate program), and abroad. Among the various points of data collection were:

- a) required courses readings and classroom discussions (also over Internet (listservs or “learning space [Lotus Notes]”);
- b) library research on campus (dissertations, theses, books, journals (mostly the Journal of Vocational Education Research and the Journal of Vocational and Technical Education), papers, reports, magazines (mostly Techniques, The Economist, U.S. News & World Report), and others) on printed materials or via electronic means available (OPAC, ERIC, etc.) other than Internet;
- c) visits to regular (in various states of Brazil and the USA), agencies/organizations (Fundação Instituto Brasileiro de Geografia e Estatística [IBGE] (João Pessoa, Brazil), Instituto Nacional de Estudos e Pesquisas Educacionais [INEP] (Brasília, Brazil), Inter-American Development Bank [IDB] (Washington, D.C.), and The World Bank

(Washington, D.C.)), and online (The European Centre for the Development of Vocational Training [CEDEFOP], European Union [EU], IDB, Instituto de Pesquisa Econômica Aplicada [IPEA], Organisation for Economic Co-operation and Development [OECD], International Labour Organization [ILO], The World Bank, United Nations [UN], UNESCO, plus private companies (Amazon, Barnes and Noble, Booknet, Siciliano, etc.) bookstores to search books, reports, papers, etc.;

- d) private sources: published and non published Brazilian thesis, dissertations, and government' and non governmental organizations' documents on education and VTET;
- e) public sources: Brazilian, USA, and United Kingdom governments documents on education and VTET; legislation on education; S System documents; Organization of American States [OAS];
- f) purchase from publishers' catalog publications on paper and online;
- g) downloaded reports, papers, informative materials, newsletters, and others from the Internet of the national education ministries/departments/agencies/educational institutions (Brazil, France, Germany, United Kingdom, and United States of America, Brazilian Ministry of Labor, Brazilian Ministry of Foreign Relations, Brazilian Ministry of Administration and Reform of the State, Brazilian Secretariat for Strategic Affairs, IBGE, INEP, IPEA, etc.), international agencies/organizations (CEDEFOP, EU, Free Trade Areas of the Americas [ALCA/FTAA], IDB, ILO, Common Market of South America [Mercosul], OAS, OECD, The

World Bank, UN, UNESCO), Latin American Network of Data Communication for Technological Education [REDELET], National Network for Research [RNP], the Brazilian Society for the Progress of Science [SBPC], FTES schools and centers, S System national home pages, and unions (Associação Nacional dos Docentes de Ensino Superior [Andes], Federação de Associações dos Servidores de Universidades Brasileiras [Fasubra Sindical], Confederação Nacional dos Trabalhadores de Educação [CNTE]);

- h) free publications from the Center for Occupational Research and Development [CORD], the National Center for Research in Vocational Education [NCVRE] - University of California, Berkeley, and The Planning Exchange/Scotland;
- i) professional associations memberships, and subscription of their journals and other publications: Brazilian Association for Production Engineering [ABEP], Association for Career and Technical Education [ACTE] (former American Vocational Association [AVA]), International Vocational Education and Training Association [IVETA], American Vocational Educational Research Association [AVERA], World Future Society [WFS], Association for Supervision and Curriculum Development [ASCD], Kappa Delta Pi, and Phi Kappa Phi;
- j) participation in annual conventions (ACTE/IVETA (1995-1998) and Tech Prep network (1995-1997)) besides other events (50th Anniversary of the Organization of the American States [OAS] - Washington Conference of the

Americas (1998), 50th Annual Convention of the Brazilian Society for the Progress of Science [SBPC] (1998), and others);

- k) coordination of Brazilian government officials visits to the USA and two human resources development projects developed for the Ministry of Education and Sports in Brazil and the USA by Oklahoma State University (1995-1997),
- l) Brazilian journals (Universidade e Sociedade), newsletters (Jornal da Ciência [every issue], Escola Técnica Federal da Paraíba [every issue]), conferences proceedings (on general education and VTET, e.g., SBPC, International Conference on Technological Education [CONET International], National Conferences on Education [CONEDs], and others);
- m) Brazilian weekly general news magazines (Veja [every issue] and Isto é), bi-weekly business news magazine (Exame [every issue]), newspapers (Correio Braziliense, Gazeta Mercantil, Jornal do Brasil [every issue], Folha de São Paulo, O Estado de São Paulo [often], O Globo, O Norte [every issue]), news agencies (Agência Estado, Radiobrás [every issue]) in print or online;
- n) meetings and conversations with FTES stakeholders; and
- o) e-mails exchanged with FTES stakeholders.

8. Data Organization. Once it was defined the first draft of how the case study would be structured, the sources of information began to be grouped according to the sections they were supposed to be used. If a source of information was to be used in more

than one section of the case study, it was placed in the group relative to the first section it was going to be used.

After being browsed, if a material was of interest for a section, it was read. The parts of the material that could be used in the case study were marked with highlighters, PostIt Notes, or pencil leads. Its bibliographical data was entered in a provisional bibliography that was created for for each section of the case study.

Some comments about the sources of information for every section:

- a) Brazil: An Overview - The past came most from Brazilian history and Brazilian economic history sources (mostly books, almanacs, papers, published theses, and IBGE and international agencies reports). The present originated mostly from IBGE and international reports, magazines, newspapers, news agencies, almanacs, legislation, books analyzing the Brazilian present and proposing or not alternatives for the future;
- b) Education in Brazil - the past came most from Brazilian education history, educational policy, education versus economy, political system, economic development, etc., educational funding, organization of education, educational legislation sources (mostly books, papers, published and non published theses and dissertations, legislation, Ministry of Education documents (other than INEP's), INEP publications, and IBGE and international agencies reports). The present originated mostly from Ministry of Education documents (other than INEP's), INEP publications, legislation, IBGE and international agencies reports, magazines, newspapers, news agencies, almanacs, conferences proceedings, books/papers analyzing the

Brazilian education at present and proposing or not alternatives for the future;

- c) Vocational-Technical Education and Training in Brazil - the past came most from Brazilian VTET history, VTET policy, VTET versus economy, political system, economic development, etc., VTET funding, organization of VTET, VTET legislation sources (mostly books, papers, published and non published theses and dissertations, legislation, Ministry of Education documents (other than INEP's), INEP publications, and IBGE and international agencies reports). The present originated mostly from Ministry of Education documents (other than INEP's), INEP publications, Ministry of Labor documents, legislation (including recent bills), S System publications, Paula Souza System publications, NGOs publications, IBGE and international agencies reports, magazines, newspapers, news agencies, conferences proceedings, books/papers analyzing the Brazilian VTET at present and proposing or not alternatives for the future;

Note: 1) as alluded to in Chapter II, the first Brazilian masters' program in education was established in 1965, while the first doctoral program in education was established in 1976, both at the Pontifical Catholic University of Rio de Janeiro [PUC-RJ] (Yamamoto, 1996). Presently, there are over 50 Master's programs in education in Brazil, in addition to over 10 doctoral programs in the same area too (Yamamoto, 1996);

2) the researcher searched theses and dissertations related to Brazilian vocational-technical education and training. He found forty theses and four dissertations. All theses were developed in Brazilian universities, two dissertations at a Brazilian university (PUC-SP,

197-, and 1984, and two in USA (Stanford U., 1981, and Oklahoma S.U., 1988). The earliest thesis dates from 1979 (one could not have its date confirmed but for sure it was completed before 1982). The theses were produced at fourteen universities, Getulio Vargas Foundation - Rio de Janeiro [FGV-RJ], and two technological education centers (Minas Gerais [CEFET-MG] and Paraná [CEFET-PR]). FGV-RJ and UFMG, each five theses. PUC-RJ, UFF, UFRGS, and CEFET-MG, each four theses. UFRJ, three theses. UNB, two theses. PUC-RS, PUC-SP, UFBA, UFC, UFES, UFMA, UFPB, UFRN, and CEFET-PR, one each. Twenty-one theses were developed in non identified master's programs (most probably in education). Five at FGV-RJ (at IESAE, probably at their Master's in Education). Five in Masters' of Education. Four in Masters' of Technology. One in each of those programs: Master's in Education and Work, in Information in Science and Technology, in Production Engineering, in Public Policies, and in Technological Education; and 3) compared to the quantity of theses and dissertations on VTET developed at USA universities, there is not a substantial number of graduate works on VTET developed at Brazilian institutions yet - there may be more theses and dissertations of VTET developed in Brazilian higher education institutions, however not that many as many graduate programs are recent. Despite that, out of the five theses, and one dissertation (developed at OSU) that the researcher had access to, two theses and the dissertation proved to be helpful as sources for the present work.

- d) Vocational-Technical Education and Training in Selected Countries - the present status of VTET in England, France, Germany, and the United States came from books, papers, government documents, international agencies reports, one dissertation, NGOs publications, magazines, newspapers,

conferences proceedings, books/papers analyzing VTET in the selected countries at present and proposing or not alternatives for the future. The fact the researcher can read in Portuguese, English, and French was important in the choice of the sources of information available about VTET in England, France, and the USA. As the researcher can not read German, the choice of sources of information about VTET in Germany was more limited.

8. Writing the Case Study. The basic writing procedure for each section was: after having selected (find, browse, read or discard) enough materials related to the section to be developed, the researcher began to write the text in a chronological format. As the section writing moved on, if necessary additional materials were necessary, they were searched. Now and then, even without necessarily looking for information for an specific section, the researcher came across data that he judged to be of interest for that section. The information was then included in the section's text even if its draft had already been completed.

After having written the section of the review of literature on the case study method, the researcher began to develop the case study. Each section was developed around the process questions related to each of them so that the latter would be answered by the former - the answers are implicit on the texts. Each of the sections was developed in a chronological pattern and as a building block for the coming section. The first section to be completed was "Brazil: An overview." The second, "Education in Brazil." The third, "Vocational-Technical and Training in Brazil." The last section was "Vocational-Technical and Training in Selected Countries."

While writing a section, whenever necessary, already written sections were modified to include new information, improve the text, or update or discard information so that the case study met its purpose in the dissertation (unveiling VTET in Brazil) in order to set the basis for the addressing the future of Brazilian Federal Technological Education System.

Brazil in 2025

While the past and present of Brazil, Brazilian education, and Brazilian VTET are addressed in Chapter II (case study) and IV (findings), the future (2025) of Brazil and of Brazilian VTET is covered in Chapter IV (findings) through the sections Brazil in 2025 and the Delphi Study, respectively.

This section of Chapter III describes how the answer for the process question number thirteen, “What are the most probable scenarios for Brazil by 2025?,” was obtained.

Having in mind that the main purpose of the research is to develop an informed strategy for the Brazilian FTES so that it can contribute to meet the country’s needs in VTET by the year 2025 and not in developing scenarios for Brazil as a whole for the year 2025, the researcher searched for studies that had already developed scenarios for the 2020s.

The search for the scenarios for the 2020s did not happen at a single point in time but in a series of moments that happened since 1996 until the section on scenarios for Brazil in 2025 was written, that is, 1999. The researcher had already had contact with

some works in the futures area: one by Naisbitt (1984), two by Toffler (1980, 1991), and one by Toffler and Toffler (1995).

The data collection method used by the researcher was data mining in documentation (books, journals, reports, etc.). Among the various points of data collection were:

- a) required readings of the course “Educational Futures” and classroom discussions (also over Internet (listservs or “learning space [Lotus Notes]”);
- b) library research on campus (dissertations, theses, books, journals, papers, reports, magazines, etc.) on printed materials or via electronic means available other than Internet;
- c) visits to regular (in various states of Brazil and the USA), agencies/organizations (Fundação Instituto Brasileiro de Geografia e Estatística [IBGE] (João Pessoa, Brazil), Inter-American Development Bank [IDB] (Washington, D.C.), and The World Bank (Washington, D.C.)), and online European Union [EU], IDB, Instituto de Pesquisa Econômica Aplicada [IPEA], Organisation for Economic Co-Operation and Development [OECD], International Labour Organization [ILO], The World Bank, United Nations [UN], World Future Society [WFS] plus private companies (Amazon, Barnes and Noble, Booknet, Sicialiano, etc.) bookstores to search books, reports, papers, etc.;
- d) publishers’ catalogs of publications on paper and online;
- e) downloaded reports, papers, informative materials, newsletters, and others from the Internet of the government agencies (particularly those from the

- Brazilian Secretariat for Strategic Affairs, IBGE, and IPEA), international agencies/organizations (EU, Free Trade Areas of the Americas [ALCA/FTAA], IDB, ILO, Common Market of South America [Mercosul], OAS, OECD, The World Bank, UN), National Network for Research [RNP], the Brazilian Society for the Progress of Science [SBPC];
- f) free publications from the Organization of American States [OAS];
 - g) World Future Society publications: The Futurist (magazine, 10 issues/year), Future Times (newsprint supplement to The Futurist, 4 issues/year); Future Research Quarterly (journal, 4 issues/year), Future Survey (monthly abstract of books, articles, and reports concerning forecasts, trends, and ideas about the future);
 - h) Brazilian weekly general news magazines (Veja [every issue]), bi-weekly business news magazine (Exame [every issue]), newspapers (Correio Braziliense, Gazeta Mercantil, Jornal do Brasil [every issue], Folha de São Paulo, O Estado de São Paulo [often], O Globo, O Norte [every issue]), news agencies (Agência Estado, Radiobrás [every issue]) in print or online.

After browsing, material related to this section of the study was read. The parts of the material that could be used in Brazil in 2025 were marked with highlighters, PostIt Notes, or pencil. Its bibliographic citation entered to the Brazil in 2025 provisional bibliography.

Of the existing materials about futures, the researcher selected recent studies on how the future would be in the 2020s. Three types of studies were found: those that discussed/proposed world scenarios/developments in general (without separating per

regions of the globe), those that discussed/proposed scenarios/developments by regions of the globe, and those that discussed/proposed scenarios/developments in Brazil.

In the first group are Cetron and Davies (1997), Cornish (1996), Costanza (1999), Halal, Kull, and Leffmann (1997), Mercer (1997), Molitor (1998), and Petersen (1997). In the second group are: Coates, Mahaffie, and Hines (1997), Hammond (1998), McRae (1994), and OECD (1997). In the last group were the set of reports on the Brazil 2020 Project developed by the Brazilian Secretariat for Strategic Affairs (*Secretaria de Assuntos Estratégicos* [SAE]) which is directly under the Office of the Brazilian Presidency.

None of the works belonging to the first and second groups addressed Brazil's future in particular. The only authors from groups one and two that "indirectly" addressed how Brazil would be in 2025 were Hammond (1998) - his book discussed the future of various regions of the globe including Latin America -, and Coates, Mahaffie, and Hines (1997) - their work addressed the future in three types of countries: World 1 (affluent advanced nations), World 2 (middle level nations), and World 3 (destitute nations). On the other hand, the project developed by SAE provided scenarios for Brazil in 2020 which could be extrapolated for 2025. After a closer look at the work performed by SAE and after comparing the methodologies used and results achieved by the Brazil 2020 Project to the methodologies used by and the results of the studies alluded to above, the researcher decided to rely on SAE's scenarios as the major source for developing the scenarios for Brazil in 2025.

Before providing details about the Brazil 2020 Project and how its scenarios were extrapolated to generate the scenarios for 2025, it is pertinent to indicate that other recent

works that addressed the future of Brazil were found - i.e., Alencar (1996), Banas (1996), Baumann (1996), Costa (1997), Kanitz (1995), Nort (1997), Rotstein (1996), and Teixeira (1996) -, however as none of them addressed the 2020s, they were not used to compose the scenarios for 2025. It is appropriate to indicate that they were useful in helping to form the researcher's mindset about possible alternatives for Brazil's future.

The main sources on the Brazil 2020 Project were Sardenberg (1999) and SAE (1997a, 1997b, 1998, 1999). The following newspaper reports were also useful: "Medo do Caatê" (1998), "O país contra a pobreza" (1998), Rocha (1998), and "Secretaria traça estratégias" (1999). The paragraphs below were paraphrased from them.

According to SAE (1998), the Brazil 2020 Project is

a national project for long term development able to stimulate the reflexion about "the country that we want to be and what we should do to transform such vision in reality" (SAE, 1998, online).

Its development was requested by President Cardoso during his first administration. The Brazil 2020 Project began to be implemented in 1995.

The Brazil 2020 Project has three phases:

- development of prospective scenarios about the Country, having as a horizon the year of 2020;
- development of a desired (normative) scenario based on the wishes and expectations of the Brazilian nation; and,
- definition of referential lines and development of a strategic project of long term development for Brazil (SAE, 1998, online).

The prospective scenarios and the desirable one had already been completed by the end of 1998. Presently SAE is working in the last phase of the Brazil 2020 project.

The process for development of the prospective scenarios happened during 1996 and 1997. The starting point for developing such scenarios was Brazil of the second half of the 1990s. The sources of information “about the main tendencies and conditioning factors at the world and national levels, and at middle and long range” (SAE, 1999, online) were technical bibliography and experts’ opinions. Ten seminars were held and almost one hundred experts were interviewed. Among the Brazilian bibliography used for developing the scenarios were present administration plans, and reports from seven different studies about different aspects of Brazil’s future.

The information collected from the bibliography and experts enabled the establishment of a “coherent game of hypotheses” which had as the most relevant elements invariants (“situations that will remain immutable in all scenarios”), strong tendencies (“situations that may present different rhythms and speeds of innovation in the future”), and central variables (external and internal, “organized under the social, economic, political-institutional, scientific-technological, cultural, environmental, and territorial dimensions”) (SAE, 1997, online). The alternative scenarios generated were a result of “relevant combinations of different states of the central variables” (SAE, 1997, online).

The first phase of the Brazil 2020 Project had as results three alternative international scenarios (Globalization, Selective Integration, and Fragmentation), one probable international scenario (not named), and three alternative scenarios for Brazil (*Abatiapé*, *Baboré*, and *Caaté* - those are native Brazilian names) which were told to be exploratory.

The second phase of the Brazil 2020 project started after the completion of its first phase and was completed by the end of 1998. The sources of information for developing

the desired scenario were the representatives of 48 national organizations representative of the various segments of society who were personally interviewed. Also consulted by mail or email were the representatives of around 280 regional and local organizations. Finally three symposiums were held (one per region: North, Northeast and Centerwest) with 50 people each who were either businesspeople' or workers' leaders.

The information collected enabled not only the development of the desired scenario for Brazil in 2020 (*Diadorim scenario*) but also to determine the priorities of the Brazilian society for 2020 and how they are ranked.

The brief description of the Brazil 2020 Project shows the efforts (time, money, personnel, and other resources) that were invested in developing the scenarios for 2020. The quality of work done, the proximity of 2025 to 2020 (only five-years difference), and the lack of other works about Brazil in 2025 led the researcher to repeat the qualitative part of the scenarios and to extrapolate the figures contained in them for the 2025 scenarios.

The figures for population and economically active population [EAP] were extrapolated from the 2015-2020 period. The figures for percentage of population in poverty, and level of unemployment of the EAP were extrapolated from the 1996-2020 period. The figures for gross domestic product, GDP per capita, and total Brazilian international trade were extrapolated from the 1997-2020 period. The extrapolation of the population and EAP figures used only a five-year period because data about them was available from other sources (HABITAT, 1996; IBGE, 1997b) than the reports on the Brazil 2020 Project so the researcher did not need to be conservative. As the same was not true regarding the other indicators which were only available from the Brazil 2020

Project reports, the researcher preferred to use a longer period to extrapolate the figures for 2025. The figures regarding Brazil in 1996 and 1997 used in the extrapolation process came from the Brazil 2020 Project reports and IBGE (1996a, 1997b). The 1995 data about the countries used in the comparisons present in the 2025 scenarios originated from The Economist (1998).

The scenarios *Abatiapé*, *Baboré*, *Caaté*, and *Diadorim* for 2020 after the changes described above became respectively the scenarios A, B, C, and desirable scenario for 2025 in this work. The latter are presented in Chapter IV in the following format:

- first, immutable situations in all scenarios;
- second, situations that may present different rhythms and speeds of innovation;
- third, probable scenario A;
- fourth, probable scenario B;
- fifth, probable scenario C; and
- sixth, desirable scenario.

Internally, the scenarios for 2025 were organized as follows: cap statement and characteristics grouped in six domains (international, political-institutional, socio-cultural, economic, environmental, and regional).

The probable scenarios for 2025 in conjunction with the results of the Delphi study and also taking in consideration the case study findings constitute the base for the conclusions and recommendations regarding the role to be played by the Brazilian federal technological education system by the middle of the 21st century.

The Delphi Study

Introduction

The Delphi technique was used to identify a desirable role and structure for the Federal Technological Education System in Brazil by the year 2025.

The Delphi technique was used as the research technique because

1. The problem ... [did] not lend itself to precise analytical techniques but ... [could] benefit from subjective judgements on a collective basis.
2. The individuals who need[ed] to interact ... [could not] be brought together in a face-to-face exchange because of time or cost constraints. Further, a conventional conference ... [would tend] to be dominated by particularly strong personalities or to give rise to undesired bandwagon effect (Linstone, 1978, p. 275).

According to Weatherman and Swenson (1974), the Delphi technique has the following characteristics: informed intuitive judgements, anonymous responses, controlled feedback, and statistical group response. Some of its advantages are:

- it often leads to consensus and defended minority positions; and
- it is useful when the input of consultants is desired, and it can be used to obtain information from a large number of people (Phi Delta Kappa, 1984, p. 21).

The use of Delphi is adequate

where a poll is appropriate [because it is] usually a much superior form of poll; where a commission is appropriate, a Delphi may do essentially the same thing with much less expense and much less danger of domination by prestige or personality (Kauffman, 1976, pp. 105-106).

Delphi is possibly more successful when used as “an educational device and as an intragroup communication device” (Kauffman, p. 106)

However the researcher understood that the Delphi technique has some limitations including:

- the clarity of the questionnaire or survey tool can affect the results;
- the willingness of the panel to reconsider their original opinions will determine whether a consensus can be reached;
- the Delphi technique can suppress extreme points of view by forcing a consensus, thereby limiting the range of the forecasts;
- the value of the results depends on the competency of the participants;
- the results of this technique are intuitive rather than scientifically obtained (Phi Delta Kappa, 1984, p. 21).

Weatherman and Swenson (1974), Linstone (1978), and Masini (1993) discussed the limitations of Delphi extensively. The clarification of the latter, however, has not discredited the use of Delphi as a research tool, but rather allowed more certainty when it is appropriate to use the methodology and how it should be implemented.

Taking in consideration all aspects alluded to above, the researcher used the Delphi survey as a preference probe, that is, for determining “experts’ preferences and/or perceptions of a state of affairs” whose questions about the future tend to be “in terms of what ‘should be,’ rather than ‘will be’” (Weatherman & Swenson, 1974, pp. 100-101). It is relevant to report that the Delphi technique use as a “preference probe . . . has been more frequently reported in the educational literature” (Weatherman & Swenson, p. 100) than the other types of Delphi probes.

Steps Prior To The Beginning Of The Delphi Survey

1. Request By Mail Of The Input Of My Committee Members About The Application For Review On Human Subjects Research (pursuant to 45 CFR 46) regarding my research proposal to be submitted to the Institutional Review Board [IRB] of the Oklahoma State University (September 26, 1997). Besides the IRB form, the committee members received the set of materials for the first round of the Delphi Survey (written

solicitation, informed consent form, round I cover letter, and round I survey instrument), and a copy of my research proposal (which they had already approved on April 15, 1997). The deadline for their responses was set on September 30, 1997 (See Appendix B).

2. Submission of the Application for Review on Human Subjects Research to IRB-OSU (October 1, 1997);

3. IRB-OSU Reviewed And Processed The research proposal as “exempt” on October 27, 1997 after some requested minor modifications were made - approval valid for one calendar year (see Appendix X);

4. The Delphi Survey Was Officially Authorized To Begin after IRB-OSU approval was granted.

Steps of the Delphi Survey

Whaley (1995) provided a list of ten steps that comprise the implementation of the Delphi Technique (Whaley’s Delphi procedure is very similar to Linstone’s (1978) which describes the original Delphi):

1. Individuals to Develop and Monitor the Delphi Survey. Researcher (Paulo T. C. Henriques under Garry R. Bice’s guidance).

2. Selection of Members of the Delphi Panel. a) experts were selected based on their *knowledge and experience* in future studies, in Brazilian government policy as a whole, in Brazilian government policies for education, in Brazilian government policies

for vocational-technical education and training, in Brazilian vocational-technical education and training, and in international vocational-technical education and training (publications & *vitas*); b) *purposive sampling* was used to set up the panel of experts (Delphi does not require random sampling of subjects); c) *104 experts* (67 Brazilians, 24 Americans, 13 other nationalities) were invited by mail (November 11, 1997) to participate in the survey (they received a written solicitation and informed consent form [as some experts did not understand English, all materials used in the survey were written in English and Portuguese]) - the deadline for confirmations was set to December 2; d) *30 experts* (17 Brazilians, 6 Americans, 7 other nationalities) agreed on time to participate, *1 expert* that agreed to participate was late (American), *12 experts* (7 Brazilians, 4 Americans, 1 other nationality) replied back choosing not to participate, *57 experts* (40 Brazilians, 12 Americans, 5 other nationalities) did not reply back, and *4 experts* (3 Brazilians, 1 American) were not found; e) as a minimum of *10 experts* participating in the last round of the Delphi survey was the target in mind, the beginning number of 30 participants was appropriate for the survey (The literature does not show agreement on an optimal number of participants, however there are recommendations for the number be at least 10 but not above 30 well-chosen participants - as described by Weatherman and Swenson(1974), and Murry, Jr. and Hammons (1995)).

3. Development of the First Round Survey Instrument. a) The survey instrument contained two open questions based on the process questions:

Question 1) Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in vocational-technical

education and training by the year 2025? If you envision different roles for different futures for different roles be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with in future rounds, if necessary.

Question 2) Based on your perception of how the future may be by the year 2025, how should be vocational-technical education and training in Brazil be organized by the year 2025 - who should provide it, who should fund it, in which format, etc.? If you envision different forms of organization for different futures be free to express your opinions. Do not attempt to rank your predicted forms of organization; this issue will be dealt with in future rounds, if necessary.

4. Testing the Questions for Appropriateness. Certifying that the researcher was asking the right questions for the area of exploration. My committee members (four) were asked to evaluate the Round I Survey Instrument in order to establish whether the questions asked were the right ones for the area of exploration (on September 26, 1997). Their choice was based on their knowledge not only about the research being made but also about the current status of VTET in Brazil (three of them worked in VTET projects for the federal government agencies and educational institutions from 1995 through 1998).

5. Sending the First Round Survey Instrument to the Chosen Panel of Experts.

a) *30 experts* (17 Brazilians, 6 Americans, 7 other nationalities) that had agreed on the survey were sent a cover letter and Round I Survey Instrument (identified solely by a control number) on December 2, 1997 - the deadline for responses was set to January 7, 1998; b) Round I materials were prepared in English and Portuguese (each of the participants received one of the versions); c) Round I materials were sent by mail but the

participants could answer by mail (the Americans and Brazilians received pre-addressed and pre-stamped envelopes, those belonging to other nationalities just pre-addressed envelopes but they were told they would be refunded for mail expenses), by fax (numbers were given in the USA and in Brazil), or by email - the responses sent by mail or fax to the Brazilian address/fax were faxed to the USA; d) as some of the participants did not get to answer on time, they were sent a follow-up letter dated January 11, 1998 (by mail, fax, and email, whenever possible) - some of the participants were contacted by phone too; e) 23 *experts* (15 Brazilians, 6 Americans, 2 other nationalities) of the 30 that had agreed on the survey answered back the Round I Survey Instrument.

6. Analyzing the Results of the Returned Survey Instruments. a) as the responses for the two open questions arrived, they were typed with the help of a word processor - the answers in Portuguese were translated to English; b) after the answers for each question were typed, they were broken down and/or rearranged in the simplest possible statements and allocated to one of the following categories: question one (policy, provider of programs/courses, funding, others), and question two (who to provide it, who to fund it, in what format, other aspects); c) 98 statements were generated from question one and 267 statements from question two which after removing the duplications and fine tuning became 88 for question one and 139 for question two.

7. Development of the Second Round Survey Instrument. Based on the analysis of Round I responses, the Round II Survey Instrument was developed: a) the 88 statements originated from question one were placed after the heading for the question however the categories they belonged were not named (but the statements belonging to

each category were placed in sequence); the 139 statements from question were also placed after the heading for the question however but they were grouped in sequence by categories which were named; b) to each of the 227 statements was added a five point semantic scale whose options were strongly disagree (SD or 1), disagree (D or 2), no opinion (NO or 3), agree (A or 4), and strongly agree (SA or 5); c) none of the 227 statements were identified as belonging to any specific panelist, but they expressed all the answers that had been given by the participants; d) in addition to the Round II Survey Instrument and a cover letter, some extra materials were prepared to be sent to the participants: a description of the present state of Brazilian education, answer sheets, and a communication form; e) the description of the present state of Brazilian education (schooling education in general, vocational-technical education and training specifically, and other issues such as technological education and polytechnical education) was included in order for the participants be able to understand the varied nomenclature presented and positions defended by the panelists - such description was told to be helpful in Round III too; f) the answer sheets (2) for Round II presented an alternative way of indicating the answer for each statement of the Survey Instrument, that is, either the participant sent back the Survey Instrument answered or just the answer sheets; g) the communication form sent included the communication data of each participant - he/she was asked to check its accuracy and send back it back along with the response for the Round II Survey Instrument; h) Round II materials were prepared in English and translated to Portuguese (each of the participants received one of the versions);

8. Sending the Second Round Survey Instrument to the Panel. a) 23 experts (15 Brazilians, 6 Americans, 2 other nationalities) that had answered Round I questionnaire were sent a cover letter and Round II Survey Instrument (identified solely by a control number), a description of the present state of Brazilian education, answer sheets (identified solely by a control number), and a communication form on March 2, 1998 - the deadline for responses was set to March 23, 1998; b) before sending the Round II materials to the participants of the survey, the researcher sent them an update letter dated February 3, 1998, explaining the status of the study; c) Round II materials were only sent to the participants in the beginning of March because it took longer than expected to process all answers for Round I and to prepare the materials for Round II, in addition to delays in getting the answers from the participants (located in North America, South America, and Europe) over a Christmas/New Year period (mail delay and summer vacation in Brazil); d) Round II materials were sent by mail but the participants could answer by mail (the Americans and Brazilians received pre-addressed and pre-stamped envelopes, those belonging to other nationalities just pre-addressed envelopes but they were told they would be refunded for mail expenses), by fax (numbers were given in the USA and in Brazil), or by email - the responses sent by mail or fax to the Brazilian address/fax were faxed to the USA; e) as some of the participants did not get to answer on time, they were sent a follow-up letter dated March 17 or 24, depending upon their location, and April 1, 1998 if necessary, by mail, fax, and email (some of the participants were also contacted by phone); f) 21 experts (13 Brazilians, 6 Americans, 2 other nationalities) of the 23 that had answered the Round I Survey Instrument replied back.

9. Analyzing the Returned Survey Instruments. (steps 7 & 8 repeated for as many rounds as the researcher understands as necessary):

a) as the responses from the panelists for the 227 statements arrived, they were entered in a spread sheet previously prepared for doing all the necessary calculations related to each statement (Arithmetic Mean Response, Number of Respondents, and Number of No Respondents):

$$\text{Arithmetic Mean Response (AMR)} = (P_1 + \dots + P_{23}) / \text{NOR}$$

P_i = Response of the Participant i ($i = 1$ to 23)

P_i may be 1 (SD), 2 (D), 3 (NO), 4 (A) or 5 (SA)

$P_i = 0$ (zero) if a specific participant did not answer it

NOR (Number of Respondents per Statement) = $\text{NOP} - \text{NNR}$

NOP = Number of Participants of Round II = 23

NNR = Number of No Respondents per Statement

b) the frequency distribution for each statement was established, that is, it was determined how many SD, D, NO, A, SA each statement received.

c) *consensus*: According to Murry and Hammons (1995),

since the primary objective of a Delphi study is the achievement of consensus, the researcher should carefully determine in advance what percentage of the panel of responses for any item constitutes consensus. Unfortunately, however, the literature offers little guidance, since there is no agreement concerning the minimum percentage necessary to declare consensus (p. 429).

The researcher decided to define consensus as a minimum of 75 percent agreement on any particular statement at the second round or later. This definition of consensus was also used in a national Delphi study conducted by Murry and Hammons (1995) “to determine

the most practical procedure for implementing a management audit program in a community college setting” (p. 430).

d) consensus per statement:

Criterion A: [(16 SD or D) or (16 A or SA) answers or more] equal to [75% or more] out of a total of 21 possible responses per statement

Total: 42.3% (96 statements) of the 227 statements

Criterion B: $AMR < 2.5$ or $AMR > 3.5$;

Total: 61.2% (139 statements) of the 227 statements

Note: Criterion B was used as the first consensus criterion being replaced by the criterion A which is more exigent.

9a. Development of the Third Round Survey Instrument. Based on the analysis of Round II responses, the Round III Survey Instrument was developed: a) taking in consideration the comments sent by some participants, some of the statements had typographical errors corrected, while others had their texts better worded for better comprehension; b) the Round III Survey Instrument was the Round II Survey Instrument with the modifications alluded to above; c) none of the 227 statements were identified as belonging to any specific panelist, but they expressed all the answers that had been given by the participants; d) in addition to the Round III Survey Instrument and a cover letter, some extra materials were prepared to be sent to the participants: answer sheets, and commentary/explanation sheets; e) the answer sheets (4) for Round III presented an alternative way of indicating the answer for each statement of the Survey Instrument, that is, either the participant sent back the Survey Instrument answered or just the answer

sheets - the latter included the frequency distribution, the arithmetic mean response, the participant previous response, and the number of respondents for each statement; f) the commentary/explanation forms sent was to be used by the participants whenever he/she needed to explain or support his/her answer for any specific statement, specially if it disagreed with the majority of the responses for the same statement; g) the participants were asked to send a vita/resume or its summary (education, professional experience, etc.) along with their responses to Round III questionnaire; h) Round III materials were prepared in English and translated to Portuguese (each of the participants received one of the versions)

9b. Sending the Third Round Survey Instrument to the Panel. a) *21 experts* (13 Brazilians, 6 Americans, 2 other nationalities) that had answered Round II questionnaire were sent a cover letter and Round III Survey Instrument (identified solely by a control number), answer sheets (identified solely by a control number), and commentary/explanation forms on April 22, 1998 - the deadline for responses was set to May 14, 1998; b) Round III materials were sent by mail but the participants could answer by mail (the Americans and Brazilians received pre-addressed and pre-stamped envelopes, those belonging to other nationalities just pre-addressed envelopes but they were told they would be refunded for mail expenses), by fax (numbers were given in the USA and in Brazil), or by email - the responses sent by mail or fax to the Brazilian address/fax were faxed to the USA; c) as some of the participants did not get to answer on time, they were sent follow-up letter dated May 6 and 17, 1998 by mail, fax, and email,- if necessary some of the participants were also contacted by phone; d) as some of the participants did not

send their vitas/resumes or its summary along with their responses to Round III questionnaire, they were sent a vita request letter by email, fax or mail; e) 20 experts (13 Brazilians, 6 Americans, 1 other nationalities) of the 21 that had answered the Round II Survey Instrument replied back - the last response arrived on June 22 because the participant (a Brazilian) was doing some work in Asia for UNESCO and could not have replied before.

9c. Analyzing the Returned Survey Instruments. a) as the responses from the panelists for the 227 statements arrived, they were entered in a spread sheet previously prepared for doing all the necessary calculations related to each statement (Arithmetic Mean Response, Number of Respondents, and Number of No Respondents):

$$\text{Arithmetic Mean Response (AMR)} = (P_1 + \dots + P_{21}) / \text{NOR}$$

P_i = Response of the Participant i ($i = 1$ to 21)

P_i may be 1 (SD), 2 (D), 3 (NO), 4 (A) or 5 (SA)

$P_i = 0$ (zero) if a specific participant did not answer it

NOR (Number of Respondents per Statement) = NOP - NNR

NOP = Number of Participants of Round III = 21

NNR = Number of No Respondents per Statement

b) the frequency distribution for each statement was established, that is, it was determined how many SD, D, NO, A, SA each statement received.

c) consensus per statement:

Criterion A: [(15 SD or D) or (15 A or SA) answers or more] equal to [75% or more] out of a total of 20 possible responses per statement

Total: 72.7% (165 statements) of the 227 statements

Criterion B: $AMR < 2.5$ or $AMR > 3.5$;

Total: 75.3% (171 statements) of the 227 statements

Note: Criterion B was used as the first consensus criterion being replaced by the criterion A which is more exigent.

d) variation from Round II to Round III:

Criterion A: Variation = Round III - Round II

Variation: 72.7% (165 stat.) - 42.3% (96 stat.) = 30.4% (69 stat.)

Criterion B: Variation = Round III - Round II

Variation: 75.3% (171 stat.) - 61.2% (139 stat.) = 14.1% (32 stat.)

e) No Need for Round IV:

According to Weatherman and Swenson (1974),

one of the five generalizations which Cyphert and Gant³⁹ believed to be a significant result of their study concerned the number of rounds required to achieve consensus. Virtually all (99 percent) of respondents' changes in opinion occurred by Questionnaire III. Therefore, one might seriously question the need for going beyond the third round.⁴⁰ One might also question the interpretation of results which have contained only two rounds (p. 109).

f) based on comments sent by some participants, some of the statements had typographical errors corrected, while others had their texts better worded for improved clarification.

g) the total time spent from formal authorization to begin the Delphi survey (October 27, 1997) until the last response to Round III arrived (June 22, 1998) was 8 months. In such period, neither included the time spent in the steps prior to obtaining the

formal authorization to begin the Delphi survey, nor the time spent in analyzing the results of the last round of the survey and in preparing the final report.

10. Communication of the Findings And/or Conclusions. Based on the results of Rounds II and III, it was indicated which statements there was agreement (consensus on agreeing), which statements there was no agreement (consensus on disagreeing), and which statements there was neither agreement nor disagreement (no consensus), on the role of the Brazilian federal government in VTET in 2025 regarding to policy, provision of programs/courses, funding, and others, as well as those related to the organization of VTET in Brazil in 2025 as to who to provide it, who to fund it, in what format, and other aspects.

The Delphi survey findings (Chapter IV) having as context the scenarios presented at “Brazil in 2025” (Chapter IV) and the case study (Chapter II) as starting point lead to conclusions and recommendations regarding the proposal of an informed strategy the Brazilian Federal Technological Education System could follow in order to contribute for the development of an appropriately trained civilian workforce by the year 2025.

Summary

In order to be able to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country’s needs in technological education by the year 2025, the investigator conducted a review of literature (case study and scenarios about Brazil in 2025) and a Delphi survey.

The case study was developed around twelve process questions which guided the construction of the following sections of the review of literature: Brazil: An Overview, Education in Brazil, Vocational-Technical Education and Training in Brazil, and Vocational-Technical Education and Training in Selected Countries. Those sections addressed the present and past of Brazil, Brazilian education, Brazilian VTET, and the present status of VTET in selected countries (England, France, Germany, and The United States of America).

After examining a number of studies, the researcher opted for transposing scenarios generated by a study conducted by the Brazilian Secretariat for Strategic Affairs for 2020 to the year 2025. After the necessary modifications, the scenarios for 2020 gave birth to four scenarios for 2025. Three of them are exploratory scenarios while the fourth is a desired scenario. The scenarios for 2025 provide possible contexts that the Brazilian federal technological education system may face by the middle of the 21st century.

The Delphi survey addressed two process questions which inquired about the role the Brazilian federal government in VTET and the structure of VTET in Brazil for the year 2025. It was used as a preference probe. The first round began with 30 participants and the last round (the third) ended with 20 participants. The participants were mostly Americans and Brazilians. Among them, there were experts in not only Brazilian education, VTET, and government policies but also in international VTET and future studies. The responses for the two survey questions generated 227 statements. In the last round, there was consensus of 75% agreement or 75% disagreement on 72.7% of the statements or on 165 of them. The results of the Delphi survey were used to determine a

desirable role and structure for the Brazilian federal technological education system in Brazil for the year 2025.

The findings which resulted from the review of literature and the Delphi survey allowed the research question to be properly answered, which is done in the last chapter through the conclusions and recommendations, thus meeting the purpose of the study.

CHAPTER IV

FINDINGS

Introduction

The primary purpose of the study is to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country's needs in vocational-technical education and training by the year 2025.

This chapter presents the findings of the research. The latter was developed around fifteen process questions whose responses converge to address the research question: What is the best strategy for the federal technological education system in Brazil to follow in order to contribute for the development of an appropriately trained civilian workforce for the first half of the 21st Century?

The findings originated from a review of literature, and from a Delphi study and are organized in three sections. The first section presents the findings that came from a case study (past and present of Brazil, Brazilian education, and Brazilian VTET, in addition to the present of VTET in selected countries) which are distributed along twelve process questions. The second section presents the findings obtained from a scenarios development project (Brazil 2025) which are presented under one process question. The last section presents the findings that resulted from the Delphi study (the role of the

Brazilian federal government in VTET by 2025 and the organization of VTET in Brazil by 2025) which are arranged around two process questions.

Case Study Results

Process Question Number One

What is Brazil?

The answer for this question covers the Brazil of the second half of the 1990s and is distributed along six sections (international context, and political-institutional, socio-cultural, economic, environmental, and regional domains). Numerical data is from 1996 unless stated otherwise. The information about the international context and environmental domain originated from SAE (1997a; 1998).

International Context:

- Most important processes in flux.
 - Globalization.
 - Mainly through the technological revolution, internationalization of production and the substantial expansion of the international financial flows.
 - Also political globalism, modification of the State attributions, planetary view of the ecological issues, instant communications among countries, and a growing presence.
 - Molds a new international distribution of power.
 - End of the strategic-military bipolarity.

- Regionalization.

Political-Institutional Domain:

- Former colony of Portugal which became independent on September 7, 1822.
- Brazil was a parliamentarist monarchy from 1822 to 1889.
- It has been a presidentialist republic since November 15, 1889.
- Present official denomination: *República Federativa do Brasil*.
- Territorial Unity (Size: 87% of the USA's territory).
- Federation with 26 states and a Federal District (Brasília, the federal capital).
- Democratic political system operating according to the Law.
- Citizenship Guarantee (political and civil but not social).
- Most important piece of legislation: Constitution of 1988.
- Three branches of government (Somewhat similar to the USA).
- Mandatory voting for those older than 17 and younger than 71 (106 million voters, 1998).
- Unbalanced national budget (dependent on the influx of foreign capital).
- Scarce federal public funds, limited investment capacity.
- Disorganized state and municipal public finances.
- Structural reforms under way pushed by the federal government initiatives (since 1995; also referred to as the “modernization” of the Brazilian State and economy).

- Concession and privatization of public companies and services under way.
- Decreasing the size of the federal government while trying to make it more flexible and efficient (also referred to as “the necessary state”).
- Opposition parties (most of them socialists, communists, or nationalists) disagree with the present federal administration initiatives (referred as “neoliberal” ones but which would be termed as neo conservatives in the USA).

Socio-Cultural Domain:

- Population of 157 million people (59% of the USA 1995 population).
- 10 cities of 1 to 10 million people.
- Decreasing population annual growth (1.4% for the 1991-1996 period).
- Population aging (0-14 years, 32%; 15-64 years, 63%; more than 64 years, 5%).
- Increasing urbanization (78.4% of the population; slightly higher than in the USA).
- Consolidated traits of the Brazilian society.
- Catholicism is the major religion (83% of the population; trend: decrease).
- Multiracial acquaintanceship (55.2%, whites; 38.2%, mulattos; 6.0%, blacks; 0.4%, yellow; 0.2%, indians - however, race figures can not be trusted in Brazil).

- One national language: Portuguese (but a foreign language is also taught at school, mostly English, but Spanish has been growing since the implementation of Mercosul).
- Reform in all levels and modalities of education (beginning: 1995).
- Quality of life ranked slightly above medium level (HDI: 0.809, 1995 [high in the 10 states (all Southeast, all South, two Northern states, and one Centerwestern state) and in the Federal District, medium in the other states] - trend: increase).
- One of the worst concentrations of wealth of the planet (Gini: 0.58, 1997 - trend: slow decrease).
- 19% of the population in the poverty level (trend: decrease).
- Level of unemployment of 5.4% of the Economically Active Population (trend: increase).
- 48% of the Brazilian workers in the informal economy (trend: increase).
- Average age of the EAP is increasing.
- Average schooling of Brazilian workforce: 3.5 years (trend: increase).
- 2.7 million people migrated in the 1991/1996 period (main origin: Northeast, main destination: Southeast, reason for migration: search for better quality of life).

Economic Domain:

- The Country is the 8th biggest world economy.

- Developing country (World Bank classification: Upper middle income country).
- Economic stability in the 1994-1998 period.
- Inflation: 9.34% (1996) and 7.48% (1997).
- Gross Domestic Product = US\$ 749 billion (in 1996 dollars; 11% of 1995 USA GDP).
- GDP growth in 1995 and 1996 below 3% (it should be at least 6% for enough jobs to be created for those joining the labor force).
- GDP distribution: 54.4%, services; 33.4%, manufacturing and mining; and 12.2%, agriculture (trend: participation of services growing, manufacturing and mining decreasing, and agriculture stable around 12%).
- GDP per capita = US\$ 4,780 (in 1996 dollars; smaller than Uruguay's 1995 one).
- Economically Active Population of 73.1 million (54% of the USA 1995 EAP).
- Economically Active Population Growth (1996-1997) = 1.04%.
- Distribution of the Brazilian labor force (1997): 62%, services; 22%, industry; and 16%, agriculture (trend: services share increasing, industry and agriculture shares decreasing).
- The participation of women in the labor force keep increasing, however men still have the best jobs.
- Similar to the rest of the world, Brazilian unions have been losing members.

- Small presence in the world commerce (less than 1% of the total).
- Negative trade balance since 1995 after 14 years of positive results.
- Total international trade = US\$ 101.1 billion (in 1996 dollars).
- Most important participant of the Mercosul (the country pushes significantly for the success of Mercosul which is seen as the proper regional base which must evolve to a higher domain in terms of South America, Western Hemisphere, and in the world economy).
- Main trade partners: the United States of America, Japan, European Community countries, and Mercosul countries.
- Brazilian exports balanced among primary, semi industrialized, and industrialized products.
- Continuation of the opening of the Brazilian economy which was started in 1990.

Environmental Domain:

- Conscientization and advancement of initiatives related to the protection of the environment.

Regional Domain:

- Five regions: north, northeast, centerwest, southeast, and south.
- North: occupies 45% of the Brazilian territory (7 states), is the least populated part of the country, has the smallest share of the GDP (3.5%), and is mostly covered by the rainforest.

- Northeast: occupies 18% of the Brazilian territory (9 states), has 29% of the Brazilian population, has the smallest GDP per capita of the country, but economically is the fastest growing part of the country (13% of the GDP).
- Centerwest: occupies 19% of the Brazilian territory (3 states and the Federal District [Brasília]), has only 7% of the Brazilian population, and is an agriculture frontier of the country (6% of the GDP).
- Southeast: occupies almost 11% of the Brazilian territory (4 states) and 43% of the Brazilian population (highest population density), has the highest GDP per capita of the country, and is the economic power house of the country (63% of the GDP).
- South: occupies almost 7% of the Brazilian territory (3 states), has 15% of the Brazilian population, has the second highest share of the GDP (15%) and GDP per capita of the country.

Process Question Number Two

How is Brazilian education structured?

The present structure of Brazilian education is a blend of the past developments affected by Cardoso administration initiatives - administrative and legal ones - which were introduced during its first term (1995-1998) and have resumed over its second term (1999-2002). Having the Constitution of 1988 as the starting point, the Cardoso administration has passed legislation in the Brazilian Congress to reshape Brazilian education. One constitutional amendment (No. 14), a version for the LDB of 1996 (Act

No. 9,394/96) it favored, complementary laws, in addition to a substantial number of decrees, executive orders, and National Council for Education's expert opinions and resolutions were the legal tools the Cardoso administration and its supporters used to implement their educational views for Brazil. Brazilian education is structured in the following way:

General:

- Education is among the social rights of every Brazilian citizen (education a right of all having the State and the family the duty to provide it).
- Education will be promoted and stimulated with the collaboration of society, aiming to achieve the full development of every Brazilian, his/her preparation for the practice of citizenship, and his/her qualification for work (the right to education for all has been present in Brazilian constitutions since 1934 but by 1998, not all Brazilians had had their right to education fulfilled yet).
- To legislate about the directives and bases of national education continued to be a private competency of the Union (federal level of Public Government) but besides the Union, the states (since 1988 joined by the federal district) also maintained their right to legislate about education, culture, instruction and sports within their level of competency.
- Instruction to be provided in Brazilian educational institutions must obey the following principles:
 - I - equality in the conditions for access and permanence at school;

II - freedom to learn, teach, research, and to spread the thought, the art, and the knowledge;

III - pluralism of ideas and of pedagogical concepts, and co-existence of public and private instruction institutions;

IV - free public instruction in official (public) institutions;

V - valuing those who work in education, . . . ;

VI - democratic administration of the public instruction (public educational institutions)

VII - guarantee of quality standard.

- Compared to previous legislation (not constitutions), the most innovative principles were “equality in the conditions for access and permanence at school,” and “democratic administration of the public instruction (public educational institutions);” the other principles were present in previous legislation but organized or worded differently from above.
- For the first time, a Brazilian constitution included the principle of “free public instruction in official (public) institutions” (it was the major gain of the defenders of public education in the Constitution of 1988).
- Regular evening instruction must be offered in an adequate way to meet the needs of the student.
- Specialized educational care must be provided to handicapped students, preferably through regular schools.
- Everyone must have access to the highest levels of instruction, research, and artistic creation according to his/her capacity.

- MEC is the main authority in Brazilian education having the National Council of Education [CNE] for an advisory role (since the termination of the Federal Council of Education, MEC has the final word in Brazilian education which was not true for some educational issues in the 1961-1994 period).
- The Constitution of 1988 required the development of a national plan of education [PNE] but differently from the Constitutions of 1934 and 1967, it clearly mandated it must be a pluriannual one and established by a law.
- The national plan of education must aim at the articulation and the development of instruction in its various levels, and the integration of the actions of the Public Government which lead to:
 - I- eradication of illiteracy;
 - II - universalization of the provision of schooling;
 - III - improvement of the quality of instruction;
 - IV - development for work;
 - V - humanistic, scientific, and technological promotion of the Country

Levels and Modalities of Education:

- Brazilian formal (schooling) education is divided in two levels: basic (K-11/12) education and higher education.
- There are four modalities of education which complement the levels of education: youth and adult education, vocational-technical education and training, special education and distance education.

Basic Education:

- Basic education has as goals developing each person, providing him/her with the knowledge necessary for exercising his/her citizenship, and preparing him/her to advance in his/her studies and work.
- It is organized in three sub-levels: children's education, fundamental instruction (previously named 1st Degree), and middle instruction (previously, 2nd Degree).

a) Children's Education:

- Child care (for children from 0 to 3 years of age) and pre-school (for children from 4 to 6 years of age) continued not to be mandatory, however, they are free when offered in public schools (more attention was provided to this level of education if compared to previous constitutions).
- The municipalities and the Federal District are expected to offer children's education but priority is to fundamental education (despite the population in the age group less than 7 years old has been decreasing its share in the total Brazilian population, the number of enrollments in children's education has been increasing due to the transformations Brazilian society has been going through however the quality of the services provided is variable).
- MEC plans to propose the extension of mandatory fundamental education to nine years (by diminishing one year in pre school) what is already done in many countries.

b) Fundamental Instruction:

- Fundamental instruction continued to be mandatory for all children from 7 to 14 years of age, and must be provided free of charge at state, Federal District, and municipal schools being the last two ones the main responsible for its offer - the latter is also a right of those older than 14 years old who have not completed fundamental instruction yet (if the latter is not done, differently from before, the present legislation provides legal means for suing the State for not offering fundamental instruction).
- Fundamental instruction lasts at least eight years, each having at least 200 school days and 800 hours of activities, final examinations (when required) period not included.
- The curriculum has a national common base which is complemented by a regional diversified part, according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students.
- The competent Public Authorities are to set minimum contents for fundamental instruction, so that the common basic development and the respect to cultural and artistic, national and regional values be assured which will be taught in Portuguese but native Brazilian communities also the utilization of their mother languages and their own learning processes (the innovation here refers to the inclusion of statement which makes reference to the native Brazilian communities).

- The study of a foreign language is required from 5th grade up (English is the most common one, however Spanish is growing as a 2nd foreign language since Mercosul started).
- Religious instruction will continue to be taught, during the regular class schedule, at public schools at the fundamental instruction level (but it is not mandatorily offered at public schools at the middle instruction level any more) remaining to be an optional course for the students too (this is an example of the long lasting influence of the confessional educational institutions - specially the Catholic ones - in the Brazilian educational scenario).
- In 1996, out of the 33.1 million students enrolled in fundamental instruction (being 11.2% in private schools), 25.9 million belonged to the 7-14 age group - 2.7 million children were out of school, more than half of them in the Northeast.
- Despite the advances verified, fundamental instruction still presented significant problems in the students' promotion and dropout rates at school (due to several reasons, quality of instruction in many schools being one of them) in addition to the need of extending this level of basic education to the all children in the age group and to the significant number of those who did not get it in the proper age.

c) Middle Instruction:

- Middle instruction continued to be not mandatory for all those from 15 to 17 years of age, but the universalization of free middle education is to be

done gradually (the original text of the Constitution of 1988 stated that this level of education was to be gradually made mandatory too, however such determination was dropped in the Constitutional Amendment No. 14 of 1996 because the majority of the Brazilian population in the proper age group has already joined the workforce and may not be able to attend school).

- It must be provided free of charge at public schools but it is the states and Federal District main responsibility to provide it - the latter is also a right of those older than 14 years old who have not completed fundamental instruction yet.
- Middle instruction lasts at least three years, each having at least 200 school days and 800 hours of activities, final examinations (when required) period not included.
- The curriculum has a national common base which is complemented by a regional diversified part, according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students (the competent Public Authorities are to set the minimum contents for middle instruction based on the guidelines of the LDB of 1996).
- In 1996, out of the 5.7 million students enrolled in middle instruction (being 20.5% in private schools), 2.5 million belonged to the 15-17 age group - 7.8 million children were out of school.

- The universalization of middle instruction in Brazil is a goal that will take time to be reached however it may not take very long as can be learned from the rate of enrollment for the nineties.
- In 1996, the majority of the students who began middle instruction were older than 17 (due to promotion problems in fundamental education), most of the middle instruction ones were already engaged in the workforce and studied in the evening in public schools run by the state governments (among the latter were many who returned to school).
- Overall, while qualitative problems are of comparative magnitude in fundamental and middle instruction, the universalization of the latter is more distant to achieve if compared to the former's.

Higher Education:

- Higher education (previously, also named 3rd Degree) has the purpose of preparing personnel for careers which require this level of education, of developing research, and performing extension - essentially the same that is stated in previous legislation (Act No. 5,540/68).
- It is structured as follows: sequential programs, undergraduate programs, graduate programs, and extension programs/courses (sequential programs were not alluded to in previous legislation).
- As in the case of basic education public institutions, instruction in higher education public ones is also provided tuition-free (also not stated in previous legislation).

- Public higher education institutions' programs are mostly offered during day-time, however they have to establish evening programs as long as appropriate funding is provided (the latter was not guaranteed in previous legislation).
- Private higher education is paid, its programs predominantly offered in evening-time programs, and its participation in research is minimal which is mostly done by public institutions (universities and specialized institutes).
- Sequential programs are to be offered in different fields and levels, and must be open to those who meet the exigencies of the instructional institutions they apply for (they are something new in Brazilian higher education and are aimed to provide a quick and emergencial training of personnel in the various activities connected to the production of goods and services - they provide certificates and not diplomas).
- Undergraduate programs are open to those who have completed middle school through regular or alternative (GED) means and have been admitted through a selection process.
- They last between four and six years, each year having at least 200 school days, final examinations (when required) period not included.
- The undergraduate programs need authorization and accreditation to operate which can be revoked based on the evaluations that are conducted by MEC periodically.
- In 1994, there were 1.7 million undergraduate students (with 58.4% in private institutions).

- During the last 15 years, the expansion of higher education slots in Brazil was slow which resulted in the fact that in 1994 less than 12% of the population in the 18-24 age group was enrolled in higher education programs (as more people have graduated from middle school and the Brazilian economy has grown and become more complex, the need for this level of higher education has also increased, demanding an expansion of its offer at much higher rate than its present one).
- Graduate programs are open to those who have completed undergraduate programs and meet the exigencies of the instructional institutions they apply for.
- Graduate studies include master's (from two to four years), doctoral (from four to six years), specialization (similar to a master's with creative component), improvement, and updating programs - each school year in graduate programs is required to have at least 200 school days, final examinations (when required) period not included.
- Master's and doctoral programs need authorization and accreditation to operate which can be revoked based on the evaluations that are conducted by MEC periodically.
- In 1996, there were 74 thousand sponsored graduate students in Brazil and 4.1 thousand ones abroad spread in 24 countries but 72% of them in the United States, England, and France (the majority of Brazilian graduate students are not sponsored however those who study in public universities do not pay tuition).

- In 1994, less than 40% of the higher education instructors in Brazil had doctoral or masters' degrees (such numbers indicate an already significant need for those with graduate degrees which will tend to increase as Brazilian higher education is pressed to grow in terms of institutions, programs, enrollments, and research).
- Most of the research conducted in Brazil is performed at public institutions (universities and specialized institutions; federal or São Paulo state ones) and is underfunded (at the federal level, research is coordinated by the Ministry of Science and Technology).
- Extension programs and courses are open to those who meet the exigencies of the instructional institutions they apply for (as they are not regular programs or courses, the institutions that provide them establish the regulations regarding to their organization and operation).
- In 1994, the various higher education programs/courses were taught at 851 educational institutions all of which need authorization and accreditation from MEC to operate and will be evaluated by MEC periodically too (the latter determines the continuation or not of the former).
- From the academic point of view, they are classified as universities (15%), university centers (none), integrated colleges (10%), colleges, and higher education institutes or schools (the last two categories, 75%).
- While all of higher education institutions provide programs, only the universities have to do research and extension.

- Public and private universities also have didactic-scientific, administrative, and financial and patrimonial management autonomy (for the first time, there is specific reference to universities in a Brazilian Constitution which is an indication that they should have a high but not total degree of independence - but the constitution may be changed - to perform their duties of instruction, research, and extension).
- Like the universities, the university centers can create, organize, and terminate programs and courses at their campuses, as well as increase or reorganize the slots for each program/course without previous authorization from MEC - medicine, odontology, and psychology programs require authorization from the National Health Council, while law ones, from the Federal Council of the Brazilian Bar Association.
- The integrated colleges, colleges, and higher education institutes or schools do not have the autonomy of the university and university centers, but they can request upgrade in their status if they meet the requirements existing in the legislation.
- Since 1995, the quality of the services provided by such institutions has been evaluated periodically by MEC (before that, only graduate programs were periodically evaluated) which has not only revealed the situation in them but also forced them to act to improve their instruction, research, and extension (and associated costs) to at least an acceptable level which is necessary to continue in operation.

Modalities of Education:

- There are four modalities of education which complement the former: youth and adult education, vocational-technical educational and training, special education, and distance education).

a) Youth and Adult Education:

- Youth and adult education is aimed at those who could not attend and complete basic education at the proper age.
- It is offered through tuition-free programs and General Educational Development [GED] tests.
- Such educational opportunities while meeting the national base of the curriculum, must also take into consideration the characteristics, the needs and the interests of the students, guaranteeing to those that are workers the necessary means of access and permanence at school (the LDB of 1996 did not make drastic changes in previous legislation however it updated its content so that educational challenges the Brazilian people faces could be properly met).
- Despite the progress achieved in the last decades, in 1995 the average number of years of schooling was only 5.4 years per men and 5.7 years per women.
- Still 15.6% of the population 15 years and older were illiterate (16 million people), 30.5% of such population group in the Northeast.

- In 1995, while 32.7% of those in the 50 years and over age group were illiterate (16.7% of those 40-49, and 11.0% of those 30-39), only 5.9% of Brazilian population has 12 or more years of schooling, over 70% have less than 8 years of schooling.
- The numbers above justify the legal dispositions which mandate the eradication of illiteracy in ten years-time, mandatory fundamental education for all children, and its offer for those who could not get in the proper age while also indicating where the funding to achieve such goals will come from.
- To have completed fundamental instruction is not only a right of every Brazilian but is also necessary for each person to be able to exercise fully its citizenship while at the same time improving his/her chances in the labor market - the right to educational opportunities beyond fundamental instruction is also guaranteed in Constitutions of 1988.

b) Vocational-Technical Education and Training:

- Vocational-technical education and training [VTET] is open to students who are enrolled or completed any level of basic and higher education, as well as to the worker in general, young or adult, as a way of qualification to the exercise of activities in the productive life.
- It can be developed in articulation with the regular instruction [schooling education] or in formats which meet continuing education strategies.

- VTET can be offered at regular instruction schools, in specialized institutions or in the workplace.
- VTET is divided in three levels: training (independent of previous schooling), vocational-technical (middle instruction level), and technical (associate of science level).
- VTET has been provided at the public, semi public, and private levels.
- Additional findings are provided in the responses to process questions five through eleven.

c) Special Education:

- Special education is aimed at students that have special needs (handicapped and highly gifted ones) being its offer at the public institutions guaranteed by the Constitution of 1988.
- Preferentially, they should attend regular schools which should provide specific complementary supports, however when that is not possible, the students should enroll in specialized institutions.
- Special education must be provided from children's education level up to the highest levels of instruction being the duty of the various instructional systems (federal, state, Federal District, and municipal) being properly prepared to fulfill such need in their level of competency.
- Private institutions may receive receive public funding for providing special education if they meet criteria specified in legislation.

- The 1996 Census on Education revealed that the number of enrollments in special education (all levels of basic education) was minimal - 201 thousand for the whole country (half of the enrollments were located in the Southeast while 25% of them were registered in the South what indicated a substantial national unbalance in the provision of special education).
- The LDB of 1996 provided much more attention to special education than previous legislation, however, as a general rule, schools are not prepared yet to fulfill what is mandated by law in relation to special education what will require a significant effort from Public Government for years to come.

d) Distance Education:

- Distance education is open to the Brazilian population as an option to get formal and informal education.
- Differently from before the LDB of 1996, distance learning programs can be provided at all levels and modalities of instruction and of continuing education.
- Distance education methodologies can also be used as a support to regular programs activities.
- It is encouraged by Public Government, and its providers have flexibility in terms of organization and special administration, but must not only be accredited by MEC but also obey federal regulations regarding to students evaluations and diploma registration (if it is the case).

- The development, control, and evaluation of distance education programs must meet regulations of the instruction system (federal, state, Federal District, or municipal) they are subordinated to (such systems will be integrated or co-operate whenever necessary).
- Brazil has a number of public educational radio and television networks in addition to the educational programs that have been produced and broadcasted by commercial television networks, however Internet is still far away from being used in most Brazilian schools or for providing distance education programs in Brazil.
- Not counting on the use of distance instruction/learning as a supplement to presencial education, so far only basic education, and VTET have been provided through distance education (the former as non presencial GED programs) in Brazil.
- The LDB of 1996 enlarged the possibilities to be explored ahead which will need not only the technical competence to do it, but also financial and political support as well as a change of attitude regarding to the value of this modality of education (the former listed a number of provisions regarding to the support that distance education is entitled to).

Military Instruction and Indian Education:

- Besides the levels and modalities of education shown above, the LDB of 1996 also alluded to military instruction and to Indian (as the native population is named in Brazil) education.

a) Military Instruction:

- Like in previous legislation, military instruction is said be the subject of specific law due to its nature.
- However, the LDB of 1996 stated that the instruction systems are to enact regulations indicating the equivalences between the various levels and modalities of Brazilian education and military instruction.
- Presently, the three branches of the armed forces (Air Force, Army, and Navy) have a number of educational institutions spread over Brazil.

b) Indian Education:

- For the first time, a Brazilian Constitution (1988) and an LDB (1996) guarantee the native Brazilian the right to an education that included their languages, learning processes, sciences and cultures, as well as to have their contributions to the formation of the Brazil properly to acknowledged.
- The recognition of the former at the higher levels of law made official what had already happening for some years as a result of efforts of ONGs and Indian communities, while the latter has been an effort to rewrite Brazilian history in all its nuances that have been undertaken for some time already.
- In addition to the urbanized Indians (there is no structured information about them, however many are believed to keep their languages and traditions), there are between 280 and 329 thousand Indians living in reserves who belong to about 210 different groups.

- Since 1991, MEC is the coordinator of the efforts regarding to Indian education but its implementation is to be performed by the states, Federal District, and municipalities (the Indian education efforts have the input of the National Foundation for the Indians).
- Besides coordinating the efforts of Indian education, the federal government has to provide technical and financial support to the instruction systems that provide integrated programs of instruction and research can be developed.
- The implementation of Indian education (which take in consideration what is stated in the LDB of 1996) nationwide is a task that has just begun and will be not an easy, quick, or cheap one because the information about Indians as a whole is poor, their population is reduced, scattered and heterogenous, and the human resources to provide it need to be developed to the appropriate extent not to mention the necessary provision funds to pay for all.

The Teaching Profession:

- For each level or modality of Brazilian education, the LDB of 1996 requires that the instructors have the proper degrees (which are very similar to what is stated in previous legislation, Acts No. 5,540/68 and 5,692/71, but there were changes relating to where, when, and how the training is to be provided besides others).

- The 295 thousand children's education (pre-school and alphabetization) instructors and the 777 thousand 1-4 grade instructors (1996) are required to have either a secondary or higher education teaching degree which is not true for 22% of the former and 15% of the latter - higher education training is preferred.
- The 612 thousand 5-8 grade instruction degree teachers and the 327 thousand 9-11/12 grade instructors (1996) are required to have a higher education teaching degree however 26% of the former and 14% of the latter still do not meet the necessary qualification.
- The 141 thousand higher education instructors (1994) are required to have graduate training, preferentially at masters' and doctoral levels (universities mandatorily at least one third of their instructors), but the latter is still a goal to be reached - in 1994, doctors (15.1%), master's (23.7%), specialization (masters' with creative component) (35.6%), bachelors (25.4%), others (0.2%).
- There are a significant number of Brazilian instructors (at all levels) that still need to get the proper degrees to do their job.
- There is a need for constant update in the skills of those who already have the minimum qualifications, and for better working conditions and pay which are, for a substantial number of instructors, far below what is necessary to provide quality education as well as to attract good professionals.

- The legislation in place (the Constitution of 1988, the Constitutional Amendment No. 14 of 1996, the LDB of 1996, and complementary legislation) is a start, but it will require much political and technical competence to change the unfavorable context that the teaching profession is presently immersed in Brazil.

Instructional Systems:

- In 1996, basic and higher education in Brazil was provided by 290 thousand educational institutions which along with the public agencies (MEC, CNE, states, Federal District, and municipal secretariats of education, and others) which are in charge of education belong to one of the following instruction systems: federal, states, Federal District, municipal.
- The Federal Instruction System includes the instruction institutions maintained by the Union (in 1996, 349 basic education institutions (some provide VTET too); in 1994, 57 higher education ones (some provide VTET too) - those numbers include those of the Federal District), the private higher education institutions (in 1994, 633), and the federal agencies of education (MEC, CNE, and others).
- The States and Federal District Instruction Systems include the instruction institutions maintained, respectively, by the states Governments (in 1996, 70 thousand basic education institutions [some provide VTET too]; in 1994, 73 higher education ones [some provide VTET too]), and by the

Federal District one (see Federal System), the higher education institutions maintained by municipalities governments (in 1994, 88), the fundamental and middle instruction institutions created and maintained by private organizations (in 1996, 21 thousand), and the states and Federal District agencies of education, respectively.

- In the Federal District, the children's education institutions, created and maintained by private organizations (see the Municipal Systems), are also part of its instruction system.
- The Municipalities Instruction Systems include the fundamental and middle instruction, and children's education institutions maintained by the municipalities governments (in 1996, 181 thousand), fundamental and middle instruction, and children's education institutions maintained by private organizations (in 1996, 38 thousand), and the municipal agencies of education.
- Municipal instruction systems can only provide other levels of instruction than children's education and fundamental instruction if those are properly met and if the funding does not come from the 25% of their tax revenues they mandatorily have to spend in education.

Legal Responsibilities of the Various Instructional Systems:

- The Union, the States, the Federal District and the Municipalities are organized in a collaboration regime their instruction systems (by the first time it is stated in a Brazilian constitution that municipalities can set up

their own instruction systems not being subordinate to the states ones any more).

- The organization and funding of the federal system of instruction and the Territory ones is the responsibility of the Union which also has supplementary and redistributive roles in terms of funding and technical assistance to the States, Federal District, and the Municipalities so that the equalization of education opportunities and a minimum instruction quality standard be guaranteed.
- While the States and Federal District instruction systems provide prioritarily fundamental and middle instruction, the Municipalities ones have as priority providing children education and fundamental instruction.
- The States and Municipalities must coordinate their efforts so that the mandatory instruction is provided to all those live in each Municipality.
- Private schooling is allowed in Brazil as long as private initiatives fulfill the general norms of national education, and be authorized and have their quality evaluated by the Public Government (private schooling has always been present in Brazilian education, however, at constitutional level, it is the first time that is stated that the quality of the educational services they provide will be evaluated by the Public Government)

Funding for Education:

- The funding for Brazilian Education, in its different levels and modalities, comes from public and private sources.

- The Constitution of 1988 maintained the mandatory spending in education at all levels of Public Government but increased the percentage to be spent by the Union from 13% to 18% (it also provided some directions about how the public funding should be dealt with being more detailed than the previous ones - some modifications were introduced in 1996 by the Constitutional Amendment No. 14).
- Overall, public funds are to be used for financing public instruction, research and extension, however private institutions may get them too for fulfilling specific purposes if they meet certain conditions stated in legislation (the Constitution of 1988 is more emphatic than the previous ones regarding to the use of public funds for public education, however the possibility of some of the public funds to be used in private institutions still remained and was even increased).
- A new version for Article 60 of the constitutional transitional provisions mandated that the States, the Federal District, and the Municipalities spend at least 60% percent of their mandatory expenditures on education to eliminate illiteracy and universalize fundamental instruction while the Union would have to do the same with at least 30% of its mandatory expenditures on education (that is mandatory from 1996 until 2006).
- There is a re-distribution fund (one per state/federal district) which is to be used solely for financing the maintenance and development of public fundamental instruction and for paying its teachers at least a national

minimum salary (whenever the minimum expenditures per student are not reached, the Union will complement the funds resources).

- In 1995, 42.9 billion US dollars (5.97% of Brazilian GDP) were spent in education being 81% from public sources (federal, state, municipal; 4.85% of the GDP), and 19% from private ones (families, companies/workers' training; 1.12% of the GDP).
- The state governments provided 47% of public funds to education, the municipalities ones, 29%, and federal level, 24%.
- Families contributed with 80% of private funding while 20% came from other sources.
- Compared to developed countries, the public expenditures per student in Brazil are much lower in basic education, and equivalent or above in higher education (however the calculation methodology has been a matter of dispute).
- The efficiency and efficacy in the use of the existing public funds for education are necessary to improve and increase the reach of Brazilian education, however such funds seem not to be enough to provide quality education in all present public institutions (they are tuition-free).
- The allocation and use of public funds for education has been a hot issue in Brazil and there are no indications it will cease to be in the near future.

Others:

- Brazilian History must be taught taking in consideration the different contributions of the different cultures and ethnicities for formation of the Brazilian people.
- In order to guarantee that all those in the proper age group are getting fundamental instruction, the states, the Federal District, and municipalities, supported by the Union, will have to hold a census periodically on the fundamental instruction students, to verify their presence at school, and to look after, along with the parents or responsible ones, for students going to school.
- The Public Government has also to meet the fundamental instruction students' needs in terms of didactic-instructional material, transportation, nourishment, and health care.

Process Question Number Three

Why is Brazilian education structured the way it is?

It is a result of an evolution that is summarized below:

- Before 1549 there was no systematic education in Brazil.
- From 1549 to 1759 the Jesuits had a concession granted by the King of Portugal to open schools in Brazil; they also got partial funding from the Kingdom.

- Jesuits' original mission: to catechize and provide instruction to the native Brazilians (but as they were the only educators in the territory by the time of their arrival, they also took charge of educating the colonists).
- At first education was academic and utilitarian; after 1570, it became solely academic and directed at the sons of the colonists and to the preparation of priests.
- After the arrival of the Jesuits in Brazil, other religious orders and educated lay people also opened "non official" schools in Brazil.
- In 1759 the Jesuits are expelled from Brazil by the Portuguese government for political reasons.
- In 1759 the Portuguese government created the position of general director of studies for Brazil.
- The new educational guidelines: prepare the perfect noble, at that time a businesspeople; a shorter, diversified and practical curriculum so that more people could proceed to higher education.
- Between 1759 and 1772 the Portuguese government was not successful in replacing the public education previously provided by the Jesuits.
- In 1772 the "Regal Classes" model begins to replace the Jesuit's model, that is anyone who thought he/she could teach (primary or secondary education) could get permission from the King of Portugal through any town councillor; instructor's work would be paid by the City Council; teaching could happen any place and the curriculum was of rational and

liberal inspiration but conservative in practice - the latter continued to be disconnected of the Brazilian reality.

- In addition to the “Regal Classes,” the other providers of education were seminaries and private “sponsored” schools; they did not get to replace the educational systems implemented by the Jesuits in terms of coverage and quality - despite the fact that the focus of the latter aimed at the interests of the order.
- The Portuguese children had priority over the locals’ children; the native Brazilian and the African Brazilians had not access to schooling.
- In 1808 the arrival of the Portuguese Royal family in Brazil (running away from Bonaparte’s forces) benefitted Brazilian education.
- Funding, instructors, libraries, colleges, schools, vocational and technical schools, books, newspapers, magazines either grew in quantity and quality or become available by the first time in Brazil.
- In 1821 the Portuguese Royal family left Brazil aggravating the already existing problems in the provision of education (the needs grew faster than the means to meet them) in Brazil because along with them left instructors, funding and other resources.
- As a result of those problems the first private “paid” schools were established in the Brazilian major cities whose instructors were supposedly foreign and Brazilian licensed individuals.
- The independence of Brazil in 1822 did not bring “real” immediate changes in public education.

- The Constitution of 1824 “granted” by the emperor stated that free primary education would be established, but made no mention of whom would offer what levels of instruction.
- In 1827 an Instruction Act mandated the offering of free public primary education to all Brazilians and the use of the Lancaster and Bell method of organization of instruction (to compensate for the lack of enough qualified instructors); however, the situation did not change: education continued to be for the elite of the country while most of the population was illiterate (blacks, poor people, and also women who lived in small cities and rural areas).
- In 1834 an amendment to the Constitution of 1824 transferred the responsibility of offering primary and secondary education from the central government to the provincial governments; apart from São Paulo, such transfer while allowing flexibility did not allow public education to expand properly due to a lack of human, financial, and material resources, political will from the local governments, and social demand for it (the situation remained unchanged until 1931).
- During D. Pedro II’s reign, secondary education began to be taught by schools (lyceums) and not through the format of “Regal Classes”.
- Secondary education then reflected what was going on in Europe being a combination of humanities and experimental sciences but more to provide a “general culture” rather than aiming to improve the quality of life of the population; the emphasis either on humanities or on experimental sciences

kept shifting according to the various reforms that were mandated after 1834, that is in 1841, 1854, 1862, 1870, 1878, and 1888.

- Along with the total abolishment of slavery in 1888, and the proclamation of the republic in 1889 came pressure for education for all which included the whites, the former slaves, native Brazilians, mestizos, and foreign immigrants (that pressure grew as the migration from the rural areas to the cities increased).
- Contrary to the Imperial Constitution of 1824 which mandated that primary education was free for all citizens, the Republican one of 1891 made no reference to free primary, secondary or higher education; also, no level of public government was mandated to offer any level of education, that is, it was optional; such determinations were coherent with the views of federalism, liberalism and positivism which were represented among the elite of the country at that time.
- By 1900, most of the Brazilian population lived in rural areas while the illiteracy rate was 65% of the population 15 years and older.
- During the “Old Republic” period getting education was something difficult to achieve; despite the legal possibility of proving education at all levels, the states mostly provided primary education for part of the people while the federal government continued to fund and operate secondary and higher education institutions which were directed to the preparation of the elite of the country; private schools and colleges complemented the offer of primary, secondary and higher education for those who could pay for it.

- Overall, primary education was offered for less than one third of population in the proper school age while secondary and higher education was for an elected few.
- Besides government and private institution efforts in education, several educational initiatives or proposals were developed by various agents such as pro-literacy nationalist, socialist, communist, workers, and anarchist groups - all non governmental organizations [NGOs] of several inclinations - because reading and writing was seen more and more necessary to function in society.
- While the federal government did not get involved in setting nationwide regulations for primary education (although there were several reforms in various states) during the “Old Republic” period, it did so in secondary and higher education: federal administrations implemented four reforms (in 1890, 1901, 1911, 1915, 1925) which impacted mostly secondary education but also related to higher education (such reforms revealed an oscillation between the classic humanist influence and the real or scientific one).
- Despite getting more attention than during the imperial period, primary teacher training did not get the support it should have had during the first republican period.
- In 1911 the federal government established the Superior Council of Instruction (it is the origin of the present National Council of Education).

- In 1920 the federal government established the *Universidade do Rio de Janeiro* which was formed by the union of several already existing colleges (it is the oldest Brazilian university).
- In 1924 educators established the Brazilian Education Association (Associação Brasileira de Educação [ABE]) which was probably the major forum of Brazilian education until 1967 when it held its last national conference.
- During the “Old Republic” period, three major pedagogical views also influenced the educational issues in Brazil: the traditional, the libertarian, and the new school [“*escola nova*”] views; while the traditional pedagogical view spread quickly in Brazil due its functionality being the predominant one during the “Old Republic,” the new school pedagogic view became the only viable alternative to it (from the 1920s on) because those who defended the libertarian pedagogical were repressed by the federal government due to its proposals of radical change in the existing social and political structure (in the 1920s some libertarians began the “Marxist” movement in Brazil which would become an important player in the educational arena from the end of the 1960s on).
- By 1930, most of the population still lived in rural areas and the illiteracy rate only declined to 60% of the population 15 years and older.
- In 1930 a political-military movement (the Revolution of 1930) ended the “Old Republic” period giving birth to the first Vargas administration (1930-

1945) which would impact significantly Brazilian education in its two phases (1930-1937 and 1937-1945).

- After 1930, addressing one of the criticisms of the *escolanovistas*, the national government started to organize education in Brazil.
- In 1930, the Vargas administration established the Ministry of the Affairs of Education and Public Health, which was required to define national policy guidelines, and to develop a National Education Plan to direct the activities of states and municipalities (it is officially considered the origin of the Ministry of Education and Sports [MEC], however there were precursors in the 1890-1892 and 1925-1930 periods).
- During 1931-32, the Vargas administration provided a legal and organizational structure to secondary, commercial, and higher education; among other actions, it also created the National Council of Education which replaced the National Council of Instruction.
- Despite being the first effort to organize education in Brazil and to tune it to the social-economic situation of the country, such reform (Campos reform) still did not address primary and normal education which was the demand of most of the population (that revealed a major concern with the children of the elite rather than with those of the common citizen).
- In 1932, the *escolanovistas* published their main work Manifesto of the Pioneers of the New Education which described their proposals for Brazilian education: in order to meet the exigencies of “modernization”, democracy, and economic growth schooling should be universal, secular,

co-educational, compulsory, and free so that equal opportunity would be assured to every child.

- Among the various proposals of the *escolanovistas* were: every Brazilian should have an integral education, common to all, but taking in consideration their natural aptitudes; and centralism should end, that is, schools should meet local needs.
- As the views of the *escolanovistas* for education were understood as complementary to the views of modernization of Brazil proposed by the first Vargas administration the former were viewed sympathetically the latter what contributed to having the *escolanovistas*' proposals as the framework for the chapter on education in the Constitution of 1934.
- The Constitution of 1934 established that it was the obligation of the State to provide education for all citizens, assigning priority to the universalization and democratization of schooling; federal, state, and local authorities were obliged to spend a designated percentage of their revenues to support the educational system; the main responsibility for establishing schools and administering the basic education system was assigned to state and municipal governments; federal authorities were required to define national policy guidelines, and to develop a National Education Plan to direct the activities of states and municipalities.
- The Constitution of 1934 was short lived because in 1937 the "*Estado Novo*" regime began (it had its own ideas about how education should be organized and run in Brazil).

- The Constitution of 1937 (granted by the “*Estado Novo*” regime) emphasized that the State’s first obligation in education is to provide primary education and vocational training to the “less favored classes,” and otherwise deemed public action to be supplementary to the efforts of families and private agencies including the Catholic Church; public agencies were to intervene only in cases where private agencies failed to provide sufficient opportunities (while the Constitution of 1934 had established a minimum percentage of the federal, state, and municipal taxes to be spent on education, the Constitution of 1937 abolished such obligation).
- Besides what was written in the new constitution, the “*Estado Novo*” regime took a series of major actions to implement its view on education among them a series of reforms in primary, secondary (Capanema’s), and higher education (such reforms consolidated the separation of education for those who would become leaders and for those who would be conducted).
- By 1945, 66% of the population still lived in rural areas and the illiteracy rate had declined to 55% of the population 15 years and older.
- The “Democratic-Populist Republic” period brought the Constitution of 1946 (which was restored many of the principles of the Constitution of 1934 regarding to education) and a long fight (over 15 years) over the Education Act required by the former (the bigger players were the *escolanovistas* and the Catholic religious/defenders of private education).

- In 1948 the Brazilian Society for the Advancement of Science (SBPC) was established but only in the 1970s it became a forum for educational issues.
- The Education Act (LDB) enacted in 1961 was a compromise between the *escolanovista* and traditional views and replaced the reforms implemented during the “*Estado Novo*” regime.
- The 1958-1964 period witnessed the major mobilization in the field of adult education up to that point in Brazilian history which had a significant impact in Brazilian political life.
- By 1964, 50% of the population still lived in rural areas and the illiteracy rate had declined to 36% of the population 15 years and older.
- Like the “*Estado Novo*” regime, the Military Regime of 1964 (1964-1985) reformed all levels of education (the main legal instruments were the Constitution of 1967 and its amendments; and the Acts No. 5,540/68 (*higher education*) and 5,692/71 (*primary and secondary education*) which modified the LDB of 1961).
- The reforms in education were originated from the MEC-USAID Agreements which generated a lot of controversy because the USAID proposals and interests were told to be not beneficial to Brazil by students, teachers, professors, and politicians who had a different view of how country should be.
- The liberal humanist inspiration that characterized the LDB/61, was traded by the technicist tendency of the Acts 5,540/68 and 5,962/71 which were in

accordance with the technobureacratic-capitalist-dependent model adopted by the military regime.

- The reforms introduced by the military administrations expanded public primary and secondary education but as funding did not grow accordingly there was a significant loss of quality in both; public higher and vocational-technical secondary education also expanded but counted on new resources for that; the motto was a more rational and efficient use of educational resources at all levels of education.
- By the end of the 1960s/beginning of the 1970s, educators and practitioners who opposed the government views on education regrouped and began to participate more effectively in Brazilian education through events and publications (graduate studies, papers, etc.).
- In 1985, the military regime ends and the present phase of Brazilian republic begins.
- By 1985, only 30% of the population lived in rural areas and the illiteracy rate had declined to 22% of the population 15 years and older.
- Despite a new constitution was completed in 1988 (which revived many of the educational principles present in the Constitutions of 1934 and 1946), the reforms on education introduced by the military administrations only began to be significantly altered after the enactment of a new Education Act (LDB) in 1996 which took almost 10 years of discussions in the National Congress (the debates of the LDB of 1961 were retaken and

another compromise was reached by the proponents of public and private education but the former advanced over the latter).

- In 1995 the first term of the Cardoso administration begins.
- By 1995, only 22% of the population lived in rural areas and the illiteracy rate had declined to 15.6% of the population 15 years and older.
- Since the beginning of the Cardoso administration, an overall education reform has been under implementation having as legal instruments the Constitution of 1988, its amendments, the LDB of 1996, and complementary legislation (laws, decrees, ministerial orders, and resolutions and experts' opinions from the National Council of Education).
- The present reform on Brazilian education is an initiative of the Cardoso administration which has been negotiated with selected important stakeholders, that is, not with all of them

Process Question Number Four

Is the present structure of Brazilian education likely to change?

The history of the making of the Constitution of 1988, the LDB of 1996, and the Decennial National Plan of Education (still in Congress) indicate that the answer is yes if the political forces that presently control the federal government lose the 2002 or the following presidential elections to socialist, communist, or even some of the nationalist political forces. However, broad changes will also depend on the support of society.

Below are listed some evidence that support this perception:

- According to Pinheiro (1996), in relation to education, the Constitution of 1988, “like previous ones, [presents] a conciliatory solution for the conflict between the public and the private” (p. 284) but such agreement was “more unfavourable to the public sector than to the private one” (p. 283), however Saviani (1998a) stated that most of the educators’ proposals for the education chapter of new constitution (the 1988 one) which were listed in the final document (*Carta de Goiânia*) of the Brazilian Conference on Education of 1986 (*Carta de Goiânia*) were included in the Constitution of 1988.
- Since the very beginning the Cardoso administration became very active in education whose policy was connected to the overall government strategy of maximizing public services efficiency while at the same time privatizing what the present federal administration and its supporters do not consider should not be owned and operated by Public Government - its critics call such approach the neo-liberal policy or the minimal state.
- The present shape of Brazilian education is a blend of the past trends affected by Cardoso administration initiatives (administrative and legal ones).
- From January 1995 up to 1998, the Constitution has been altered (EC14 of September 1996), a new LDB has been approved (the final version was the one supported by Cardoso administration [LDB of December 1996] which was slightly altered in 1997 [Act No. 9,475]), both have been complemented or detailed by laws, decrees, executive orders, and by

National Council of Education's expert opinions and resolutions in order to implement the educational view of the Cardoso administration and its supporters for Brazil (Saviani, 1998b).

- Some of pieces of educational legislation were enacted before the approval of the LDB of December 1996, others after, what allows us to conclude that the Cardoso administration did not want to take much time in beginning to implement its view of education.
- Whenever there was no legal need for a law, the complementation and detailing of educational regulations were done by decrees, executive orders, and by National Council of Education's expert opinions and resolutions (MEC, 1998b; Saviani, 1998b; Souza & Silva, 1997).
- Some educators characterize the LDB of 1996 as "innocuous and generic" (Saviani, 1998a, p. 199) and "minimalist" (Cunha, in Saviani, p. 199) while others understand it really should bring only "the essential" (Souza and Silva, 1997, p. 3) leaving the details to "minor pieces of legislation" (Souza & Silva, p. 3).
- There are commonalities between the version originated in the House if compared to the final version of the LDB of 1996, and even its critics see positive points in it too (Saviani, 1998a).
- Public education gained with it if compared to previous legislation but private education still can provide the services it offered before, however with more Public Government control.

- MEC became the major authority in Brazilian education and any federal administration can shape that latter according to its view what can contribute to improve, worsen, or keep the existing status of education in Brazil (Saviani, 1998a).
- Differently from the previous three federal administrations, the Cardoso one has been pushing very hard for the achievement of the eradication of illiteracy and the universalization of fundamental instruction in ten years' time, however, as the Union mandatory expenditures in fundamental education decreased from 50% to 30% of its total expenditures in education, some critics say that the Federal Government is trying to have it accomplished using mostly other levels of government money (e.g., a number of governors and mayors).
- Since the beginning of 1998, two bills were introduced in the National Congress regarding the decennial national plan of education (one from the Cardoso administration, and another from the opposition parties).
- The Cardoso administration terminated the CIEPs like educational initiatives (which originated from a socialist party and for some "on conceptual grounds . . . make good sense" (Plank, 1996, p. 78) at the federal level and put in place their own initiatives for fundamental education which aimed at improving/maximizing the performance of the already existing educational facilities and personnel rather than building new ones while at the same time pushing for having all the children age 7-14 in school.

implement their view on VTET for Brazil. The Brazilian VTET is structured in the following way:

General (Constitution of 1988 and/or the LDB of 1996):

- Education and work are among the social rights of every Brazilian citizen (education a “right of all” having the State and the family “the duty” to provide it).
- “*Educação profissional*” (translated in this work as “vocational technical education and training [VTET]”), a modality of Brazilian education, is a lifelong process of development of aptitudes for the productive life integrated to the different forms of education, to work, to science, and to technology (there is no reference in the LDB of 1996 to terms such as “*politecnia*” or “*educação tecnológica* (technological education)”).
- Any Brazilian that is enrolled or completed fundamental, middle, or higher (education) instruction, as well as the worker in general, young or adult, count on the possibility of having access to vocational-technical education and training.
- VTET is required to be developed in articulation with regular instruction or by different strategies of continuing education.
- VTET can be offered not only specialized institutions or at the workplace but also at regular instruction schools.
- Specialized institutions (vocational-technical schools and other VTET providers), in addition to their regular [italics added] programs, will offer

special and informal [italics added] ones, which must be open to the community, being the enrollment for them conditioned to the student learning ability and not necessarily to his/her level of schooling.

- The knowledge individuals obtained through any VTET strategy may be assessed, accounted for, and certified (for work or continuation of interrupted studies purposes).
- The secondary level technicians programs graduates are entitled to diplomas that when properly registered will be valid nationally.

MEC's and Ministry of Labor (MTb)'s Roles and Policy Premises Regarding

VTET:

- MEC is the main authority in Brazilian VTET having the National Council of Education [CNE] an advisory role (since the termination of the Federal Council of Education, MEC has the final word in Brazilian VTET what was not true for some educational issues in the 1961-1994 period).
- Both MEC and MTb were required by President Cardoso to work in cooperation on the matters related to VTET mainly through SEMTEC and SEFOR (Secretariat for Preparation and Development for Professions) - while MEC is formally in charge of vocational-technical education, MTb has dealt with training aspect of VTET.
- MEC/MTb's policy for VTET has the following premises:
 - VTET is considered to be complementary to regular basic education and must have as its goal the individual's employability.

- Employability must be understood to include not only the ability to get a job, but also the ability of keeping oneself in a labor market in constant mutation.
- Employability involves three interrelated factors: investments that generate labor, efficient intermediation services and workers' continuing education.
- These three factors result from the growing globalization and competitiveness of the economy (modernization and restructuring processes begin in top notch sectors, but extend to all sort of enterprises - even to the informal market).
- It begins to be born, from that process, the exigence of a new worker profile, able not only of "doing," but also of "thinking" and "learning" continually.
- The construction of that profile requires, before all, quality basic education.
- It depends, also, from permanent VTET education, but always with beginning, middle and end, that is, focused on the market, guaranteeing the worker opportunities of entering and leaving the development process, during his professional (work) life.

General (Decree No. 2,208 of 1997):

- The goals of VTET are:

I - promote the transition between the school and the world of work, preparing youngsters and adults with general and specific knowledge and skills for performing productive activities;

II - enable the preparation of professionals, able to perform specific activities in the workplace, whose schooling is correspondent to middle (secondary), higher (college, post secondary), and graduate (college, post undergraduate) levels;

III - specialize, improve, and update the worker's technological knowledge;

IV - train non-skilled persons (*qualificar*), train for workers' for different occupation of theirs (*reprofissionalizar*), and update workers' skills (*requalificar*), young or adult, independent of their schooling, so that they can join the work opportunities available in the market] and perform better their functions at the workplace

- VTET courses/programs belong to one of three following levels levels: training (*básico*), vocational-technical (*técnico*), and technical (*tecnológico*).
- While the vocational-technical and technical levels are formal modalities of education, the training level is a non formal modality of education (all the existing VTET programs which do not meet the regulations established through the Decree No. 2,208/97 for vocational-technical or technical programs are in the domain of training).

a) Training Level:

- Training level courses/programs train non-skilled persons, update workers' skills, and train workers' for different occupations of theirs.
- They are open to anyone independent of his/her previous schooling (however, the students should be able to attend them).
- The completers of courses/programs at the training level are entitled to get certificates of occupational training.
- The duration of courses/programs at training level is variable, and their curriculum is not submitted to the public government regulations.
- The courses/programs curriculum must be compatible with the technological complexity of work, with the level of technical knowledge of the student, and to the student's level of schooling.
- All VTET public and non profit educational institutions which get public funding must offer courses/programs at training level for not only students of basic education public and private schools but also to workers.

b) Vocational-Technical Level:

- Vocational-technical level programs prepare secondary level technicians (*técnicos*).
- They require that applicants be enrolled or have completed middle instruction (secondary education).

- Individuals may enroll in a vocational-technical program time after having begun middle instruction but the completion of the former is only allowed after completion of the latter.
- VTET at vocational-technical level was separated from middle education each having their own curriculum.
- Vocational-technical programs can offered in parallel or sequentially to the middle instruction but not in a combined program as before (VTET courses which are included in the diversified part (25% of the total) of the middle instruction curriculum can count as part of a vocational-technical program that an individual may decide to take later).
- The curriculum for the vocational-technical programs are being redone and will have 70% percent basic part (defined by the normative bodies of each instruction system for the VTET institutions under them) and a 30% specific part (defined by each VTET institution individually).
- The vocational-technical programs basic curriculum defined by the normative bodies of the existing instruction systems in Brazil will include a list of courses, their minimum duration (1560 contact hours including a 360-hour internship in business and industry), basic contents, skills, and competencies to be mastered.
- Such curriculum will be developed having as major guidelines the national curricular parameters (minimum workload per program, minimum contents, basic skills and competencies per career cluster) to prepared by MEC in conjunction with the CNE.

- MEC will have to set up mechanisms for the development and permanent update of the national curricular parameters for each career cluster (those mechanisms will have the participation of instructors, entrepreneurs, and the workers from each career cluster).
- The curriculum development process was more decentralized if compared to before (the federal government gave power away to non federal instances and to the VTET institutions themselves).
- The curriculum of vocational-technical programs will be organized in courses (as before) which may be grouped in modules (not possible before).
- At the completion of each module the students will get a certificate (not possible before).
- Courses and modules can be taken at different VTET institutions in an intermittent way (before that was not possible).
- Programs whose curriculum is organized in modules have to be completed in at most five years time (not possible before).
- Courses and modules taken in a specific vocational program may be counted towards another (not possible before).
- The accredited VTET school which issued the certificate for the last module of the curriculum of a vocational-technical program taken by a student will also issue the diploma of secondary level technician if the candidate proves he/she has already completed middle instruction (not possible before).

- The level of flexibility for the students to take the programs is much more than previously (before if a student had to interrupt a program and could not return sometime later, he would not get any certificate stating his having received technical training in a specific area; it was the diploma or nothing).
- Students can be exempt of enrolling in courses and modules of vocational-technical programs for which they already have certificates of competency (such certificates will be granted to those individuals who pass in correspondent exams to be held by the federal and states systems of education; such possibility did not exist before and allows flexibility for the students to get training at the vocational-technical level).
- The mandatory supervised internship must be constituted by social, occupational and cultural learning activities which are made available to the student by the participation in real situations of life and work, under the responsibility of the school.
- Programs whose curriculum are experimental (that is, not backed by the national curricular parameters) may be implemented as long as their curriculum are previously authorized by the normative bodies of the instruction system to which the VTET institution belong.
- After the program implementation is evaluated by MEC (in conjunction with the CNE), if the program is approved, it will be accredited and its diplomas will become valid nationwide.

- Such determination was much more limited before when a new program could be started only after being authorized at the federal level (now there more flexibility for trying new curricula which can be authorized at a lower level of public government).
- The courses that are included in the curriculum of vocational-technical programs are delivered by teachers, trainers, or teachers/trainers assistants who must be selected taking in consideration mainly their professional experience (they must either have teacher training or get it while in-service through regular teacher training programs or through special “pedagogical development”).
- Before the present reform only those who had higher education diplomas could be hired to teach in vocational-technical programs but now that changed because a higher education diploma is not a pre-requisite anymore to teach in vocational-technical programs (it was like this before the 1980s).
- The teacher training options indicated will be described in legislation to be enacted by MEC in conjunction with the CNE (those teacher training programs for vocational-technical instructors were offered before, but not as something permanent as it is mandated now)

c) Technical level:

- Technical level programs prepare associate of applied sciences (*tecnólogos*).

- Such programs must meet the demands of the various sectors of the economy, including specific areas.
- They demand that applicants have graduated from either from middle instruction or from vocational-technical instruction.
- The completers of technical programs are entitled to get diplomas.
- The dispositions of the present reform on VTET about the technical programs are still minimal (in the past the latter was a domain of the higher education area of MEC [SESU] in conjunction with the CNE, but the Decree No. 2,208 of 1997, place them in the VTET area).
- It is still to be seen if they will remain as they have been structured so far and to which MEC area they will be subordinated: continue under SESU or be under SEMTEC (the LDB of 1996 do not list them among the higher education programs or anywhere).
- Higher education institutions and others, clearly in the domain of VTET (e.g., federal VTET schools), already provide them.

VTET Providers:

- The VTET providers that offer vocational-technical and technical programs have to offer them in formal bases in order to obey the dispositions of the LDB of 1996 and complementary legislation.
- The VTET providers that only offer training level courses and programs operate in non formal bases.

- SEFOR/MTb classified the providers of VTET in Brazil in seven major groups (despite some of them are named systems, they do not operate as systems because the agencies of VTET in the Country are far from operating in a systemic way, articulated among themselves or to national policies.
- Such groups are a product of the conditions below:
 - federative organization of the country, with three levels of Government - federal, state and municipal - combining a high degree of political and bureaucratic centralization of the Federal Government, with a wide margin of economic and executive decentralization in the state and municipal governments.
 - ample diversity of institutions and organisms, public and private, involved in or responsible for VTET in the Country, without an effective national coordination.
 - a historical experience with Institutions of Development for Professions (*Instituições de Formação Profissional - IFPs*), funded by compulsory contributions, under the private management of entrepreneurs, as it is the case of Senai, Senac, Senar and Senat.
- The seven groups of VTET providers (of several kinds, combining ample diversity of organizational, managerial, pedagogical and funding models, as well as stakeholders) are the following: a) public VTET systems, b) the S system, c) public and private universities (and other higher education

institutions), d) unions, e) business and industry, f) NGOs, and g) other private VTET providers.

a) Public VTET Systems:

- The public VTET systems include the federal, state, and municipal VTET systems which are estimated to have around 12,5 mil school units around all the country.
- The best structured subgroup is the “federal technological education system” (it is addressed in the responses for process questions 8 through 11).
- The best known and organized state system is the São Paulo system (the Paulo Souza system [CEETEPS]) (in 1994 it had 96 vocational-technical schools and seven technology colleges (the FATECs graduate associate of applied sciences or *tecnólogos*), located in 80 municipalities, which offered 38 different programs for over 84 thousand students).
- No accurate information could be found about the other state or municipal systems, however it is known that they exist and that they probably are not in good shape due to funding, management, and pedagogical problems; in addition to those, the programs in public systems are out of tune with the labor market (most of the state and municipal VTET schools do not operate as systems but as isolated VTET providers with, in some cases, some central coordination).

b) The S System:

- The S System includes the National Services of Apprenticeship and of Social Service funded by compulsory contributions on the top of the payroll, to know: SENAI/SESI (manufacturing), SENAC/SESC (commerce and services, except for banks); SENAR (agriculture); SENAT/SEST (transport on tires); SEBRAE (all sectors, for serving micro and small companies).
- Together, these institutions have more than 7 thousand schools and training centers, covering, only in the part of education and development for professions, around 3 million of enrollments (not including medical and social appointments).
- The great majority of the courses/programs offered by S System institutions are classified at the training level of VTET (the number of students enrolled in vocational-technical and technical programs provided by SENAI/SESI, SENAC/SESI, SEBRAE have been less than 1% of their total enrollments).
- SENAR and SENAT do not have their own VTET schools and centers they buy the training they identify as needed from other providers).
- Despite having a strong reputation, the S System, like the public ones, has been criticized regarding to its funding, management and pedagogy. However, they are much more focused and agile to meet business and industry needs than the public systems (like the federal VTET system, the S System is going through a phase of restructuring; the changes are still to be

defined by the federal congresspeople, the federal government, business and industry, those who work at the S System besides other stakeholders).

c) Public and Private Universities (And Other Higher Education Institutions):

- Many public and private universities and other higher education institutions are providers of VTET.
- Technical programs are provided through all sorts of higher education institutions.
- Various federal and state universities have vocational-technical schools attached to them.
- In addition to that, VTET courses/programs at VTET training level are provided as extension services to communities they serve.
- There are over 850 higher education institutions in Brazil and there is not enough information on how many of them provide courses/programs in the domain of VTET.

d) Unions:

- Schools and centers funded and operated by workers' unions.

e) Business and Industry:

- Schools and foundations directly funded and operated by entrepreneurial groups (besides the contributions they make to the S System, or making use exemption of part of the contribution due to the S System).

f) NGOs:

- Religious, communitary, and educational non governmental organizations, which provide services to poor communities (it is estimated that there are 2 thousand of former that provide services in VTET).

g) Other Private VTET Providers:

- Non regulated VTET (training level), which is provided mainly in the urban centers and/or by mail (it is estimated that there are more than 10 thousand units in all the country)

Providers of VTET, Students, Business, and Industry:

- Due to heterogeneity of the VTET providers it difficult to find accurate data about them.
- Despite its variety, the provision of VTET is below what is needed by the country, as only five million of youngsters and adult have access to VTET courses and programs per year.
- Besides preparing those who are going to join the labor market by the first time, there is also the need of continuing education of those already in the labor force (in 1996 it was composed of approximately 74 million workers, who have spent less than four years at school [but whose schooling is not equivalent to 4th grade] being 30% functionally or totally illiterate).
- The VTET providers (mostly the schools and centers) interact with business and industry in order to arrange for the students' internships and

jobs, and to offer courses/programs for updating and refreshing their employees' knowledge and skills (such relation is also used to obtain equipment donation too).

- While the S System providers have made extensive use of business and industry input regarding programs and the development/update of their curriculum, that is not standard practice at most of the public VTET providers which are slow in their responsiveness to business and industry needs.

Process Question Number Six

Why is Brazilian VTET structured the way it is?

Like the structure of Brazilian education as a whole, the structure of VTET in Brazil is a result of an evolution that has happened through Brazilian history since the sixteenth century. Changes have occurred in terms of scope, nomenclature, organization, degree of need, and value. A summary of the developments over time are summarized below:

- Before 1549, there was no systematic education or training in Brazil.
- From 1549 to 1759 the Jesuits had a concession granted by the King of Portugal to establish schools in Brazil; they also got partial funding from the Kingdom.
- The first curriculum taught by the Jesuits was the same for the sons of the colonists and the sons of the natives who after having initial common

instruction, at some point in time, they had to choose between getting academic instruction or a vocational one (agriculture and handicrafts).

- As soon as the Jesuits noticed that the sons of the natives were not suited to become priests that changed, the sons of the colonists were taught a more academic curriculum while the sons of the natives got a more utilitarian curriculum.
- After the death of Father Nóbrega (the head of the Jesuits in Brazil) in 1570, the Jesuits' schools in Brazil had their curriculum changed to solely academic due to the priority of using the existing limited resources of people and funding for the education of the sons of the colonists and the preparation of priests (vocational instruction in educational facilities was terminated).
- From a beginning where anyone could attend vocational instruction, the latter was directed to those at a lower position in society or considered less apt intellectually, and finally not offered at all (such view was the beginning of negative mindset towards VTET in Brazil).
- During the Jesuit period in Brazil a not for profit vocational lyceum was established in Ouro Preto (Minas Gerais) in 1749 by a Franciscan friar, Gaspar de Santa Teresa (it provided training in carpentry, metal working, sculpture, painting, metal casting, tailoring, and clayware making).
- In 1759 the Jesuits were expelled from all Portuguese possessions, including Brazil, but the situation did not change regarding vocational

instruction which as a general rule was provided at first at the sugar mills, after at minting and engraving facilities, and in the beginning of the nineteenth century at the navy arsenals.

- One fact that contributed to the delay of establishing of VTET schools/programs in Brazil before the 1800s was an Executive Order from the Portuguese government (1785) which mandated the closing of the existing factories in Brazil in order to prevent competition with the ones located in Portugal (it was only revoked after the arrival of the Portuguese Royal family in Brazil in 1808).
- Among the various initiatives taken by the Portuguese government, to enable its operation from Brazil (1808-1821), was the establishment of several educational institutions and programs which also included technical schools/programs in metal working/gun making, agriculture (botanics included), economics, chemistry (industrial chemistry, geology, and mineralogy), and technical drawing (the technical instruction provided was viewed as a sort of higher education).
- The 1808-1821 period did not bring any significant changes to vocational instruction which was aimed for the poor, the handicapped, the orphans, and other “unlucky ones” (it was mostly provided of a side activity of non educational institutions what would only begin to change after the middle of the nineteenth century).
- During the imperial period (1822-1889), VTET continued to get little attention from those in charge of education however some vocational

programs and schools (agriculture, industry, commerce) were established in Salvador, Rio de Janeiro, Niterói, and Ouro Preto as well as in other cities located in Maranhão, Pará, Pernambuco, Rio Grande do Sul, and Sergipe during D. Pedro II's reign.

- Vocational instruction continued to be viewed as something for the “unlucky ones” being offered through few vocational schools, and other organizations (among them orphanages and asylums) what contributed for strengthening the low esteem regarding to it.
- The first ten years (1889-1909) of the “Old Republic” period did not witness much in terms of concrete actions regarding to VTET.
- The fear of the already large and growing number “unlucky ones” in the Brazilian major cities lead to a federal governmental policy of social control which involved among other things the use of vocation education to provide part of them not only a work ethic, an occupation, and an “education” but also to keep them out of the streets and allow them to dream about having a “future,” and also to provide skilled labor to the still incipient Brazilian industry (Brazil was still a rural country whose economy was mostly based on agriculture for export).
- In 1909 the federal government established 19 artisans’ apprenticeship schools in Brazil, one per province (federal schools because the states and municipalities’ governments besides the business and industry people had not acted until that moment to establish such schools; exceptions were minimal).

- Those schools were the formal beginning of the present federal technological education system.
- In addition to vocational training, they had to provide primary education and were aimed at the children of “the unlucky ones” (the schools were free tuition being their occupational goal was to prepare carpenters, tailors, locksmiths, shoe makers, leather and metal artisans, etc.).
- The fact that only São Paulo and Rio de Janeiro had enough industries and companies to possibly employ the future graduates of the vocational schools at that time provides a significant indication that the main goal for their establishment was really other than providing skilled people power for entry level positions in industry.
- In 1910, the agriculture branch of the present federal technological education system was established (at first the agriculture apprenticeships were provided in model-farms located in three provinces and in Rio de Janeiro, the Federal District at that time).
- Before that vocational agriculture instruction in Brazil was provided mostly by philanthropic organizations and aimed for the “unlucky ones”.
- Overall, agriculture instruction was divided in four levels: primary agriculture instruction, agriculture apprenticeships, secondary agriculture instruction, and higher education instruction which should prepare skilled labor in the following areas agriculture, zootechny, rural industries, and veterinary medicine (like the artisans’ apprenticeship schools, the former was subordinated to the Ministry of Agriculture, Industry, and Commerce).

- It is believed that vocational agriculture at first was intended more for social control rather than for preparing skilled people power (the population was growing in the cities because people were leaving the rural areas so it was important to keep them in the latter by “educating” them enough for them to take their “position” in the existing social order).
- In 1912 the Brazilian Confederation of Labor was established which besides other claims pushed for mandatory primary instruction for all.
- In 1917 an institution for preparing instructors for teaching the trades and arts was established (presently Centro Federal de Educação Tecnológica Celso Suckow da Fonseca [CEFET-RJ]).
- In 1918 the federal government made changes in the regulations for the instruction of trades and arts which had been enacted in 1911.
- Also in 1918 the National Department for Labor was established to regulate the organization of work in Brazil.
- In 1920 the Service for the Remodeling of the Vocational-Technical Instruction established to be in charge of this type of instruction in Brazil.
- In 1926 the instruction in the artisan’s apprenticeship schools was standardized at national level despite the regional differences.
- In 1927 the Fidelis Reis’ bill (it mandated compulsory vocational education for every youngster in Brazil as part of their schooling and was the first attempt to establish the same type of education for all Brazilians) became law (after 6 years in Congress) but due to pressure from the elites, the proposed compulsory status of vocational education was removed except

for the primary schools maintained or which received funding from the federal government, and the Colégio Pedro II. The dualism in Brazilian education persisted (The Reis' Act was never made effective).

- In 1928 the Fernando de Azevedo reform intended to articulate VTET instruction with the other branches of Brazilian education but was only successful regarding to primary instruction.
- Despite the advancements verified since 1909, VTET in Brazil did not change very much in terms of reach and status, that is, it continued to be viewed as second class education, to have few students, and to get less support that it needed from all levels of public government (the context would only begin to change after the end of the “Old Republic” period).
- In the 1920s, as urbanization and industrialization started to happen at a faster pace in Brazil, the country went through various socio-economic-politic changes which lead to the “Revolution of 1930.”
- Brazil was gradually leaving the agriculture for export phase and beginning the national-developmentalism one which was based on industrialization for meeting the internal demand and exporting manufactured products (before the 1940s most of the industries existing in Brazil were involved in activities related to agriculture products processing, textiles, shoe making, food processing, and beverages making being their mechanization level at the very beginning stage).

- The first Vargas administration (1930-1945) brought many changes to education as a whole however VTET was deeply affected specially in the phase that is known as “*Estado Novo*” (1937-1945) - the dictatorial phase.
- Still in 1930, the Vargas administration terminated the Service for the Remodeling of the Vocational-Technical Instruction, and established the Ministry of the Affairs of Education and Public Health; in 1930, it was established the Ministry of Labor, Industry, and Commerce (November 26; Decree 19,433) which would later become involved with VTET.
- The artisans’ apprenticeship schools were transferred from the former Ministry of Agriculture, Industry, and Commerce to the Ministry of the Affairs of Education and Health (it established a Vocational-Technical Instruction Office).
- Such initiatives were in consonance with Vargas’ plans that called among other things for an intensive diffusion of public instruction, principally the vocational-technical one.
- The Campos reform (1931-1932) organized secondary (academic), commercial, and higher education at a national level (it complemented the existing norms for industry and agriculture instruction).
- In 1932 the *escolanovistas* published the Manifesto of the Pioneers of the National Education which among other things proposed that every Brazilian should have an integral education, common to all, but taking in consideration their natural aptitudes, that is, a single type of education, abolishing the existing dualism, and that centralism ended, that is, schools

should meet the local needs (however, secondary education would have a common general culture base and sections of specialization for activities of intellectual preference (humanities and sciences) or of manual and mechanical preference (courses of technical content).

- It was also stated in that education plan the development of the vocational-technical school, of secondary and higher education levels, as base of the national economy, with the necessary variety of types and schools (agriculture, mining, fishing; industrial trades; and transportation and commerce) and according to methods and directives prepared skilled technicians and workers for all levels of the industrial hierarchy.
- The proposals of the *escolanovistas* served as the framework for the chapter on education in the Constitution of 1934 which was short lived because in 1937 the “*Estado Novo*” regime began and right away granted its own constitution.
- Also in 1934, among the initiatives in VTET were mandated by the federal government were the gradual expansion of industrial instruction, the establishment of new federal industrial instruction schools, and the official accreditation of state, municipal , and private vocational-technical schools as long they followed the federal regulations regarding to VTET instruction and allowed federal inspection.
- Except for the legislation passed during the 1930-1937 period and the proposals presented by then, the situation of VTET in Brazil did not change significantly if compared to the “Old Republic” period (it was still

- continued to be viewed as second class education, to have few students, and to get less support that it needed from all levels of public government).
- In 1937, the Constitution granted by the “*Estado Novo*” regime indicated that the State’s first obligation in education was to provide basic [(primary)] education and vocational training to the “less favored classes” (a different view from the *escolanovistas*’ one).
 - In the same year the federal artisans’ apprenticeship schools were renamed to industrial lyceums, the funding to vocational-technical education was increased, the new constitution mandated that manual works must be taught at all primary, secondary and normal schools, and the cooperation between industry and the Public Government regarding to industrial instruction was established.
 - In 1942 the National Service for Industrial Apprenticeship [SENAI] was established by a Decree-Law to provide industrial training being its organization and management given to National Confederation of Industry (funding was to come from a monthly contribution paid by the industries based on their payroll; the establishment of SENAI is very much connected to the efforts of industry leaders).
 - Also in 1942, the Organizational Acts for Industrial Instruction and for Secondary Instruction were granted by the federal government (they were part of the Capanema reform).

- By 1942, the federal industrial lyceums became either industrial vocational schools (less industrialized areas) or industrial vocational-technical schools (more industrialized areas).
- In 1943 the Organizational Act for Commercial Instruction was granted by the federal government (it was part of the Capanema reform).
- The “*Estado Novo*” regime impacted VTET substantially because this time not only legislation was passed but also the offer of VTET expanded significantly (enrollments and funding).
- Overall, the reforms introduced by the “*Estado Novo*” regime (which were inspired in the German education model) consolidated the separation of education for those who would become leaders and from the one for those who would be led, and despite having helped the industrialization efforts being held in Brazil, they contributed to maintain the view of VTET as second class education.
- The “Democratic-Populist Republic” period followed and lasted from 1945 until 1964.
- Brazil was still an agrarian country, however the national-developmentalism phase was already under way.
- During the 1940s the industries which manufactured popular consumer goods were joined by government sponsored initiatives in steel, oil, and equipment.

- In the 1950s and 1960s, the industry expansion would continue but from 1955 on it would rely significantly on international capital which would begin to play a stronger role in Brazilian economy.
- Besides the areas already alluded to, investments were also made in the following base industries: mechanical, electrical, communications, transportation which supported the efforts done in other industries such as cars and household appliances manufacturing.
- While before the 1940s the industries mechanization level was incipient in Brazil, after 1940s they became more and more dependent on the electrical-mechanical equipment which required a more specialized workforce.
- However the need for the latter was not only a result of the production technical base becoming more complex, there was also need for more qualified personnel due to the increased difficulty of the management of operations caused by the diversification of products made in Brazil and their production scale.
- The Constitution of 1946 provided new general principles for Brazilian education but the replacement of the Capanema reform only happened in 1961 with the enactment of an LDB (Act No. 4,024) that took over 15 years of discussions in the Brazilian Congress.
- In 1946 National Service for Commercial Apprenticeship [SENAC] is established by a Decree-Law, at the request of businesspeople, to provide

training for commerce and services activities being its organization and management was given to National Confederation of Commerce.

- Also in 1946, the Organizational Act for Agriculture Instruction was granted by the federal government.
- In 1950 Act No. 1,076 granted the completers of the first phase of vocational education the right to enroll in the second phase of secondary (academic) instruction if they met the legal requirements (the practical results of such “equivalence” were ineffective due to the difficulty of meeting the demands of the law).
- In 1953 Act No. 1,821 established that the graduates of vocational-technical or normal secondary instruction could apply for any higher education program if they met the legal requirements (the practical results of such “equivalence” were the same as the ones of the Act No. 1,076 of 1950).
- In order to adequate the VTET schools for contributing to provide properly trained peoplepower for the Brazilian industry which was expanding and diversifying, legislation was passed in 1959 (Act No. 3,552) setting regulations which were mandatory for the federal schools and the SENAI ones but optional for the state, municipal, and private ones.
- Particularly at the federal level, Act No. 3,552 of 1959 granted the federal schools with substantial pedagogical and administrative autonomy so that they could be responsive to industry needs.

- In 1961 the federal government renamed the basic secondary industrial programs to industrial gymnasiums in order to try to change the existing negative attitude toward them by giving them a denomination equivalent to the secondary (academic) gymnasiums (such initiative was part of a set of others related to VTET to be implemented during Quadros's administration however most were not due to the short life of the latter).
- Also in 1961, after more than 15 years of discussions in the National Congress, the Directives of National Education Act [LDB] was finally enacted becoming Act No. 4,024.
- Regarding to VTET the major modification was the complete equivalence of all branches of secondary technical instruction with the secondary academic one allowing the students enrolled in the former to apply for any higher education program if they wished to.
- Such equivalence caused not only the enrichment of the curricular structure of the vocational-technical programs by the inclusion of general culture and technical contents in the same curriculum, but also the diversification of the clientele, starting a process of elitization of the federal VTET schools (due to the free quality academic/vocational-technical education provided at them which enabled the students to apply for college if they wished to).
- In 1963 the federal government pushed for the establishment of the Gymnasiums Oriented for Work, and of the Intensive Program for Peoplepower Preparation for Industry (those were inspired in the success

being achieved by the Senai schools and, in part, by the federal vocational-technical schools).

- Also in 1963, the Federal Council of Education of a MEC's proposal for the establishment of short term engineering programs (operational engineering) which would eventually provoke changes in the federal vocational-technical education schools (their graduates of these programs would be prepared for working in industry as managers and supervisors).
- Operational engineering programs eventually would lead to the offer of VTET programs in Brazil at the technical level and beyond by the federal and non federal VTET providers.
- Still in 1963, MEC established an agreement with the USAID which aimed at improving the preparation of peoplepower for meeting the needs of the expanding Brazilian industrial capability (the agreements between Brazilian and US agencies involved the provision of equipments, financial and technical assistance from the latter to the former and had been happening since 1946 being intensified after 1964).
- During the military regime (1964-1985) such agreements would play an important role in the changes to be made in Brazilian education including VTET (the World Bank would have a significant participation then).
- If compared to the "*Estado Novo*" regime who had a single administration the "Democratic-Populist Republic" period had four major ones, however to VTET, there was a continuation of what had been started in the former, that is, legislation was complemented (and later updated), the offer of

VTET continued to expand, secondary level technical instruction was gradually made equivalent to secondary academic one, and the first steps to establish post secondary VTET were taken (such continuation aimed to support the national-developmentalism model which had been started in the first Vargas administration and which was only substituted by the interdependence one during the military regime).

- After 1961 the graduates of the federal VTET schools were mostly interested in going to college rather than working, at least for some time, as secondary level technicians, so the S system schools and equivalent ones were the ones that really prepared the majority of those who would work in business and industry but mostly for positions below secondary level technicians.
- The “military regime” period lasted from 1964 until 1985.
- The Brazil of 1964 was a much more industrialized country than the agrarian Brazil of 1945, and such industrialization that was going to be consolidated in the 21 years of the military regime.
- The interdependence political doctrine that substituted the national-developmentalism one would support the existence of three major economic players in the Brazilian economy: the government owned companies (“*estatais*”), the Brazilian owned private businesses, and the multinational companies.

- From 1968 to 1974, substantial public and private investments were made in infra-structure, agribusiness, and heavy, transformation, equipment, and durable goods industries.
- The oil crisis and the increase in the international interest rates of the 1970s affected substantially the performance of Brazilian economy, beginning a crisis which led to the recession of the 1980s (during the latter, among other things, the Brazilian economy stagnated, the inflation rate rose up to 235% a year (1985), and services passed industry as a percentage of the GDP while agriculture stabilized around 10%).
- Throughout the 1964-1985 period business and industry not only expanded and diversified but also their operations became more complex from the administrative and technical points of view what had a significant impact on the number of the workers needed and the skills they were required to possess.
- In order to implement their view on how Brazil should be, the military regime made significant changes in education (and VTET in particular), so that it could back the efforts of quick economic growth in conjunction with minimum social and political unrest.
- In 1964 consultants from the Oklahoma State University at the request of the Ministry of Education and the Ford Foundation analyzed VTET programs in Brazil, identified a shortage of engineering technicians in the Country, and recommended the development of programs to prepare them.

- Also in 1964, the Center for Integration Enterprise-School was established in São Paulo which aimed for setting the necessary conditions for better interaction between schools and business and industry (later other centers were established in other states).
- Still in 1964, the Centro de Educação Técnica in Guanabara (now Rio de Janeiro state) and São Paulo states were established (those two were the first of the various VTET education centers established in Brazil in the 1960s which would operate under the technicist concept of education for curriculum development, personnel training, and technical support).
- In 1965 the federal VTET schools got their present denomination “Escolas Técnicas Federais” (they gradually stopped offering basic secondary level industrial instruction and concentrated their efforts on vocational-technical secondary level industrial programs).
- Also in 1965, the Federal Vocational-Technical School at Rio de Janeiro (now CEFET-RJ) received an \$800,000 grant from the Ford Foundation to establish a “Center for the Development of Technical Education” with the technical support from Oklahoma state University (the support under such grant lasted for five years).
- In 1966 classes of the three-year engineering technology program (named operational engineering in Brazil) were started at ETF-RJ but the degrees would be granted by the engineering college at the University of Brazil (now Federal University of Rio de Janeiro).

- In 1967 the Congress promulgated a new Constitution in part related to education which set the initial framework for the implementation of the initiatives based on “the educational economicism” (it would be substantially modified two years later so that the federal government had additional powers to implement its view for Brazil).
- Still in 1967, the agriculture vocational-technical instruction which at that time was under the Ministry of Agriculture was turned over to the recently reorganized Ministry of Education and Culture (the federal agriculture vocational-technical schools did not have the same degree of autonomy as the industrial schools which would happen in 1993).
- In 1968 the Act No. 5,540 reformed higher education altering the LDB of 1961 opening the possibility for Brazilian higher education institutions to offer technical programs for graduating associate of applied sciences and operational engineers.
- Also in 1968, the Program for the Expansion and Improvement of Instruction was established, targeted primary and secondary education - specially the aspects of initiation to work and to technology (the PREMEN was terminated in 1982).
- It also supported the creation of various vocational-technical schools around the country which were passed on to the states without any previous analysis or planning of the consequences of such act. That proved to be disastrous as the schools were not able to operate properly (such experience has been a source of information for the analysis of a polemical

proposal that now and then resurges: turning the federal vocational-technical schools to the states control).

- In 1969 a Decree-Law authorized the federal vocational-technical schools to offer short term higher education technology programs including the operational engineering programs.
- Also, in 1969, studies were initiated to establish operational engineering programs in other federal vocational-technical schools located in five major Brazilian cities.
- Still in 1969, the Abreu Sodré administration of the state government of São Paulo established the Technological Education State Center of São Paulo [CEETEPS] through a decree-law (it was to provide vocational-technical and technical education and was inspired in the format of the Colleges of Advanced Technology and Junior Colleges of the USA and on the Higher Education Technology Colleges of France).
- In second semester of 1969, the Constitutional Amendment No. 1 was granted by the military junta which gave the military administration the authority to legislate in several areas through decree-law (some of the modifications of the legislation related VTET were made through them).
- In the beginning of 1971, the Ministry of Education/the World Bank I agreement (MEC/IRDB I, lasted nine years) was signed (the agreement involved a loan of \$21 million to be used for implementing actions in some ETFs among them the establishment of six operational engineering

centers, the expansion of facilities and equipments, and the development of human resources).

- By mid 1971, the Department of Secondary Instruction of MEC created the Program for the Development of Secondary and Short Term Higher Education Instruction [PRODEM] to be the executive body of the MEC/IRDB I project (PRODEM was absorbed by PREMEN in 1976).
- In the second semester of 1971, the Medici administration introduced the reform on primary and secondary education (Act No. 5,692/71 impacted VTET directly and was also part of a general strategy for education in Brazil).
- The major change mandated was the existence of only one type of school in Brazil where students would get not only the academic contents but also technical ones (the teaching of the latter would begin already on 5-8 grade period as initiation for work and in particular cases even before).
- At secondary level, all students should join one of the vocational-technical programs that should exist at their schools in order to graduate either as assistant technician (3 years) or technician (4 years).
- Act No. 5,692 mandated the end of the distinction between academic and “technical” schools (which had been claimed before without success), however it was enacted in order to ease the demand for higher education and to expand the peoplepower for middle-level positions in the market place.

- The single school initiative did not work and was made optional in 1982 through Act No. 7,044 (among the various reasons for the failure are cultural, economic, educational, and social issues).
- As the VTET schools were the closest thing to the proposed single school model, they were affected less by the legislation implemented than the academic schools (the latter mostly pretended that they taught students a profession).
- In 1973 the Department of Higher Instruction [DAU] of MEC began to implement Project 19 which pushed for the offer of associate of applied sciences programs around the country (DAU's activities eventually collided with the DEM's ones (operational engineering programs) resulting in the termination of the latter in 1976).
- In 1976 the National Service for Rural Occupational Preparation [SENAR] was established as an autarchy linked to the Ministry of Labor to provide training for agriculture activities (later its organization and management was given to the National Confederation of Agriculture).
- In 1976 Act No. 6,344 established the Technological Education Center of Bahia [CENTEC] which would prepare associate of applied science graduates (it was connected to the DAU-MEC initiatives).
- In 1977 industrial engineering programs (lasting 5 years) were authorized to be offered and the operational engineering programs were terminated (the latter had the opposition of the DAU-MEC and of the national federation of engineers).

- In 1978 the federal VTETs that offered operational engineering programs (Rio de Janeiro, Minas Gerais, and Paraná) were upgraded to Federal Technological Education Centers [CEFETs] through Act No. 6,545 (in addition to continue to prepare secondary level industrial assistant technicians and technicians as they had been doing since 1971, the CEFETs could also offer programs at higher education level in technology related areas).
- The transformation of 3 ETFs in CEFETs that happened in the Geisel administration was the beginning of a new era for the federal VTETs.
- It “accidentally” inaugurated a policy that has continued over time (not without interruptions) which has its supporters and detractors.
- It also marked the beginning of the use of the terminology “technological education (*educação tecnológica*)” instead of “vocational-technical education (*educação técnica*)” to name the activities of the federal schools/CEFETs by MEC officials, publications, and documents (the LDB of 1996 uses the terminology “vocational-technical education and training (*educação profissional*)” but not “technological education (*educação tecnológica*)”).
- After 1979, there was substantial “loss” of interest from MEC in supporting the implementation of associate of applied sciences programs (however they expanded even without such support).
- At the federal technological schools system domain, two developments which started in the beginning of the 1980s would impact significantly the

system later: the offer of secondary level technicians programs for adults that had already completed secondary education (at MEC's request), and the use of (micro)computers for administrative and academic purposes at the schools (another pioneer initiative was the use of distance education methodologies for preparing secondary level technicians in one of the ETFs).

- The first half of the 1980s was the time the technology base of business and industry began change in Brazil, particularly due to electronics and computer science (however, there were not significant modifications in VTET).
- In 1982 the single school model was made optional through Act. No. 7,044 after agonizing for years (in practice, regular high schools could openly continue to be concerned only with the academics while the VTET could proceed on preparing secondary level technicians which got both the technical and academic contents in the same school).
- The single school model did not work during the military regime due to lack of proper support, poor implementation, and lack of interest from many of the stakeholders.
- The present phase of Brazilian republic began in 1985.
- The Brazil of 1985 was a developing country which almost 90% of its GDP came from manufacturing/mining and services (half each).
- Its wealth distribution was the worst of the planet what made the country for a few and not for the majority or all Brazilians.

- In 1985 a new Constitution began to be discussed in the Brazilian Congress and was promulgated in 1988 (by the first time it is stated in a Brazilian constitution that preparation for work is said to be one of the goals to be reached by education in Brazil and that the pluriannual national plans for education to be implemented have to provide for the former).
- The Constitution of 1988 did not mandate any changes in VTET in general and particularly for the federal technological education system but indicated that proper attention should be provided to “preparation for work.”
- The federal technological education schools and centers continued to be federally supported but now and then a Minister of Education or a congressman proposed to transfer the schools to state governments (that still holds true to these days).
- If such action had been taken, it would terminate the federal technological education schools because the state governments could not even properly fund their educational systems, let alone properly support vocational-technical schools which need more funding than regular ones (that also remains true to these days).
- Some states have had their own networks of VTET schools which, maybe with the exception of São Paulo state one, have been mostly in bad shape.
- In 1986 the Sarney administration sets in motion the “Program for the Expansion and Improvement of Technical Education [PROTEC]” which intended to build 250 new vocational and vocational-technical schools to

be operated by either public governments (federal, state, or local) or by non public organizations (there was a real need for the schools).

- The implementation of the program, which is still under way, was mostly deviated from its original goals and executed without the proper technical supervision during the Sarney administration.
- After the enactment of new Constitution in 1988, a new Education Act (LDB) began to be discussed in the Brazilian Congress but proposals for it started to be developed by educators since, at least, the end of 1987 (the enactment of the new LDB in 1996 marked the formal beginning of the latest reform in Brazilian VTET).
- Also in 1988 the National Service for Transportation Apprenticeship [SENAT] was established by law to provide training for transport on tires activities being its organization and management was given to the entrepreneurs of the transport on tires area.
- In 1990 the Deliberative Council of the Worker's Support Fund [FAT] was created by law (it is a public fund managed by the Deliberative Triparty Council (Ministry of Labor, workers, and employers), which among other activities, finances the Public System of Employment in Brazil run by the Ministry of Labor in conjunction with the States Secretariats of Work - the FAT is a major source of funding for training activities in Brazil).
- Important developments at level of the federal technological education system during the Sarney administration: the ETF of Maranhão state was upgraded to CEFET, several ETFs sent projects to MEC requesting

upgrade to CEFET but were not granted that, and the agriculture and industrial federal schools were encouraged to offer programs beyond their original domains jumping into the services and health areas (the transformation of the Maranhão school into CEFET was an isolated case and not part of an overall policy of “cefetization” which would only be implemented during the end of the first Cardoso administration).

- In the beginning of the 1990s, two initiatives of the Collor administration changed Brazilian life to the present including VTET: the push for the modernization of the economy and the opening of the Brazilian economy to international competition.
- In 1990 MEC established of the National Secretariat for Technological Education [SENETE] (it was the first time that VTET - then called “technological education” - issues were addressed at this level of the federal government).
- The creation of SENETE provided more visibility to VTET, however, it did not result in any major changes in terms of policies, funding or improvement in extent and quality of the services provided (SENETE was transformed into Secretariat for Secondary and Technological Education [SEMTEC] during the beginning of Franco administration).
- In 1991 the Brazilian Service for the Support to Micro and Small Enterprises [SEBRAE] was established to provide not only training mainly regarding to entrepreneurship (micro and small businesses) but also to aid micro and small businesses to strengthen and consolidate in addition to

induce the opening of new businesses (it originated a previous government agency which was much more limited in its functions).

- SEBRAE is run through a partnership of public government and business and industry and funded by a compulsory contribution of on the top the companies pay-roll (it is the youngest member of the S System).
- Between the second half of 1992 until the end of 1994 (Franco administration), the federal government among other things began the implementation of an international project for reequipping the federal schools, and get to pass some legislation in Congress that transformed of ETF of Bahia into CEFET, upgraded the agri-vocational-technical schools to the same legal status of the other ETFs and formally established the National System of Technological Education.
- Act No. 8,948 of 1994 was of special importance for the federal system because it not only formally established the National System of Technological Education (which included the federal, states, and municipal systems), but also enabled the vocational-technical schools under SEMTEC to be upgraded to CEFETs (depending on criteria to be set by MEC).
- In addition to those, non public systems might join the technological education system, and a National Council of Technological Education was to be established (the latter has not been put in operation yet, and it does not seem to be of interest for the Cardoso administration).
- Act 8, 948 of 1994 was the central piece of legislation for the implementation of the “CEFET model” in Brazil (the model devised was an

improvement of the federal system existing then with emphasis in its verticalization).

- The actions listed above and the publications originated from SEMTEC in 1994 suggest that its administrators had hopes of continuing the implementation of the “technological education” ideas, at least, at the federal schools/CEFETs, however, Cardoso administration had other view on how VTET should be organized.
- The termination of the Federal Council of Education in 1994 by the Franco administration and its replacement by the National Council of Education increased MEC’s power not only over VTET but also on education as a whole.
- Also in 1994, the Paula Souza system [CEETEPS] was expanded through the addition of 82 state vocational-technical schools (São Paulo’s Paula Souza system has been the most important initiative in VTET run by state administrations in Brazil).
- The present reform on Brazilian VTET is an initiative started in the first Cardoso administration which has been negotiated with important stakeholders but with not all of them

Process Question Number Seven

Is the present structure of Brazilian VTET likely to change?

The recent history of the making of the Constitution of 1988, the LDB of 1996, and the Decennial National Plan of Education (still in Congress) indicate that the answer is

yes if the political forces that presently control the federal government lose the 2002 or the following presidential elections to socialist, communist, or some of the nationalist political forces. However, broad changes will also depend on the support of society. Below are listed some evidence that support this perception:

- In addition to the Cardoso administration proposal (*Educação Profissional* [VTET]) for “preparation for work” which is under implementation, there are at least two other proposals for “preparation for work” in Brazil: *Educação Tecnológica* (technological education) and *Politecnia*.
- The proposals of “*Educação Tecnológica*” and “*Politecnia*” have many commonalities but are not the same thing (for an overview on both proposals refer to Appendix K)

Educação Tecnológica:

Educação Tecnológica [ET] is a concept that began to be used by MEC officials in 1978.

- The ET proposal requires that theoretical/practical programs oriented to the labor market should be offered at vocational-technical schools but the “regular” schools should not be mandated to have them (ET programs should integrate academic and technical contents).
- In December 1994, proponents of the *Educação Tecnológica* who were in charge of SEMTEC/MEC got to pass Act No. 8,948 of 1994 which:

- formally established the National System of Technological Education (which included the federal, states, and municipal systems);
 - enabled the vocational-technical schools under SEMTEC to be upgraded to CEFETs (depending on criteria to be set by MEC);
 - made possible for non public systems to join the National System of Technological Education; and,
 - mandated the establishment of a National Council of Technological Education.
- Act No. 8,948 of 1994 was the central piece of legislation for the expansion and consolidation of the “*Educação Tecnológica*” proposal in Brazil which was under implementation only in federal technological education system [FTES] by then.
 - The “CEFET model” was the desired format for the implementation of the ET proposal (the former was an improvement of the federal system existing then with emphasis in its verticalization).
 - The “*Educação Tecnológica*” proposal was replaced by the “*Educação Profissional*” (VTET) format in the Cardoso administration (there are some commonalities in both, however the ideas of a National System of Technological and of a National Council of Technological Education were halted).

Politecnia:

Politecnia is a concept that has been discussed in academia by Brazilian socialist educators since at least the second half of the 1960s (it is based on Marx's and Gramsci's ideas for education).

- The educational proposal based on the “*politecnia*” concept is not solely related to “preparation for work” but to basic education in general.
- The “*politecnia*” proposal indicate that schools should be public, free, lay, unitary, and polytechnical (ideally there should not be any specific preparation for occupations/careers before the end of secondary education and the educative process should combine theoretical development, physical education, and education for technology).
- It has never been formally implemented in Brazil (maybe the closest thing to polytechnical schools are the FTES schools in the 1961-1996 period, that is, before the present reform)

First Disagreements on the “Preparation for Work” Reform:

- During 1995 SEMTEC/MEC held a series of meetings around Brazil to discuss proposals for “preparation for work” with representatives of MTb, other federal agencies, state and municipal agencies, the major providers of “preparation for work”, unions, enterprises, besides others.
- A Bill which proposed a new organization for “VTET” in general and for the federal “network” of technological education was sent to the House of

Representatives by the Cardoso administration (it became Bill No. 1,603 of March 7, 1996).

- Such bill was the legal instrument to support the implementation of MEC/MTb's policy for VTET.
- During 1996 the federal government debated the reform on VTET with its stakeholders in meetings promoted or participated by MEC officials around the country, and in Congress public hearings also held around the country.
- As soon as the LDB of 1996 was enacted, the Bill No. 1,603 of 1996 was withdrawn from the House of Representatives by the Cardoso administration.
- It had been meeting significant resistance from educators, practitioners, and students which favored either the proposal of "*educação tecnológica*" or the proposal of "*politecniá*" and was bound to have a hard time in the Brazilian Congress (see Frigotto, 1997, and Saviani, 1998b).
- According to the LDB of 1996, "preparation for work" is referred to as "*educação profissional [VTET]*", and is a modality of education (there is no reference in the LDB of 1996 to terms such as "*educação tecnológica*" or "*politecniá*").
- As there was not anymore the legal need for a law to reorganize VTET in general and the federal network of technological education, the federal government chose to mandate the former through a Decree (No. 2,208 of April 17, 1997) and the latter through a MEC Executive Order (No. 646 of May 14, 1997) (In Saviani, 1998b).

- Such option was strongly criticized by those who oppose the Cardoso administration view on “preparation for work” (see Frigotto, 1997; and Saviani, 1998b).
- The proponents of *politecnia* and technological education claimed that the discussions were not enough, that the reform was imposed, and that it does not serve the needs of the country (see Cunha, 1997, in Frigotto, 1997, and Saviani, 1998b; Frigotto, 1997; Kuenzer, 1997, in Saviani, 1998b; Kuenzer, 1998; Saviani, 1998b).
- Frigotto (1997), one of the major proponents of “*politecnia*,” stated that the federal government acted “legally but not legitimately” (p. 7) because it imposed the reform instead of having it discussed with the “society” through the National Congress as it was being done in the case of Bill No. 1,603 of 1996.

Major Points of Disagreement on the “Preparation for Work” Reform:

- While some (e.g., Carneiro, 1998; Souza and Silva, 1997) understand as the dispositions of the LDB of 1996 regarding “preparation for work” as appropriate for the times we live, others (e.g., Frigotto, 1997; Kuenzer, 1998; Saviani, 1998a) disagree.
- The disagreements seem to center on how “preparation for work” should articulate with “academic education,” when “preparation for work” should begin, and the level of detailing of the LDB of 1996 on “preparation for work.”

- The mandatory termination of the combined (but not integrated) academic/vocational-technical programs, particularly at secondary level, is maybe the main point of the disagreement between MEC and the proponents of “*educação tecnológica*” and “*politecni*a”.
- Some educators characterize the LDB of 1996 as “innocuous and generic” (Saviani, 1998a, p. 199) and “minimalist” (Cunha, in Saviani, p. 199) while others understand it really should bring only “the essential” (Souza & Silva, 1997, p. 3) leaving the details to “minor pieces of legislation” (Souza & Silva, p. 3).
- A comparison of the Cardoso administration proposal for the National Plan of Education and the alternative proposal from the opposition parties reveal that while there is agreement that VTET is necessary, there are disagreements regarding to policy development for VTET, the relation of VTET to the various levels of education (basic and higher), its organization, its funding, its management, the terminology related to VTET aspects, the role of public government in VTET, and the purpose, organization, funding, and management of the public and private institutions and networks of VTET besides other differences.

The Future:

The debates on “preparation for work” have continued and those who oppose the dispositions of the present reform keep fighting to revoke them as soon as possible, what would not be difficult if they had support from MEC.

Those educators viewed the reform as part of a federal government strategy for having public government responsible only for fundamental education but not its other levels and modalities which contribute to reinforce the structure of classes that exist in Brazilian society because public government is not guaranteeing the same opportunities of education for all. For them the reform is a return to the situation before the LDB of 1961 (two tracks of schooling, not completely interconnected). They defend that the reform should have as focus the citizenship rights of the Brazilians and not the financial logic of the markets. Overall they asserted that the principle of equality, all Brazilian must have “equal conditions for having access and permanence to/at school [education]” (CF88, 1996, Article 206, p. 99) was substituted for the principle of equity, that is, “public investment is only justified for the most competent; because, according to [the World] Bank, as not everybody has the competence to continue the studies, and as there are not enough jobs for all, the logic of rationality mandates that resources are not wasted, particularly in more expensive [levels and] modalities, such as development for professions [VTET] and higher education” (Kuenzer, 1998, pp. 18-19). The World Bank is seen by those educators as the international agency that has been pressing the Brazilian federal government to reduce the public funds (as a percentage of the GDP) which according to Frigotto (1997) is the opposite to what happened in the 1980-1995 period in developed countries such as the United States of America, England, France, Italy, and Sweden.

The Cardoso administration will have from 1999 through 2002 to implement its view. However, in 2003, if the new federal administration disagrees with the Cardoso administration reform regarding “preparation for work,” it can be legally undone just by decrees and executive orders, the same way it was mandated. One thing is very important

however, independent of what format is adopted, it has to work in order to be able of remaining in place. Unfortunately, even what is to be successful may also be a matter of dispute.

Process Question Number Eight

What is the Brazilian federal technological education system?

- The origin of the “federal technological education system” dates back 1909.
- Since the establishment of the first three CEFETs from previous ETFs in 1978, the term “technological education” began appear in MEC’s jargon (e.g., CEFET stands for Federal Technological Education Center).
- In 1990 MEC established the National Secretariat for Technological Education [SENETE] to take care of “technological education” issues.
- In 1993 SENETE becomes the Secretariat for Secondary and Technological Education (SEMTEC).
- In 1994 SEMTEC/MEC stated that technological education included basic development for professions (not clearly defined), secondary level development for professions (assistant technicians and technicians), short term higher education development (associate of applied sciences), industrial engineering, graduate programs in technology areas, teacher training for courses in the technology part of technological education institutions, and research and extension in the technology area

(technological education programs are said to integrate academic and technical contents) (refer to Appendix L for additional information).

- In 1994 Act No. 8,948 formally established the National System of Technological Education [SNET] (which included the federal, states, and municipal providers of technological education).
- The coordination of the SNET was to be done by MEC which would establish the procedures for its implementation, operationalization and functioning, respected the characteristics of formal and non formal education and the autonomy of the instruction systems.
- The motif for the establishment of the SNET was to allow better articulation of Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector.
- The participation of the private network in SNET might happen, after consultation with the deliberative higher bodies.
- Since 1995 MEC and MTb have been using the terminology “*educação profissional*” for designate “VTET in general” (according to the LDB of 1996), but MEC ‘s Executive Order No. 646 of 1997 (which set the dispositions for the federal system regarding to the reform on VTET) and Decree No. 2,406 of 1997 (which details the Act No. 8,948/94) use the terminology “*educação tecnológica.*”

- As posterior legislation to the LDB of 1996 keeps making reference to the Act No. 8,948/94, it is a clear indication that the latter was not revoked by the LDB of 1996, at least not completely.
- So both terminologies are valid which sometimes lead to situations of conflict.
- While MTb does not use the terminology “*educação tecnológica*” at all, MEC refers to the federal technological education schools and centers as “the federal network of technological education” (its ministerial orders/publications do not use the word “system”) but also indicates that it “supports and operates a network of VTET schools” (so while for MTb there is only VTET (*educação profissional*), MEC uses the latter as a general term and “*educação tecnológica*” as a term restricted to the federal network).
- So, in fact, it is not clear whether the “federal technological education system” presently formally exists or not, as the terminology “federal network of technological education” is currently in use in MEC’s documents.
- The “federal technological education system” [FTES] include the five types of FTE institutions that belong to MEC: the federal agri-vocational-technical schools (*escolas agrotécnicas federais* [EAFs]), the federal vocational-technical schools (*escolas técnicas federais* [ETFs]), the decentralized instruction units (*unidades descentralizadas de ensino* [UNEDs]), the federal technological education centers (*centros federais de*

educação tecnológica [CEFETs]), and the schools linked to the federal universities (*escolas vinculadas às universidades federais* [EVUFs]).

- The responses to process questions 9 through 11 provide additional information about the FTES

Process Question Number Nine

How is the Brazilian federal technological education system structured?

Like Brazilian education and VTET as a whole, the present structure of the Brazilian federal technological education system [FTES] is a blend of the past developments affected by Cardoso administration initiatives - administrative and legal ones - which were introduced during its first term (1995-1998) and have resumed over its second term (1999-2002). Having the Constitution of 1988 as the starting point, the Cardoso administration has passed legislation in the Brazilian Congress and has issued decrees, executive orders in addition to National Council for Education's expert opinions and resolutions to reshape Brazilian education, VTET, and the FTES.

The most important pieces of legislation that back the reform of the federal technological education system are:

- the Constitution of 1988, LDB of 1996, and Decree No. 2,208 of 1997 (VTET in general); and,
- Act No. 8,948 of 1994, Decree No. 2,406 of 1997, MEC's Executive Order No. 646/97, and Provisional Act No. 1,651-42 of 1998 (expanded Article 3 of Act No. 8,948 of 1994).

The Brazilian FTES is structured in the following way:

General:

- After the enactment of Decree No. 2,208 of April 17, 1997, which reorganized VTET in Brazil, in less than one month (May 14), MEC issued Order No. 646 which addressed specifically the federal technological education [FTE] system.
- Starting May 26, 1997, the FTE schools and CEFETs had 120 days to alter their internal regulations to adapt to MEC Order No. 646, but were given four years to implement what was mandated in the VTET part of the LDB of 1996, the Decree No. 2,208/97 and in MEC Order No. 646/97. The four-year period can be extended for at most an additional year if the committee (representatives of the ETFs, EAFs, ETVUFs, CEFETs, and SEMTEC) in charge of supporting, following, and evaluating the implementation of the reform in each institution decide to grant it.
- Such implementation had to be described in a plan which has been prepared by each institution (that plan had to take into consideration the material, financial, and human resources of each institution).
- The federal technological education system include the five types of FTE institutions that belong to MEC: the federal agri-vocational-technical schools (*escolas agrotécnicas federais* [EAFs]), the federal vocational-technical schools (*escolas técnicas federais* [ETFs]), the decentralized instruction units (*unidades descentralizadas de ensino* [UNEDs]), the federal technological education centers (*centros federais de educação*

tecnológica [CEFETs]), and the schools linked to the federal universities (*escolas vinculadas às universidades federais* [EVUFs]).

- In 1996 the federal technological education institutions [FTEI] were 96 schools and centers plus 26 branch campuses serving around 110 thousand students enrolled in vocational-technical, technical, industrial engineering, and graduate programs (not included those who enrolled in training level programs) spread around the country.
- They are federally owned, maintained, and operated.
- Despite most of their funding comes from the federal level but they can have other sources of income which are complementary to the former (among them is provided paid training at all VTET levels when such training is not supported by federal funding what is not always easy to determine).
- The EAFs, ETFs, UNEDs, and CEFETs are directly linked to the Minister of Education and Sports but are supervised by SEMTEC.
- The EVUFs are subordinated to the federal universities which are supervised by SESU and linked directly to the Minister of Education and Sports.
- The UNEDs are either subordinated to ETFs or to CEFETs.
- The EAFs, ETFs, and CEFETs are federal autarchies and have administrative, patrimonial, financial, didactic and disciplinary autonomy which in practice is not absolute as they are part of MEC.

- Since the beginning of 1998, the FTE institutions have had to increase their enrollments by offering:
 - vocational-technical programs for students who are enrolled in regular middle instruction schools (not done before);
 - vocational-technical programs for students who have already completed middle instruction (not all FTEs offered them) - the latter may take it either through the presential or through the non presential formats (before only the presential format was offered);
 - specialization an improvement courses/programs for those who have already completed middle instruction (before this was done at the will of the FTEs); and,
 - training level VTET courses/programs for youngsters and adults in general, independent of their schooling (before this was done at the will of the FTEs).
- Also, the combined vocational-technical/academic programs were not allowed anymore to enroll students, but the FTE institutions could offer middle instruction separated from the vocational-technical programs (the maximum number of slots for middle instruction was fixed in 50% of the combined programs total slots open to new students in the beginning of the 1997 school year)
- While the students who enrolled for starting middle instruction in 1998 (and after) did not have to take the vocational-technical contents (because they did not enroll for combined vocational-technical/academic programs),

those already in the pipeline have had to opt to remain in the previous format or migrate to the new one.

- As most of the EAFs and agri-vocational-technical ETVUFs are located in rural areas where in some cases there are no middle instruction schools around, and also due to the types of methodologies used in this kind of programs, those institutions were allowed to continue to offer middle instruction to all their agri-vocational-technical students if the schools they viewed as necessary.
- In at most five years' time, the FTE institutions must have increased the number of beginning slots for vocational-technical programs (such number may include the middle instruction slots if they will be being offered) by at least 50% over the total number of beginning slots for joint programs in 1997.
- The offer of vocational-technical and training level programs by the FTE institutions must be made according to the demand for peoplepower surveyed from the productive sector, workers' unions, employers' unions, and social and economic development agencies that belong to the states and municipalities governments, in addition to others sources of information.
- The FTE institutions, in articulation with SEMTEC and the state and municipal social and economic development agencies, must implement permanent mechanisms for consulting those interested in the development of human resources.

- Such mechanisms must not only match the offer of courses and programs to the demands of the labor market but also identify new profiles of workers requested by the employers (those mechanisms must include a programs graduates' follow-up system and another for keeping track of the job offers for the various programs).
- The FTE institutions may be authorized to offer special programs for VTET instructors' pedagogical development, and will be accredited to certify competencies in the VTET domain (such accreditation will be granted based on the proposals presented by the FTE institutions).
- Until the new national curricular parameters [NCP] for the vocational-technical programs are defined (such enterprise has been in motion at least since 1996 but by the end of 1998 the NCPs had not been formally in place yet), the determinations established for them by the former Federal Council of Education (now National Council of Education) remain valid (they were: Expert Opinion No. 45/72, and those that followed it).
- Also, until the detailing of the Article 82 of the LDB of 1996 is released, the present regulations regarding "internships" are still valid.

Particular Details about the Federal Technological Educations Institutions:

a) The Federal Agri-vocational-technical Schools [EAFs]:

- The EAFs are mostly located in rural areas.
- In 1991 they (37 then) had an average area of 2,500,000 m² of agricultural land with 15,000 m² of built facilities.

- In 1995 the majority of them offered two vocational-technical programs which included the secondary level academics: agriculture/animal raising program and home economics one.
- Besides those, there were nine other programs (in agriculture and animal sciences, health and computer science areas) which were offered by the schools (which also included the academics).
- The EAFs operated as educational farms and most of the students lived as interns at them.
- A typical vocational-technical program taught in them lasted around 3,900 contact-hours.
- According to 1991 data, the schools had an average of 360 students (only those enrolled in academic/vocational-technical programs), 32 instructors, and 61 support staff (the administrators belong either to the teaching or to support staff).
- Besides providing vocational-technical programs, the EAFs offered other services: one EAF had a technical program (wine making), many of them provided preparatory courses for vocational-technical programs, VTET training level courses and programs, and extension services.
- In 1996 there were 46 federal agri-vocational-technical schools.

b) The Federal Vocational-Technical Schools [ETFs]:

- The federal vocational-technical schools have their main campus mostly located in the capitals of the states but their UNEDs are placed in other cities (in the same state of the main campus).
- In 1995 they had an average area of 68,431 m² with 33,039 m² of built facilities.
- In 1995 the ETFs offered over 40 different vocational-technical programs in the following areas: industrial, commerce, health, hospitality, mining, besides others (the majority were related to industry).
- Most of its vocational-technical students were enrolled in academic/vocational programs rather than in the vocational-technical programs that were offered to those who had completed secondary education.
- The academic/vocational-technical programs taught at the ETFs between 2,560 and 5,197 contact-hours while the vocational-technical programs took between 720 to 3,280 contact-hours.
- The schools had an average of 3,160 students (only those enrolled in vocational-technical programs), 236 instructors, and 249 support staff (the administrators belong either to the teaching or to support staff).
- Besides providing vocational-technical programs, some ETFs had technical programs, all of them provided VTET training levels courses and programs as well as extension services.
- In 1996 there were 19 federal vocational-technical schools.

c) The Federal Technological Education Centers [CEFETs]:

- The main campuses of the federal technological education centers are located in the capitals of the states but their UNEDs are placed in other cities (in the same state of the main campus).
- The five CEFETs were former ETFs (Bahia, Maranhão, Minas Gerais, Paraná, and Rio de Janeiro).
- In 1995 despite the CEFETs offered programs at technical, undergraduate and graduate level, most of their students is enrolled in their vocational-technical programs (about a five to one rate).
- Therefore, the figures on the ETFs may also be used to describe them.
- The undergraduate programs provided by the CEFETs were in industrial engineering and VTET teacher development.
- Their graduate programs were either related to industrial technology areas or to technological education, and research on technological issues was performed by their faculty and students.
- Besides what has already been indicated, the CEFETs also offered training level courses and programs, and provided extension services to business and industry.
- In 1996 there were 5 federal technological education centers

d) The Decentralized Instruction Units [UNEDs]:

- The UNEDs are extensions of the ETFs or CEFETs.
- They are located in other cities than the capitals of the states.

- In 1995 they offered academic/vocational-technical programs but some of them also provided courses/programs at the VTET training levels as well as extension services.
- The UNEDs originated from the PROTEC project which was initiated during Sarney administration and still has not been completed yet.
- In 1996 there were 26 federal decentralized instruction units.

e) The VTET Schools Linked to the Federal Universities [EVUFs]:

- The schools linked to federal universities do not have the autonomy of the EAFs, ETFs, and CEFETs being directly subordinated to the universities rector's offices.
- In 1995 they offered vocational-technical programs in one or more of the following areas: agriculture and animal sciences, industrial, commerce, health, hospitality, mining, besides others.
- The EVUFs also provided VTET training level programs and extension services.
- They were much less structured than the EAFs, ETFs, and CEFETs which got direct support from MEC and not indirectly as it was the case of the EVUFs.
- In 1996 there were 26 federal VTET schools linked to universities

Process Question Number Ten

What are the strengths and weaknesses of the Brazilian federal technological education system?

- Before the Cardoso administration was inaugurated, there was significant debate about whether the FTE schools and centers were being effective as VTET institutions or if they were being used mostly as pathways to get to college what some agree with.
- There was not enough hard data either to support any of those views or other perceptions regarding to the VTETs which could neither be confirmed or denied.
- During 1995 and 1996 SEMTEC/MEC conducted an assessment of the ETFs which revealed revealed their profiles (data covered the 1993/1995 period and the study did not address the other types of FTE institutions, however due to their similarities it is reasonable to extend the results on the ETFs to all of them having in mind that the other types of FTE institutions have their own peculiarities).
- Some of findings maybe considered either a strength or a weakness depending on the view one takes regarding the purpose of VTET and how it should be conducted. The allocation of the findings, under three categories (strengths, weaknesses, indecisive), shown below was conducted by the researcher:

Strengths:

- 1) much higher level of institutional performance if compared to the other public education systems (its significant internal efficiency contribute for the perception that the ETFs provide quality instruction);
- 2) middle to high level of qualification of the ETFs teaching and supporting staff [as alluded to before, administrators are chosen from them];
- 3) the schools facilities were well cared for and relatively well equipped, which made them model public institutions in their communities;
- 4) high application rate (average 8.6 applicants per slot, in some cases more 15 applicants per slot) which demanded the holding of entrance exams;
- 5) an average of 70% of the ETFs vocational-technical programs graduates got an immediate job which confirmed the trust of the employers on the vocational-technical training provided at the ETFs;
- 6) as the ETFs are located mostly at the capitals, they have played an important role in providing qualified personnel for public and private companies fulfilling a social strategic function in the development of properly trained individuals and in the offer of quality instruction;

Weaknesses:

- 1) the migration rate to the school was almost none (less than 0.5% in the 93/95 period) which indicated that it is very difficult to enroll in the school through other means than the entrance exams;
- 2) there was a substantial mismatch between the number initial of enrollments for the various programs and their number of those who graduate as technicians [in 1993 and 1994 the average dropout rates were respectively 16% and 18% (1st to 2nd year), 12% and 13% (2nd to 3rd year), and 26% and 19% (3rd to 4th year)] - in the same period 6 schools graduated as technicians only 20% of the students who completed the fourth year of the program while 11 of them graduated less the 50% of them [to graduate as technicians, the students have to study four years at school and complete an outside internship];
- 3) the facilities were rather inappropriately allocated, that is, it was predominant the use of the existing facilities to middle activities rather than to end activities;
- 4) despite the budget problems faced by the schools (e.g., irregular release of budget installments), there has been an increase in the expenses with personnel and a decrease in enrollments;
- 5) substantial instruction space not used (including the 3 shifts) - addition 23,450 students could attend the schools (35 students per room) if such space were used;

- 6) vocational-technical programs once established are not discontinued even if there are no jobs for its graduates [the oldest programs were established in the 1960s, new programs have been added (only few per school)] - that revealed a lack of responsiveness from the ETFs to the labor market fluctuations;
- 7) the indefiniteness of administrative status of the UNED in relation to the ETFs caused problems related to personnel, funding, and management which impacted instruction what made difficult to establish and verify parameters of institutional efficiency - also, some of the UNEDs were over dimensioned for the cities they were built in;

Indecisive:

- 1) most of teaching staff worked 40 hours per week (91%) for the schools while more than half (65%) had the schools as their single employer (those figures are the higher among the secondary level schools networks of the country);
- 2) the ETFs network was the only secondary level schools network where the students spent the day at school [not counting the EAFs and CEFETs] because they were required by curricular and extra curricular activities;
- 3) the average students' families income was six minimum wages (approximately US\$720 in 1995) which contradicted the perception that the students belonged to high income families (the truth is: a

- substantial number of students belong to low middle income families);
- 4) approximately 40% of the instructors were 30/40 years old (such number is higher the national average age for federal civil employees);
 - 5) the student/instructor rate varied from 7.5 to 24.6 which indicated a lack of appropriate rational criteria to manage this indicator;
 - 6) the instructor/support staff rate is almost linear (1.03) which also is an indication of either inadequate or nonexistent criteria to manage this indicator;
 - 7) the teaching/support staff professional development was more a result of personal initiatives rather than of a global policy for the federal network;
 - 8) the growth of funding has not resulted in the correspondent expansion in enrollments, research, or extension services;
 - 9) the programs were over dimensioned, having on average around 1,250 hours more than the legal minimum total hours per program (that not only delayed the entrance of the students in the labor market but also made the cost per student per year higher);
 - 10) varying cost per student per year (approximately between US\$2 and 8.4 thousand) being around in average US\$3.7 thousand (1993) and US\$4.3 thousand (1994) - it could not be known in which cases there was efficiency or inefficiency, however the varying costs

per student per year were an indication that urgent studies on the matter are necessary;

- 11) extension activities have expanded, however the participants are mostly those already served by the schools;
- 12) the ETFs provided programs that ranged from traditional (e.g., accounting) programs to advanced ones (e.g., industrial computer systems) so it is necessary to verify whether those programs are really demanded by business and industry and to update quickly the curriculum of the remaining programs as well as offer of programs;
- 13) the ETFs provided qualified personnel to business, industry, and government agencies located locally, regionally and out of state but they needed to be not only more responsive to the labor market requests but also more articulated with the employers;
- 14) programs organized in semesters rather than in years took longer to be completed while the students' and instructors' data were more difficult to monitor - apart from this, there was no difference in the efficiency of both approaches;
- 15) the curriculum of the programs offered by the ETFs were properly taught providing the students with quality instruction, but a high number of the latter went to directly higher education rather than graduating as technicians and working for some time as so - such demands an urgent re-analysis of the institutional mission of the schools, their institutional and pedagogical reorganization, and a

new operational paradigm (management, decision making, evaluation, curriculum update, besides others);

16) the ETFs were highly regarded by the communities they served, however they can not be locked in a mood of self contemplation and forget about the changes in the world that are going on every day outside their walls - they need to be more agile, more diversified, offer shorter programs whose curriculum are in tune with the needs of the labor market.

- Only 45% of the findings could be “considered” either a strength or a weakness without for sure being disputed by the different proponents of the different views on “preparation for work.”
- The profile of the ETFs described above is mostly a product of MEC’s previous policies but the local administrators, instructors and support staff also contributed to it.

Process Question Number Eleven

What are the change trends for the Brazilian federal technological education system?

A redefinition of MEC’s strategy of management of the federal technological education system pushed for the following general changes during the 1995-1998 period which will continue at least until 2002:

- separation, from the conceptual and operational point of view, of the VTET part from the academic one;

- more flexibility to the curriculum of the FTE schools in order to make it easier for the adaptation of instruction to the changes in the labor market;
- approximation of the VTET nucleus of the FTE schools to the entrepreneurial world, increasing the flux of services between enterprises and schools;
- progressively, finding appropriated legal forms to the autonomous and responsible operation of the federal TE schools and CEFETs and, at the same time, stimulating the partnerships for funding and management; and,
- establishing specific mechanisms for the evaluation of the federal vocational-technical schools in order to promote the diversification of programs and the integration with the labor market.

The general changes related the federal technological education system were part of a wider set of changes intended to solve the following problems in middle instruction:

- the structure of middle instruction (curriculum reform);
- the funding;
- the expansion of the offer of middle instruction; and,
- the consolidation and decentralization of the vocational-technical schools and CEFETs network.

The solution of the problems above was told as necessary to prepare the bases for the expansion of the offer of middle instruction and the improvement of the quality of instruction.

The strategy for the federal technological education system was in consonance with the major goals MEC was willing to achieve, that were:

- priority of the federal government to the mandatory fundamental instruction;
- the valuing of not only the school and its autonomy, but also of its responsibility to the students, the community, and the society;
- the promotion of management modernization not only at all levels and modalities of instruction, but also of the management bodies;
- the utilization and the dissemination of modern educational technologies
- progressive transformation of MEC in an effective body of public policies development, coordination, and follow-up in the educational area, and the consequent reduction of MEC's executive role; and,
- the articulation of policies and efforts among the three levels of the federation, in order to obtain more effective results.

Other Changes until at Least 2002:

- Policies for VTET in general and the FTES developed through a partnership between MEC and MTb;
- FTES participation in the National Plan for VTET [PLANFOR] and in the Program for the Reform of VTET [PROEP];
- FTE institutions to be prepared to become "Reference Centers";
- FTES interaction with international VTET systems, and agencies; and,
- "Cefetization" of the FTES.

a) MEC/MTb “Partnership”:

- Since the beginning of the Cardoso administration (1995), the policies for VTET in general and the FTES developed through a partnership between MEC and MTb.
- Despite MEC and MTb, through SEMTEC and SEFOR, respectively, worked together in the “big design” of both projects, MTb has been formally in charge of detailing PLANFOR and running its execution while MEC has done the same regarding PROEP.
- The adaptation (“modernization” as it was called) of the “federal network of technological education” is under the proposal for the establishment of a “network of VTET Centers” around the country which has also been a goal of MEC/MTb.

b) The National Plan for VTET or “*Plano Nacional de Educação Profissional*”

[PLANFOR]’:

- The major goal of the PLANFOR has been to increase the employability of the peoplepower (by improving their basic [i.e., reading, writing, math], specific [“technical”], and management [“self”] abilities) while at the same time widening the offer VTET at training level for those 14 and older.
- The PLANFOR has been run by the SEFOR/MTb, funded by the FAT (Workers’ Support Fund), and has intended to gradually increase the offer of VTET at training level reaching 15 million Brazilian workers (20% of the Economically Active Population) by 1999.

- The PLANFOR began in 1996 and ends in 1999, having its implementation being done through national, state, and emergencial programs.
- The development, implementation, and management of those programs has involved besides MTb and MEC, the following actors: state secretariats for labor and education (including their councils), S System, other VTET providers, unions and professional associations, enterprises and educational foundations, and governmental organizations and non governmental organizations.
- The PLANFOR was developed according to the public policy for labor and income generation of MTb, and as the Cardoso administration was re-elected for an additional term, there is a significant possibility of its continuation until 2002.

c) The Program for the Reform of VTET or “Programa de Reforma da Educação Profissional [PROEP]”:

- The PROEP has had the goal of enabling the implementation of the reform of VTET through the support to actions which integrate education with labor, science and technology.
- The PROEP began to take shape in 1996, has been run by MEC, and its funding comes from an IDB loan (50% of the total resources), and from MEC and FAT moneys (the other 50%) - the total is US\$500 million, to be spent until 2003.

- The PROEP has been open to the participation of federal VTET institutions, to state secretariats of education and to communitary schools (those established through partnerships among public levels of government or public and non public organizations).
- The PROEP started to operate in 1996 and has been funding preliminary studies regarding the development of state plans for the reform and expansion of middle instruction and VTET, reform and expansion of the facilities of existing VTET federal and state institutions, construction of VTET Centers to be run by States/Municipalities and Communities (partnerships); acquisition of technical-pedagogical and management equipment; acquisition of materials for the teaching/learning process; teaching and support staff development (administrators either come from one group or another), and services and consulting for developing studies on the technical-pedagogical and management areas.
- The PROEP has been developed according to public policy for education of MEC, and is expected to get an extra \$5 (US) billion until 2002 (an additional loan from the IDB would account for half of the funding, the rest would come from the Brazilian government).
- Among other initiatives, the PROEP is to support the establishment of a network of VTET centers which is one of the goals of the federal policy for VTET (such network is to originate from the expansion and restructuring of the existing federal, states, and municipal VTET networks, public and private).

- The core idea is to optimize the use of the existing facilities, which in addition to the new ones, should enlarge the VTET opportunities for the Brazilian population so that the employability its citizens be increased.
- Such centers are to provide services to wider sectors of the population (low schooling youngsters, workers at any age, unemployed from the formal and informal sector), enterprises and other educational agencies.
- The services to be provided should include short, middle, and long term general (academic) and vocational-technical (VTET at secondary level) education; *qualificação* and *requalificação* (VTET at training level) programs to be offered continually and in a modular format; technological and cultural extension, advisory and consulting services (to laboratories, workshops, farms); counseling, intermediation and placement in the labor market.
- The centers' management is to be triparty (government, entrepreneurs, and workers) and decentralized.
- The funding is to come from public and private resources, from MTb and MEC, in conjunction to the progressive search for self support of the centers' activities, through the diversification of the clientele and the products/services (having in mind, e.g., enterprises and other consumers which can, at least, refund the centers for the services they provide).

d) The Reference Centers:

- The FTE institutions are to become “Reference Centers” in order to support the process of expansion of VTET in Brazil (such expansion is being done in partnership with the states, municipalities, and non governmental organizations).
- In order to be able to support such expansion, the FTE institutions will have their laboratories restructured. That will be funded by the PROEP (and possibly a new version of the METRIMPEX project).
- No new federal technological education institutions will be maintained and operated by the federal government in addition to those already implemented by March 17, 1997.
- The federal government may fund the construction and the equipment for new VTET institutions but their construction, maintenance, and operation must come from the partnerships that will run them which may involve the states, municipalities, Federal District, productive sector, and non governmental organizations.

e) FTES Interaction With International VTET Systems and Agencies:

- Since the beginning of the FTEs it has been directly or indirectly interacting with other international VTET systems (e.g., the France, England, Germany, and the United States of America), and agencies (e.g., USAID, GTZ, METRIMPEX, UNESCO, ILO, and The World Bank).

- The difference is that 1990s brought a higher degree of interaction that has been increasing in speed and scope.
- Throughout the 1990s, the *Mercosul Educacional* and the REDELET project (PMET/OAS) are the most organized, continuous, and formal channels of international interaction for the FTES.
- Besides the OAS, the international agencies that have been partners of the FTES in VTET activities in Brazil in the 1990s are the UNESCO, ILO, IDB, The World Bank, and Metrimpex.
- In addition to those a growing number of formal and informal initiatives of international interaction has been being implemented as part of MEC's actions (e.g., with the French government/institutions, with USA universities/VTET providers, etc.) or by FTES institutions themselves.

f) “CEFETIZATION” of the FTES:

- In December 1998 twelve ETFs were warned by SEMTEC that during December 1998/January 1999 period they were going to be upgraded to CEFETs.
- All 19 ETFs had already been transformed in CEFETs by Act 8,948/94 but they depended on implementation decrees to become CEFETs.
- According to the proposal for National Plan for Education sent by the Brazilian federal government to the Brazilian Congress in 1998, one of the objectives to be reached by MEC in the next 10 years is the duplication of the number of CEFETs every five years.

- As more than five (the present number of CEFETs) but not all 19 ETFs are to become CEFETs in this first round, it seems that MEC pushed hard in its policy of “cefetization,” however it did not go all the way in a single shot.

Possible Changes for the 1999-2010 Period:

- As Fernando Henrique Cardoso was re-elected in 1998, his administration will have four additional years (1999-2002) to implement its view on VTET.
- The objectives to be reached in the next 10 years are stated in the two proposals for the National Plan for Education [PNE] sent to the Federal Congress in the beginning of 1998 but that until the end of the same year had not been transformed in law yet.

a) The Cardoso Administration's PNE Proposal:

- The section on VTET has 16 objectives.
- Three of those objectives are said to depend basically on the federal government, five to depend on the federal government in association with the states, municipalities or civil society organizations, and eight depend on the states, municipalities, and the civil society organizations but not the federal government.
- The objectives that are said to be dependent basically on the federal government are:

- 1) establish, within two years, an integrated system of information in partnership with governmental agencies and private institutions, that guide the educational policy to satisfy the needs of initial and continuing development for work;
 - 2) double, every five years, the number of Technological Education Federal Centers (CEFETs), through the transformations of the present Federal Vocational-Technical Schools; and,
 - 3) modify, within a year, the present norms that regulate the development of instructors for this modality of instruction (VTET), in order to take advantage of and value their professional experience.
- The objectives that are said to depend on the federal government in association with the states, municipalities or civil society organizations are:
 - 1) implement, in five years, the reform of Middle Instruction and VTET, obeying the directives established by the Ministry of Education and Sports, according to the Decree No. 2,208, of April 17, 1997;
 - 2) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of VTET at training level, independent of the schooling level of the participants, so that the needs of those that are excluded from the labor market can be met;

- 3) integrate the offer of courses/programs at the training level of VTET, whenever possible, to the offer of programs which allow the students who did not complete Fundamental Instruction to obtain equivalent development;
 - 4) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of VTET at vocational-technical level for the students enrolled in them or for those who graduated from Middle Instruction; end,
 - 5) establish, with the collaboration among the Ministry of Education, the Ministry of Labor, the CEFETs, the higher education VTET schools, the National Apprenticeship Services [S System] and private enterprises, programs for the development of instructors for Technological Education and Development for Professions [VTET].
- The objectives that are said to depend on the states, municipalities, and the civil society organizations but not the federal government are:
 - 1) establish the permanent review and adjustment of the VTET courses/programs at the training, vocational-technical, and technical levels to the exigencies of the labor market through the collaboration with entrepreneurs and workers in the schools themselves and in levels of government;
 - 2) mobilize, articulate and increase the installed capacity in the VTET institutions network, in order to triple, every five years, the offer of

permanent VTET for the population the productive age and that need to readapt itself to the new exigencies and perspectives of the labor market;

- 3) generalize, in five years, the offer of preparation for work courses in the Middle Instruction programs [curriculum];
- 4) transform, gradually, the units [institutions] of the federal vocational-technical network in public centers of VTET and guarantee, that until the end of the decade [2000?], that at least one of those centers in each unit of the federation [state] may serve as a reference center for all VTET network, particularly regarding to the development of instructors and methodological development;
- 5) establish partnerships among the federal, states, and municipalities systems and private enterprises, for widening and encouraging the offer of VTET;
- 6) encourage, through public and private resources [funding], the production of distance education programs that widen the possibilities of permanent VTET for all the population economically active;
- 7) reorganize the network of agri-vocational-technical schools, in order to guarantee that they accomplish the role of proving VTET specific and permanent to the rural population, taking in consideration its level of schooling and the peculiarities and potentialities of the agriculture activities of the region; and,

- 8) establish, along with the agri-vocational-technical schools and in collaboration with the Ministry of Agriculture, courses/programs at the VTET training level geared to the improvement of the technical level of the practices in agriculture and of environment preservation, within the perspective of the self sustainable development.

b) The Cardoso Administration Opposition Forces' PNE Proposal (the Alternative

One):

- The section on VTET has seven directives and nine objectives.
- Differently from the proposal sent by the federal government to the Federal Congress, it is not explicitly stated in the alternative plan who is responsible for implementing what.
- The directives of the alternative proposal for the PNE are:
 - 1) reintegrate, still in 1998, VTET to the regular system of public instruction, increasing the funds in the budget particularly destined to this modality of education;
 - 2) guarantee and increase, progressively, the offer of VTET, free and of quality, in the fundamental, middle and higher levels in the public systems of instruction;
 - 3) revoke the Act No. 9,192/95 (which regulates the choice of the university administrators); the MEC Order No. 715/96 (which regulates the choice of federal vocational-technical and

profissionais [?] schools administrators), guaranteeing free, paritary, and participative elections, and the ratification of their results; the Decree No. 2,208/97 (which reforms VTET and vocational-technical and technological instruction, guaranteeing ample debate about the pathways of VTET);

- 4) articulate the [human] development agencies, professional associations [in Brazil, those are not restricted to the professions that require a higher education degree], unions, employment agencies, and government to debate and reorient the policy for education and development for professions;
- 5) implement, in all instances, democratic forms of management with the paritary participation of the government, workers, and entrepreneurs;
- 6) research and encourage alternative forms of education for the workers; and,
- 7) guarantee, in the time frame of two years, the constitution of Paritary Councils (workers, governments, and entrepreneurs) for the management of the development for professions agencies (SENAI, SENAC, SENAR, SENAT), or others initiatives, aiming the fiscal control and the formalization of systematic processes of definition and evaluation of the services provided.

- The objectives present in the alternative proposal for the PNE are:

- 1) program, starting from 1998, public qualification for professions courses/programs articulated with illiteracy programs, for youngsters and adults that did not have access or did not complete their schooling in the proper age, including the students with special educational needs;
- 2) carry out, in 1998, the mapping and diagnose of the situation of the formal and informal VTET network in order to reorient the policy and support the decision making [regarding VTET];
- 3) guarantee, starting from 1998, a progressive increase in the public slots for development for professions, in all levels and modalities;
- 4) guarantee slots, courses/programs and or activities of public development for professions specific for students with special educational needs;
- 5) begin, in 1998, programs of continuing development for instructors and employees of the technical and administrative areas who work in VTET, privileging the areas of work and including themes related to ethnicity and gender;
- 6) begin, in 1998, to carry out Forums and Seminars to debate the project of organization of the National Network of VTET (*Rede Nacional de Educação Profissional* [RENAP]), of the Public Centers of VTET (*Centro Públicos de Educação Profissional*) and of other initiatives, proposed by organizations, institutions, and unions;

- 7) keep the Federal and States Vocational-technical Schools and CEFETs in their present formats, until a new proposal is concluded;
- 8) define, in the time frame of a year, a new proposal for VTET, linked to regular instruction, not dualist, to be discussed with society, establishing, *a posteriori*, objectives and deadlines for its implementation; and,
- 9) assure not specialized instructors, as well as human, material, and financial resources adequate and necessary for the maintenance of quality of the courses/programs provided.

c) A Comparison of the Two PNE Proposals:

- While there is agreement that VTET is necessary, there are disagreements regarding to:
 - policy development for VTET,
 - the relation of VTET to the various levels of education (basic and higher),
 - its organization,
 - its funding,
 - its management,
 - the terminology related to VTET aspects,
 - the role of public government in VTET, and

- the purpose, organization, funding, and management of the public and private institutions and networks of VTET besides other differences.
- The Cardoso administration will have an additional four years to implement its view.
- in 2003, if the new federal administration agrees with what has been proposed in the alternative plan, the Cardoso reform may be legally undone just by decrees and executive orders, the same way it was mandated.
- Independent of what format is adopted, it has to work in order to be able of remaining in place.
- Unfortunately, even what is to be successful may also be a matter of dispute.

Process Question Number Twelve

How is vocational-technical education and training structured in England, France, Germany and the United States of America?

Like vocational-technical education and training [VTET] in Brazil, the present structure of VTET in other countries is a mix past and present developments. The current major aspects of the VTET in England, France, Germany, and the United States of America are shown below. The data present on every country general profile refers to 1995 unless stated otherwise.

England

Country Profile

Political-Institutional Domain:

- The “United Kingdom of Great Britain and Northern Ireland” is a parliamentarist monarchy.
- Its administrative division includes England and Wales (are administered as a unit and have 39 and 8 counties, respectively), Scotland (9 regions), and Northern Ireland (26 districts).
- Other types of administrative units: several island dependencies and Gibraltar.
- Land area: 2.9% of Brazil’s.
- The public expenditure on formal education in the United Kingdom in 1994 was 4.9% of the GDP (in Brazil, it was 4.5% in 1995).
- The public expenditure on education during the 1993-1995 period was 11.4% of the total government expenditure (in Brazil, it was 17.7% in 1989).
- While the figures are for different periods, it should also be noted that despite Brazil had higher percentile in the latter, the Brazilian GDP is smaller than the UK’s one and the Brazilian population is bigger, so probably proportionally less in spent per person in education in Brazil than in the UK

Socio-Cultural Domain:

- Population of 58.1 million people (36.5% of Brazil's).
- Population density of 240 inhabitants/km² (Brazil's was 19).
- Expected annual population growth for the 1995-2015 period is 0.1% (Brazil's is 1.1%).
- UK has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be almost none until 2015 which is not the case of Brazil.
- UK already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 19.5% (0-14), 12.4% (15-24), 48.0% (25-60), and 20.1% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.
- Most of the United Kingdom population (89%) lived in urban areas (in Brazil, 78%).
- The life expectancy at birth was 76.8 years (Brazil's was 66.6).
- The adult literacy rate in the UK was 99.0% (in Brazil, 83.3%).
- The number of students per 100,000 inhabitants was 3,126 (in Brazil, 1,094).
- The expected number of years of formal schooling was 16.3 (in Brazil, 11.1).
- A more urban, longer living, and educated population than Brazil's.
- 14th best quality of life of the planet with an HDI of 0.932 (Brazil's was 0.809, rank: 62nd).

Economic Domain:

- The World Bank classifies the United Kingdom as a high-income country (Brazil, upper-middle-income country).
- UK's GDP was US\$1,106 billion (Brazil's, US\$ 688 billion).
- GDP distribution: 2.0% in agriculture, 27.1% in industry, and 70.9% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively).
- The real GDP per capita was PPP\$19,302 (Brazil's was PPP\$ 5,928).
- The average annual rate of inflation was 2.8% (Brazil's was 72.5%).
- The United Kingdom was a richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy.
- While the United Kingdom's GDP was 1.6 times than Brazil's, the real GDP per capita was 3.3 times Brazil's what theoretically means that there was more wealth per person in UK than in Brazil.
- The Gini coefficient for the UK was not located so no comments could be made regarding the wealth distribution.
- Fifty percent of the UK population was part of its labor force in 1997 (in Brazil, 46%).
- Labor force distribution (1997): 2% in agriculture, 21% in industry, and 77% in the services area (in Brazil, 16%, 22%, and 62%, respectively).
- The total unemployment rate was 8.2% in 1996 (in Brazil, 5.4%).

- Compared to Brazil, which has much more arable land and can grow crops most of the year, UK had a very small part of its population working in the agriculture sector.
- Its workforce was a slightly larger percentage of the population than in Brazil, and it is substantially more engaged in the industrial and services areas than Brazil's.
- The high total unemployment rate in UK has been common to the other European countries since the 1980s and results a great deal from increased global competition and technological change which among other things caused the collapse of the youth labour market in the UK.

Education in England

- The VTET information refers specifically to England (the education and training systems of England, Wales and Northern Ireland are broadly similar; the education system in Scotland has always been a completely separate system with its own laws and practices).
- The information on VTET (and on education in general) reflect their status by the end of 1998 unless stated otherwise.

General:

- England has a tradition of national control over education and training.
- Since 1995 the Department for Education and Employment has been in responsible for developing and administering policies on education,

training, and employment in England, being aided in performing such tasks by six other ministries.

- The central government duties include helping to set the framework for the education and training systems, working with other local and central bodies to implement those policies, and providing funding for many of the public bodies involved in education and training.
- The present national administration's main goals regarding to education and training are:
 - to support economic growth and improve the nation's competitiveness and quality of life by raising standards of educational achievement and skills;
 - to promote an efficient and flexible labour market by enhancing choice, diversity and excellence in education and training, and by encouraging life long learning.
- Education is compulsory from 5 to 16 years of age and the schools have to teach a national curriculum which is divided in four key stages - among the courses to be taken by the student in the fourth stage (14-16) is a technology one.
- Over ninety percent of English students go to free state (public) schools which according to its purpose, ownership, funding, and administration are categorized in five types (county, voluntary, grant-maintained, specialist, and special schools).

- Funding comes from the Local Education Authorities [LEAs] for county, voluntary, and special schools.
- The grant-maintained ones get their funding directly from the central government (Funding Agency for Schools).
- The specialist schools are made possible by the Specialist Schools Programme which enables secondary schools to develop a strength in a particular area [technology, sports, languages, and arts], often in partnership with an employer with an interest in the same specialism, while still delivering a broad and balanced education through national Curriculum.
- After 16 years of age, education is no longer compulsory, however around 70% of the students remain in education while the others either go to work or are guaranteed a place in the public government's training programs.
- The three main routes or the "triple-track" system for young people at the age of 16 who wish to continue their education or get training are:
 - continuing academic studies, either at school or a Further Education-sector college;
 - studying, or continuing to study, for a broad vocational qualification, such as the General National Vocational Qualification [GNVQ], usually full time at a Further Education-sector college (but frequently involves short work placements);
 - work-based training leading to a National Vocational Qualification [NVQ] or its equivalent (this can take the form of an

apprenticeship, employment with “on-the-job” training or vocational training through Youth Training, Modern Apprenticeships or Accelerated Modern Apprenticeships; also these may include part time study at a further education college).

- The qualification opportunities listed above are also open to all adults who can use them also for updating their skills.
- While the first route is in the domain of academic education, the two last ones are part VTET.

National Vocational Qualifications [NVQs]:

- The comprehensive framework of NVQs was established as a result of the effort to rationalize UK’s diverse system of vocational qualifications.
- The organization in charge of introducing the NVQs was the National Council for Vocational Qualifications [NCVQ] which was created in 1986 for such purpose.
- The NCVQ involved employers, trade unions, education representatives and members being its role to approve and accredit qualifications and the bodies that award them (the latter are City and Guilds, the Royal Society of Arts [RSA] Examinations Boards, the Business and Technology Education Council [now Edexcel BTEC], and Professional Bodies).
- In 1997 the NCVQ merged with the Schools Curriculum and Assessment Authority [SCAA] to form a new body the Qualifications and Curriculum Authority [QCA].

- The NVQs are organized in five levels (they are specific to occupations and are suitable for progression to/in employment).
- The NVQs are:
 - based on standards, set by employers, which define the knowledge and skills needed in the workplace;
 - a guarantee of competence to do the job;
 - modular so that skills and knowledge common to many jobs can be recognized;
 - free from restrictions about pace, place and method of learning;
 - and,
 - accessible to all age groups, from school students to those nearing the end of their careers.

General National Vocational Qualifications [GNVQs]:

- The GNVQs were introduced in September 1992 as an alternative to the academic and NVQs options and combine general and vocational education.
- There are presently three levels (Foundation, Intermediate and Advanced) of GNVQs.
- The GNVQs are based on explicit standards and are of modular structure to allow credit accumulation.
- The NCVQ (now QCA) co-ordinated the efforts for the development of the initial GNVQs, and presently sets the criteria to be conformed by new

GNVQs which must then be approved by Ministers (those criteria determine the purpose, structure, and form of the GNVQs and the type of assessment systems that must be used).

- The GNVQs awarding bodies are City and Guilds, the Royal Society of Arts [RSA] Examinations Boards, and the Business and Technology Education Council [now Edexcel BTEC].
- Besides preparing for employment in a range of related occupations, the GNVQ route is an alternative way to further and higher education.

Provision of "Preparation for Work:"

- Training is provided by many private and public providers which are encouraged to be responsive to market needs by the funding structures in place (the free market philosophy prevails).
- Training is mostly provided and paid for by employers for their employees.
- The public government participates in the training efforts by providing guidance and funding an institutional framework through which decisions regarding to training are made.
- The public government also funds the work-based training for young people, unemployed people and other priority groups (handicapped and special needs).
- Broad vocational qualifications are mostly provided through further education efforts which are decentralized, operating through the following principles: autonomy, accountability, responsiveness, and quality.

- Further education [FE] offered by a wide variety of institutions: sixth forms schools and sixth form colleges, general further education colleges, agricultural and horticultural colleges, art and design colleges, and specialist institutions.
- They are self governed (organization, finance, and management) and their governing boards include representatives from business and industry.
- The 446 further education institutions are funded by public government (Further Education Funding Council).
- Those colleges vary not only in size but also in their offer of courses/programs, some of which are provided in conjunction with local employers.
- The larger colleges offer a variety of courses/programs for both youngsters and adults allowing them to get academic, vocational, and professional qualifications in most areas.
- Courses/programs can be full-time, part-time, or by distance. Full time 16- to 18-year-old students (UK, or EU) are not usually charged, however the other may be charged at the convenience of the colleges.

Careers Information and Guidance:

- In England, schools, colleges, and universities are mandated by law to provide careers information and guidance for students (this is done to raise students awareness of training, and career opportunities and to help them to prepare for life).

Job and Training Placement Services:

- The Employment Service [ES] (a public government executive agency) is responsible for job and training placement services (it runs a network of over 1,000 Jobcentres throughout Britain which submit people to training programmes and provide a range of other assistance for unemployed people, geared to improving their job finding skills).

International Interaction:

- England along with the other members of the European Community have taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial vocational training, exchanges of trainees, students, business and decision-makers.
- Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development Fund. Other international partners of UK in VTET projects have been: UNESCO, the Commonwealth., OECD, ILO and the Council of Europe.

Past, Present, and Future of “Preparation for Work” in England:

- The VTET present status is a result of continuing change and reform in the UK over the last 30 years in attempts to, rationalise the many qualifications that exist and to attract young people towards more appropriate programmes, both for them and for the nation, than more academic and general education provision (Parkin, 1997, p.1).

- However,
- the traditional English impopularity of vocational qualifications has remained, despite the considerable sums of money being spent on marketing and implementation (Young & Spours, 1996, p. 71).
- Despite the achievements of the “vocational qualifications” parts of the “triple track” system, many their aspects have been criticized by educators and employers particularly since 1995.
 - The proponents of a unified system have been arguing for its implementation however, this does not seem bound to happen in the near future.

France

Country Profile

Political-Institutional Domain:

- The French Republic (“*République Française*”) is a semi-presidentialist republic.
- Its administrative division includes 22 regions containing 96 departments.
- Other types of administrative units: overseas departments, overseas territorial collectivities, and overseas territories.
- Land area: 6.5% of Brazil’s.
- The public expenditure on formal education in the France in 1994 was 5.6% of the GDP (in Brazil, it was 4.5% in 1995).

- The public expenditure on education during the 1993-1995 period was 10.8% of the total government expenditure (in Brazil, it was 17.7% in 1989).
- While the figures are for different periods, it should also be noted that despite Brazil had higher percentual in the latter, the Brazilian GDP is smaller than France's one and the Brazilian population is bigger, so probably proportionally less is spent per person in education in Brazil than in France.

Socio-Cultural Domain:

- Population of 58.1 million people (36.5% of Brazil's).
- Population density of 106 inhabitants/km² (Brazil's was 19).
- Expected annual population growth for the 1995-2015 period is 0.2% (Brazil's is 1.1%).
- France has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be almost none until 2015 which is not the case of Brazil.
- France already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 18.9% (0-14), 13.1% (15-24), 47.7% (25-60), and 20.3% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.
- Most of France population (75%) lived in urban areas (in Brazil, 78%).
- The life expectancy at birth was 78.7 years (Brazil's was 66.6).
- The adult literacy rate in France was 99.0% (in Brazil, 83.3%).

- The number of students per 100,000 inhabitants was 3,617 (in Brazil, 1,094).
- The expected number of years of formal schooling was 15.4 (in Brazil, 11.1).
- A slightly less urban, longer living, and more educated population than Brazil's.
- 2nd best quality of life of the planet with an HDI of 0.946 (Brazil's was 0.809, rank: 62nd).

Economic Domain:

- The World Bank classified France as a high-income country (Brazil, upper-middle-income country).
- France's GDP was US\$1,536 billion (Brazil's, US\$ 688 billion).
- GDP distribution: 2.6% in agriculture, 28.6% in industry, and 68.8% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively).
- The real GDP per capita was PPP\$21,176 (Brazil's was PPP\$ 5,928).
- The average annual rate of inflation was 1.7% (Brazil's was 72.5%).
- France was a richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy.
- While the France's GDP was 2.2 times than Brazil's, the real GDP per capita was 3.6 times Brazil's what theoretically means that there was more wealth per person in France than in Brazil.

- The Gini coefficient for France was not located so no comments could be made regarding to the wealth distribution.
- Forty-five percent of France's population was part of its labor force in 1997 (in Brazil, 46%).
- Labor force distribution: 3% in agriculture, 23% in industry, and 74% in the services area (in Brazil, 16%, 22%, and 62%, respectively).
- The total unemployment rate was 12.1% in 1996 (in Brazil, 5.4%).
- Compared to Brazil, which has much more arable land and can grow crops most of the year, France had a very small part of its population working in the agriculture sector.
- Its workforce was slightly smaller part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's.
- The high total unemployment rate in France has been common to the other European countries since the 1980s and results a great deal from increased global competition and technological change which among other things caused substantial youth unemployment.

Education in France

- The information on VTET (and on education in general) reflect their status by the end of 1998 unless stated otherwise.

General:

- France's educational system historically had been under strong control of the national government but since 1982 there has been a growing decentralization which has increased the roles of the regions and departments.
- The Ministry of National Education, Research and Technology [MNERT] continues in charge of policy development and of enforcing its execution (based on general principles established by legislation), and of guaranteeing the good provision and coherence of instruction (that means involvement with following aspects: delivering of instruction, curriculum development, school calendar, personnel (recruiting, development, management, and setting the number of employees per institution), educational institutions regulations, and evaluation).
- The regions' administrations are responsible for the construction (and expansion), maintenance, and operation of the higher secondary schools, the departments administrations have the same duties regarding the lower secondary schools, and the local governments ("*communes*") do the same in relation to primary schools (elementary and pre-school).
- The funding for personnel directly involved with the educational process in primary and secondary education comes from the national government however funding for the rest of the operation must come from the levels of government indicated above.

- Higher education has special status and its funding is done either by the national government or by collaboration by the national and regional levels of government (that is the case of the universities).
- There are private educational institutions but they are submitted to public government regulations.
- Besides the MNERT (which is aided by a special minister in charge of the schooling instruction), other ministries are directly involved with education in France.
- The Ministry of Agriculture and Fishing is responsible for agriculture instruction, the Ministry of Employment and of Solidarity plays an important role regarding to VTET, and the Ministry of the Youth and Sports and the Ministry of Culture contribute to the organization of educational initiatives targeted at the youngsters.
- During the first half of the 1990s, there was an attempt to merge the ministries of education and labor (the labor function was put under the Ministry of Education) however such an attempt was not successful so the merger was terminated in 1995.
- The Minister of NERT also counts on a series of consultative bodies which have the role of informing, proposing, and advising him or her on educational issues.
- Presently the actions of the French government regarding to education and development for professions must take in consideration two major acts:

one about education and another about work, employment and development for professions (VTET).

- According to Act no. 89-486 (Act of Orientation about Education), of July 10, 1989, education is the first national priority, and in a period of ten years the following goal had to be reached: educate the entire age group to at least the level of the certificate of vocational aptitude (CAP) or of the certificate of technical education (BEP), and 80% at the level of baccalaureate.
- Another piece of legislation (Act no. 93-1313, of December 20, 1993) which is relative to work, employment, and development for professions (VTET) indicated that every young person must be given the opportunity to take up vocational training before he or she leaves the educational system.
- Education is compulsory, free and secular from 6 to 16 years of age and the schools have to teach a national curriculum.
- It is divided in primary instruction (at *les écoles élémentaires*), lower secondary instruction (at *les collèges*), and one year of upper secondary instruction (if the student completes lower secondary instruction at 15).

Primary Instruction:

- Primary instruction lasts five years being divided in two cycles. The first cycle (fundamental learning) begins at pre school and also includes the first two years of primary instruction. The second cycle (deeper studies)

includes the three last years of primary instruction. Most of the students (around 80%) complete primary education by the age of 10.

Lower Secondary Instruction:

- Lower secondary instruction has four grades (6th through 3rd) which since 1996 are divided in three cycles (for those who started lower secondary education after 1995).
- The first cycle (adaptation, one year) and the second cycle (central, two years) are common to all students.
- The curriculum of the two first cycles are common to all students however in the former there are few optional courses and different pedagogical approaches may be used to meet the needs fo the students.
- The last cycle (orientation, one year) has three pathways, two taught at the *collèges* and one taught at the *lycées professioneles*.
- The options taught at the *collèges* are either general or technological.
- While the main differences between the two pathways are in the number of hours of the courses related to languages, history/geography/civil education, and physics/chemistry (heavier in the former) and technology (heavier in the latter) and in the pedagogical methods used, both offer the same orientation for students.
- The option taught at the *lycées professioneles* are for the students who are interested in development for professions (VTET).

- At the end of lower secondary instruction the students may get or not a diploma (*Brevet des collèges*) depending on their scores on the 4th and 3rd grades (changes are being studied for the 1999-2000 school year).
- If they have not scored high enough they get the School Certificate.
- The students' scores let the government know what knowledge and skills they had acquired.
- Independent of getting the diploma or not, the students may proceed to an upper secondary school, the general and technological one or the development for professions (VTET) one.
- If they are already 16 years of age, they are entitled to get the Certificate of General Development (Certificat de Formation Générale) which indicates the end of compulsory education.
- If not they have to study an additional year at a *lycée* and after that they get the certificate.

Upper Secondary Instruction:

- Upper secondary instruction has 3 grades (2nd, 1st, and terminal) which are delivered in two types of schools: the General and Upper Secondary Schools (*les Lycées d'Enseignement Général et Technologique*) and the Development for Professions (VTET) Upper Secondary Schools (*les Lycées d'Enseignement Professionnels*).

- In 1994 more than 70% of the students went to general and technological upper secondary schools while around 25% of them went to development for professions (VTET) upper secondary schools.
- Both pathways lead to national diplomas (*baccalaureats*) which were officially considered to be the first higher education diplomas indicating the completion of 12 years of study. The programs at the *lycées* are free but not compulsory (for those who are older than 16).
- The general and technological upper secondary schools have as goals to prepare their students for two types of baccalaureates (General and Technological) or the *Brevet de Technicien*.
- The General Baccalaureat (*Baccalauréat Général*) has three options: Literature (L.), Economics and Society (E.S.), and Science (S.).
- The Technological Baccalaureate (*Baccalauréat Technologique*) has four possibilities: Industrial Science and Technology (S.T.I.), Service Science and Technology (S.T.T.), Laboratory Science and Technology (S.T.L.), and Health Care (S.M.S). There are also specific Technological Baccalaureates: Hotel Management and Techniques of Music and Dance.
- While the first year (cycle of choice) of upper secondary school is common to all students (except for the electives which allow the students experiment career options), the last two (terminal cycle) are used to prepare them for the option they have chosen.
- The *baccalauréat* is the first higher education diploma in France.

- Those who do not pass the exams held to grant them may get a certificate of end of secondary studies depending on their scores.
- While the *baccalaureate* diploma allows access to higher education, the certificate does not permit so.
- The baccalaureates are very important in France because they increase significantly the chances of the individuals not only finding a job but also of getting a higher salary.
- The preparation for the *Brevet de Technicien* provides a more specific vocational-technical education whose curriculum include the compulsory general contents in addition to the specific technological and vocational-technical ones. It allows the entrance the labor market or the continuation of studies in the technical area in higher education.
- The development for professions (VTET) upper secondary schools prepare their students for to get either a Certificate of Vocational Aptitude (*Certificat d'Aptitude Professionnelle* [C.A.P.]) or Certificate of Technical Education (*Brevet D'Etudes Professionnelles* [B.E.P.]) or both.
- While the C.A.P. was a craft qualification, the B.E.P. was broader than the former.
- In the 1985-1994 period, students strongly preferred the latter over the former.
- Another relevant way of preparing for the C.A.P. was through the apprenticeship programs.

- Since 1985 students who had the B.E.P. (two years of study) can proceed to get either a technological or a vocational-technical baccalaureate (*Baccalauréat Professionnel*) after two years of study (1st and terminal grades).
- In the end of 1998 there were 40 different vocational-technical baccalaureates.
- That baccalaureate also allows access to higher education.
- Ninety percent of the students with a Vocational-Technical Baccalaureat find a job in keeping with their training within six months after receiving their diploma.
- In 1993 seventy percent of the students obtained baccalaureate diplomas.
- In 1994 fifty-nine percent of the total baccalaureate graduates got general diplomas, twenty-eight percent, technological diplomas, and thirteen percent, vocational-technical diplomas.
- The trend has been of stability in the numbers of students enrolled in general and technological programs, and an increase in the number of those enrolling in vocational-technical programs.

Technical Programs:

- Besides the long term university and college studies, those who have the right to pursue higher education studies (e.g., by having a baccalaureate diploma, but there other ways) may also apply for the technical programs

which last two years (*les formations technologiques supérieures courtes en deux ans*).

- Those can be taken at technological institutes linked to the universities (*Instituts Universitaires de Technologie* [IUTs]) or at the upper secondary schools.
- The students' preparation developed in the former is broader than in the latter and degrees granted are different too.

Apprenticeship Programs:

- The apprenticeship programs are open to those between 16-25.
- They are also under the responsibility of MNERT.
- The individuals who join such programs sign a contract of apprenticeship whose duration is at least equal to the period (one to three years) the option chosen lasts.
- They have theoretical instruction at Centers for the Development of Apprentices (*Centres de Formation d'Apprentis* [CFA]) and work-based training at business and industry. Apprenticeships are funded by two sources: the apprenticeship tax (0.5% of the companies payroll) and the regional funds for apprenticeship.
- At the end of the programs, students get a diploma of professional (vocational-technical) or technological instruction or another title officially valid.

Other Work-based Development for Professions Opportunities:

- Besides the apprenticeship programs, there are other work-based developments for professions opportunities named “alternate developments” such as the contract of orientation (22 and over), contract of qualification (26 and over), the contract of adaptation (26 and over) which are funded by the apprenticeship tax and other related ones.
- Since December 31, 1998, the competence of taking actions regarding development for profession (VTET) of the youngsters was handed by the national government to the regional ones.

Careers Information and Guidance:

- In France, educational institutions have to provide careers information and guidance for students through their centers of documentation and information [CDIs].
- The former have the support of the Centers of Information and Orientation (*Centres d'Information et d'Orientation* [CIOs]) (518 public offices).
- The CDIs and CIOs are supplied with the necessary information by the ONISEP (national office of information about instruction and profession which is part of MNERT) and its 28 regional offices

International Interaction:

- Like England and the other members of the European Community, France has taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial

vocational training, exchanges of trainees, students, business and decision-makers.

- Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development Fund. Other international partners of France in VTET projects have been: UNESCO, OECD, ILO, the Council of Europe, and various nations (Brazil is one of them).

Past, Present, and Future of “Preparation for Work” in France:

- The VTET present status is a result of significant changes in the French educational system which have happened since 1985 which have as a major goal “to ensure that all school leavers have acquired at least some training qualifications” (Levrat, 1996, p. 130).
- However, despite the efforts made and the results achieved “the status of technology as a general compulsory subject remains low” but “academic recognition of work experience” (Levrat, 1996, p. 130) is now a fact.

Germany

Country Profile

Political-Institutional Domain:

- The Federal Republic of Germany (“*Bundersrepublik Deutschland*”) is a parliamentarist republic.
- Its administrative division includes 16 states (*länder*) with substantial powers.

- Land area: 4.1% of Brazil's.
- The public expenditure on formal education in the Germany in 1994 was 4.5% of the GDP (in Brazil, it was 4.5% in 1995).
- The public expenditure on education during the 1993-1995 period was 9.4% of the total government expenditure (in Brazil, it was 17.7% in 1989).
- While the figures are for different periods, it should also be noted that despite Brazil had higher percentuals, in the latter, the Brazilian economy is smaller than the Germany's one and the Brazilian population is bigger, so probably proportionally less is spent per person in education in Brazil than in Germany.

Socio-Cultural Domain:

- Population 81.6 million people (51.3% of Brazil's).
- Population density of 234 inhabitants/km² (Brazil's was 19).
- Expected annual population growth for the 1995-2015 period is 0.0% (Brazil's is 1.1%).
- Germany has a very small land area when compared to Brazil but it is also much more crowded, and its population growth will be none until 2015 which is not the case of Brazil.
- Germany already has substantially older population than Brazil's and by the year 2000, the estimated distribution is: 15.3% (0-14), 11.3% (15-24),

50.6% (25-60), and 22.8% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.

- Most of Germany's population (87%) lived in urban areas (in Brazil, 78%).
- The life expectancy at birth was 76.4 years (Brazil's was 66.6).
- The adult literacy rate in Germany was 99.0% (in Brazil, 83.3%).
- The number of students per 100,000 inhabitants was 2,649 (in Brazil, 1,094).
- The expected number of years of formal schooling was 15.1 (in Brazil, 11.1).
- A more urban, longer living, and educated population than Brazil's.
- 19th best quality of life of the planet with an HDI of 0.925 (Brazil's was 0.809, rank: 62nd).

Economic Domain:

- The World Bank classifies Germany as a high-income country (Brazil, upper-middle-income country).
- Germany's GDP was US\$2,416 billion (Brazil's, US\$ 688 billion).
- GDP distribution: 1.1% in agriculture, 33.4% in industry, and 65.5% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively).
- The real GDP per capita was PPP\$20,370 (Brazil's was PPP\$ 5,928).
- The average annual rate of inflation of 1.5% (1996) in West Germany (Brazil's was 72.5%).

- Germany was a much richer country with a substantially more stable economy which had already moved much farther than Brazil in direction to a services economy.
- While Germany's GDP was 3.5 times than Brazil's, the real GDP per capita was 3.4 times Brazil's what theoretically means that there was more wealth per person in Germany than in Brazil.
- The Gini coefficient for Germany was not located so no comments could be made regarding to the wealth distribution.
- Fifty percent of Germany's population was part of its labor force in 1997 (in Brazil, 46%).
- Labor force distribution: 1% in agriculture, 32% in industry, and 67% in the services area (in Brazil, 16%, 22%, and 62%, respectively).
- The total unemployment rate was 9.0% in 1996 (in Brazil, 5.4%).
- Compared to Brazil, which has much more arable land and can grow crops most of the year, Germany had a very small part of its population working in the agriculture sector.
- Its workforce was slightly larger part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's.
- The high total unemployment rate in Germany has been common to the other European countries since the 1980s and results a great deal from increased global competition and technological change which among other things caused substantial youth unemployment.

Education in Germany

- The information on VTET (and on education in general) reflect their status by the October 1997 unless stated otherwise.

General:

- In Germany, the states (not the federal government) have the primary responsibility for the educational system).
- The federal government, through the Federal Ministry of Education, Science, Research and Technology (*Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie* [BMBF]) has control over only a few general matters such as the supervision of schools, religious instruction, the establishment of private schools, and VTET policy development, planning, research, and teacher training.
- The states' role in education are an expression of their cultural sovereignty, while the involvement of the federal government in VTET is justified by the importance of VTET to the economy of the country.
- Almost 75% of the funding for German education comes from the states.
- The funding for VTET comes from the federal government, the states, local governments and the companies which share responsibilities.
- At the states level, the "Conference of State Ministers of Education [CSME]" meet regularly to coordinate educational policy, structure, curricula, and qualifications however the resolutions originated from the meetings are not mandatory for the states' governments.

- At the national level, the Federal Institute for Vocational Education [FIVE], which operates under the supervision of the BMBF, advises the government on vocational training, conducts research, and provides support services to vocational education.
- The Federal Institute of Labor [FIL], which operates under a management board (employers, labor, and public corporations) is responsible for vocational guidance and placement, granting funds to create and maintain jobs, and for employment research (besides the central office, the FIL has states offices, and local employment offices).
- Both organizations have the participation in their boards and committees of representatives of the employers, employees, and public agencies.
- The Federal-State Commission for Education Planning and Research is the forum for addressing issues involving the relationship between the educational system and the employment structure (its members come from Science Council, the CSME, and FIVE).
- At state level, there is a series of organizations are involved with VTET: a state ministry (labor or economics), state vocational training committees, chambers of commerce, industry, trades and crafts, employer and labor unions, and companies' committees of employee representatives (each has its own attributions and they are a clear indication of the significant involvement of business and industry with VTET in Germany).

Organization of Education:

- Education is compulsory, and free from 6 to 16 years of age.
- It is divided in primary school (*Grundschule*), and secondary level I (*Sekundarstufe I*).
- After 16, there is the secondary level II (*Sekundarstufe II*) which is free but not mandatory.
- The description of the German educational system to be given below applies to most states but there are some differences among the states.

Primary Education:

- Primary school lasts four years and is uniformly organized.
- Based mostly on their academic performance in the 3rd and 4th grades, the children are divided into three tracks at the end of 4th grade in order to get secondary level I education.

Secondary Level I Education:

- Secondary level I education three tracks are: higher-level or grammar school (*Gymnasium*), middle-level or non-classical or modern school (*Realschule*), lower-level or main school (*Hauptschule*).
- Grammar school covers from 5th through 10th grade and is the primary pathway to university and polytechnical studies, and also allows entrance to the dual-system.
- Non-classical school covers from 5th through 10th grade and is a direct pathway to two-year technical schools and to the dual system but also

allows indirect entrance to university studies (the student must fulfil the requirements of grammar school equivalency) or to polytechnical college (the student must have completed the two-year technical school to be able to apply).

- Main school covers from 5th to 9th grade and is a direct pathway to the dual system but also allows indirect entrance to two-year technical school (the student must fulfil the requirements of non-classical school equivalency) or to technical college (the student must have completed the two-year technical school to be able to apply).

Secondary Level II Education:

- At the end of secondary level I, students will engage in one of the options of secondary level II which will depend for every student on what kind of secondary level-I school he/she has come from.
- The Vocational Training Act or *Berufsbildungsgesetz* [BBIG] of August 14, 1969 require that students under 18 receive training in one over 300 recognized vocations if they do not choose or are not entitled to other educational opportunities.
- The students who are interested in higher education take the senior classes of grammar school (*Oberstufe des Gymnasiums*) which lasts at least two years but can last more than three years in order to prepare to the grammar school examination (*Abitur*) - the latter leads university studies or to a polytechnical college (*Fachhochschule*).

- Those who completed non-classical school or even main school may get to the polytechnical colleges too.
- In order to be able to apply for the polytechnical colleges, those who graduated from non-classical school have to study at a two-year technical school (*Fachoberschule*).
- It is a full-time school where besides the theoretical knowledge, the students get substantial practical expertise and exercise.
- This type of two-year technical school was established along with the polytechnical colleges in 1970/71.
- The individuals who have completed main school must get the non-classical school equivalency before applying to a two-year technical school.
- After completing that program, they can also apply to a polytechnical college.

Higher Education:

- While university studies last 4-5 years (at least), the studies in polytechnical colleges last 4 years (including the practical semester).
- Both pathways grant engineering diplomas, however the universities engineers are prepared to work as researchers and in development activities in industries and government institutes while the polytechnics engineers are prepared to work in construction and production in industry.
- The politechnics have been very successful in Germany particularly since the 1980s - they were established in 1970/71. By 1994 they comprised 20%

of higher education, but the German government intends to increase their participation up to 40%.

“Preparation for Work” in Germany:

- Below the engineers, who are the highest level of technological qualification below graduate studies, come the technicians and foremen (both at secondary level), assistant technicians (also at secondary level), and skilled (trained, expert) workers.
- *Technicians* (a little more practically oriented) or a *foremen* (a little more practically oriented) come from either non-classical or main school.
- After secondary level I school, students join an apprenticeship where they get vocational training at a company (industry or other fields) along with attending a part-time vocational school (*Berufsschule*) on one or two days per week for usually three years (dual vocational training system or *duale Ausbildung*).
- Post completion of vocational training, they must have a professional activity as trained worker for either at least two years (for those willing to become technicians) or at least three years (for those willing to become foremen).
- After getting the necessary work experience, the individuals study two years (to become a technician) or one year (to become a foreman) at a technical school (*Fachschule*).

- There is a substantial number of technical schools in Germany which offer programs in all technical professions.
- Besides the full time programs, some of the technical schools offer part-time programs too (usually last 4 years for technicians).
- *Assistant technicians* come from either secondary level I grammar school or non-classical school.
- After secondary level I school, they get vocational training at a full time special vocational school (*Berufsfachschule*) for usually three years.
- The graduates of special vocational schools are entitled to work as assistant technicians in chemistry, biology, metallography, medicine, electrical or electronics engineering, industrial drafting, design, foreign language, social works, etc.
- *Skilled workers* may come from secondary level I grammar school, non-classical school, or main school.
- After secondary level I school, students join an apprenticeship where they get vocational training at a company (industry or other fields) along with attending a part-time vocational school (*Berufsschule*) on one or two days per week for usually three years (dual vocational training system or *duale Ausbildung*).
- The graduates of part-time vocational schools are entitled to work in a large number of vocations which are subdivided in trade groups (e.g., building, metal (including electro-electronics), wood, clothing, food, health and cleaning, and glass, paper and ceramics).

Provision of “Preparation for Work”:

- In general the offer of VTET in Germany for youngsters and adults is done by substantial number of not only VTET public and private institutions already alluded to but also by industry, industrial training workshops, re-education centers, rehabilitation centers, chambers of commerce and industry, commercial associations, trade unions, etc.

International Interaction:

- Like England, France, and the other members of the European Community, Germany has taken part in the Leonardo da Vinci enterprise which has developed initiatives in the domain of VTET such as transnational pilot projects, initial vocational training, exchanges of trainees, students, business and decision-makers.
- Additional funding for VTET initiatives come from the European Social Fund, and the European Regional Development Fund.
- Other international partners of Germany in VTET projects have been: UNESCO, OECD, ILO, the Council of Europe, and various nations.

Past, Present, and Future of “Preparation for Work” in Germany:

- The German VTET system has its origins in the guilds in the twelfth and thirteenth century which introduced the work-based training.
- Later, in the sixteenth and seventeenth century, the religious and crafts-related schools introduced the school-based learning.

- VTET evolved to the present complex organization which if has achieved considerable success in training qualified personnel, also has significant problems of esteem for its participants who are considered to have a lower status than those on the academical track.
- Bremer (1996) indicated that several experiments have been made in Germany (e.g., in Bavaria, Brandenburg, and North-Wesphalia) to increase the educational opportunities to the German youth through more permeability between general education of vocational training or through integrated vocational and educational qualifications which would help to at least minimize the parity of esteem problem.
- According to Lasonen (1996), “the general German public still does not consider vocational training ‘educational’ in ideal or material terms” (p. 145), therefore whether the proposals alluded to above, particularly the integration one, have a future or not, is still to be seen.

The United States of America

Country Profile

Political-Institutional Domain:

- The “United States of America” is a presidentialist republic.
- Its administrative division includes 50 states, the District of Columbia, and several administered territories.
- Land area: 1.13 times of Brazil’s.

- The public expenditure on formal education in the the USA in 1994 was 4.9% of the GDP (in Brazil, it was 4.5% in 1995).
- The public expenditure on education during the 1993-1995 period was 14.1% of the total government expenditure (in Brazil, it was 17.7% in 1989).
- While the figures are for different periods, it should also be noted that despite Brazil had a higher percentual in the latter, the Brazilian economy is much smaller than the USA's one and the Brazilian population is 60% of the USA's, so probably proportionally less in spent per person in education in Brazil than in the USA.

Socio-Cultural Domain:

- Population of 267.1 million people (1.7 times of Brazil's).
- Population density of 28 inhabitants/km² (Brazil's was 19).
- Expected annual population growth for the 1995-2015 period is 0.8% (Brazil's is 1.1%).
- The USA has a land area slightly larger when compared to Brazil, but it is also slightly more crowded, and its population growth will be slightly less than Brazil's until 2015.
- The USA already has an older population than Brazil's and by the year 2000, the estimated distribution is: 21.8% (0-14), 13.4% (15-24), 48.5% (25-60), and 16.3% (over 60) - in Brazil, 30.1%, 19.0%, 42.5%, and 8.4%, respectively.
- Most of the USA population (76%) lived in urban areas (in Brazil, 78%).

- The life expectancy at birth was 76.4 years (Brazil's was 66.6).
- The adult literacy rate in the USA was 99.0% (in Brazil, 83.3%).
- The number of students per 100,000 inhabitants was 5,395 (in Brazil, 1,094).
- The expected number of years of formal schooling was 15.8 (in Brazil, 11.1).
- A slightly less urban, longer living, and more educated population.
- 4th best quality of life of the planet with an HDI of 0.943 (Brazil's was 0.809, rank: 62nd).

Economic Domain:

- The World Bank classifies the USA as a high-income country (Brazil, upper-middle-income country).
- The USA GDP was US\$6,952 billion (Brazil's, US\$ 688 billion).
- GDP distribution: 1.9% in agriculture, 23.4% in industry, and 74.7% in services (Brazil: 10.7%, 42.0%, and 47.3%, respectively).
- The real GDP per capita was PPP\$26,977 (Brazil's was PPP\$ 5,928).
- The average annual rate of inflation was 2.5% (Brazil's was 72.5%).
- The USA was a much richer country with a substantially more stable economy which had already moved much further than Brazil in direction to a services economy.
- While the USA's GDP was 10.1 times than Brazil's, the real GDP per capita was 4.6 times Brazil's what theoretically means that there was more wealth per person in the USA than in Brazil.

- The Gini coefficient for the USA was not located so no comments could be made regarding to the wealth distribution.
- Fifty-one percent of the USA population was part of its labor force (in Brazil, 46%).
- Labor force distribution: 2% in agriculture, 22% in industry, and 76% in the services area (in Brazil, 16%, 22%, and 62%, respectively).
- The total unemployment rate was 5.4% in 1996 (in Brazil, 5.4%).
- Compared to Brazil, the USA has a very small part of its population working in the agriculture sector but makes a more intense use of mechanization which leads to a high agriculture output.
- Its workforce was slightly larger part of the population than in Brazil, and it is more engaged in the industrial and services areas than Brazil's.
- The USA total unemployment rate was low due to the strength of its economy and to a much less protective social security system than England, France, and Germany's.

Education in the United States of America

- The information on VTET (and on education in general) reflect their status by the end of 1998 unless stated otherwise.

General:

- The primary responsibility for education in the United States of America belongs to the states governments which delegate some authority to the local education agencies.

- The federal government role is to provide guidance and support to state agencies and influence the offering of certain programs by providing funding to them.
- One of the areas of interest of the federal government is VTET due to its importance in preparing qualified workers for the the US economy.
- At the national level, the Department of Education [USDE] is the main responsible for education in general, however in relation to VTET, it shares some responsibilities with the Department of Labor [USDOL].
- The USDE and the USDOL interpret and disseminate relevant legislation, monitor federal expenditures, provide national leadership, conduct research, and monitor compliance with federal laws, and make studies and report to public and the national Congress.
- The USDOL is responsible for administering the federal training programs that it shares with the Department of Education.
- Other major players at the national level are educational associations such as the Association for Career and Technical Education (former American Vocational Association), the National Education Association, and the American Association of School Administrators (besides those, there are literally hundreds of associations, foundations, corporations, institutes, and others that have an interest in VTET issues.
- At state level, the state legislature, the board(s), and the department(s) in charge of the various levels of education take care of its several aspects which include developing regulations, policy development, planning

(including budgeting), technical support, educational statistics and other information, supervision, monitoring, and enforcement.

- The states are divided by the legislature in school districts which are governed by local boards who appoint a superintendent as the executive officer for running the district educational system. The local school districts are supervised by the states governments.
- Funding for K-12 education comes mainly from local real estate taxes and state taxes but the federal programs are funded by the national government.
- The administrative structure for education in the American states is not equal but is somewhat similar.
- States (like the local districts) may participate or not in federal programs, but if so, they must comply with the federal regulations related to such programs.

Organization of Education:

- As education is a primary matter of the states, the organization of their educational systems may vary from state to state.
- Elementary and secondary education has 12 grades and is free however their organization is not uniform among the states.
- Besides the public schools, there are private schools, charter schools, and home schooling.
- Children begin 1st grade at 6 years of age and have to stay at school until they are 14 or 16 depending on the state.

- Elementary education may last six or eight grades.
- Secondary education may last six or four grades.
- The most common organization form is: elementary school (6 grades), middle high school (3 grades), and high school (3 grades).
- Two other formats are: elementary school (8 grades) and high school (4 grades), and elementary school (4 grades), middle high school (4 grades), and high school (4 grades).
- While in high school, students have the options of preparing for baccalaureate-degree programs, for two-year postsecondary programs, or for joining the labor market.
- It is at the high school level where vocational-technical education begins (vo-tech programs are electives in schools - only in Oregon state students are required to take a course related to careers/career development).
- Secondary vocational-technical education is provided primarily through three types of public high schools:
 - (1) comprehensive high schools (the typical U.S. high school);
 - (2) area vocational-technical schools (regional facilities that students attend part of a day to receive occupational training); and
 - (3) full-time vocational-technical high schools (schools that offer academic studies but focus on preparing students for work in a particular occupation or industry).

- Besides providing vocational-technical education for high school students, the area vocational-technical schools (or centers as they are also named) often enroll postsecondary (for credit) and adult (non credits) students.
- The secondary vocational-technical courses can be classified in three types:
 - (1) consumer and homemaking education;
 - (2) general labor market preparation; and
 - (3) specific labor market preparation.
- The first type of courses prepare for students for unpaid employment at home.
- The second type of courses teach general employment skills - such as introductory typing or wordprocessing, industrial arts (now called technology), career education, and applied academic skills - rather than preparing students for employment in a specific occupation.
- The last one provide students with the skills needed to enter a particular occupation which belongs to one of following occupational program areas: agriculture, business and office, marketing and distribution, health, occupational home economics (now family and consumer sciences), trade and industry (including construction, mechanics and repairs, and precision production), and technical and communications.
- In 1992, 97 percent of all public high school graduates completed at least one vocational education course, and 87 percent completed at least one occupationally specific course, however, vocational coursework made up

only 16 percent of the total coursework completed by high school graduates, down from 21 percent in 1982.

- Among the factors which contributed to such decline in vocational-technical enrollment are the increasing high school graduation requirements over the 1982-1992 decade and the vulnerability of secondary vocational-technical programs to local economic conditions (loss of jobs for the existing programs and loss of educational funding for the schools).

Post Secondary Education:

- After high school, those interested in continuing studying may apply to baccalaureate-degree programs (4-year programs) at a college or a university, or to nonbaccalaureate-degree programs at one of the following institutions: public 4-year institutions, private, nonprofit 4-year institutions; public 2- to 3-year institutions (community colleges); public vocational-technical institutes; private, nonprofit less-than-4-year institutions; and private proprietary (for-profit) institutions.
- Admittance criteria vary among the educational institutions however it is much stricter in the former than in the latter.
- The acceptance of the transference of credits from nonbaccalaureate programs making for the first two years of 4-year programs at colleges and universities vary among programs, colleges, and universities.
- *Postsecondary nonbaccalaureate-degree programs* can be divided in academic and vocational-technical program areas.

- The academic area has the following program areas: mathematics and sciences; letters, humanities, and communications; social sciences; art and design; education; and others (each of those program areas lead to a series of academic programs).
- The *vocational-technical area* branches in six programs areas: agriculture, business and office, marketing and distribution, health, home economics (now family and consumer sciences), technical education (including the following sub areas: protective service, computers/data processing, engineering/science technologies, and communication technologies), and trade and industry.
- Those program areas lead to a number of vocational-technical programs which are more advanced than its secondary counterparts.
- Students at postsecondary vocational-technical institutions may study for an associate degree or just take a one or a few courses (in 1990 the former represented about 35 percent of all undergraduate postsecondary enrollments and about one half of the nonbaccalaureate undergraduate students).

Graduate Education:

- After undergraduate studies (4-year programs), students (if they fulfill the requirements), may apply to professional schools (e.g., Law or Medicine) which may mean up to additional four years of studies or to graduate

programs to get Master's degree (one or two years), Doctoral degree (two to four years), or other graduate degrees (e.g., Specialist).

“Preparation for Work” Administration:

- Federal law mandates that every state has a State Board of Vocational Education [SBVE] (which has a correspondent function to the State Board of Education) and a State Employment and Training Council [SETC].
- The SBVE is responsible for administering secondary vocational and technical education (including federal programs) within the state and supervising the administration of local vocational-technical districts.
- The SETC plans and directs the programs funded by the federal Department of Labor.
- In some states vocational-technical education is not under the State Department of Education. In those states (e.g., Oklahoma), there is a State Department of Vocational and Technical Education.
- Other state departments also involved with VTET issues are the Departments of Labor, Agriculture, Commerce, and Economic Development.
- Among the tasks of that the state departments in charge of vocational and technical education have to fulfill is the development of the federally mandated Five-Year Plan for Vocational Education (each state's plan must describe how each of them is going to use the federal vocational education funds allocated to them and must be renewed when the time comes).

- The state departments in charge of VTET must also prepare reports to the state Governor, business community, and general public.
- Like at the federal level, at state level, there are a number of non governmental organizations which have interests in vocational and technical education and influence its policy development (education associations, labor organizations, chambers of commerce and other business organizations, private research firms, special interest groups, and taxpayer and parents groups).
- In some states, at the local level, vocational-technical education is under the local education boards, while in others there are separate vocational-technical education boards.
- There is also the possibility of local districts joining resources for constituting a joint vocational-technical area center which is under a joint board of vocational-technical education.
- In any case, an executive officer, the superintendent, is hired by the board to run the local or joint vocational-technical education system.
- The funding for the local or joint vocational-technical system comes mostly from state and local levels, however some targeted programs are funded by the Federal Government.
- Like at the federal and state levels, at the local level, there are a number of non governmental organizations and individuals which have interests in vocational and technical education and influence its policy development (school administrative staff, teachers, students, parents, civic leaders,

service organizations, labor unions, chambers of commerce, and youth organizations.

- Another important source of training are the initiatives sponsored by the Job Training Partnership Act [JTPA] which is a federal program.
- The JTPA fund training initiatives through the states administrations which are implemented by regional or local delivery agencies (each of these agencies are advised by a Private Industry Council which is composed of local business leaders, officials, organized labor, representatives of employment and economic development services, and of public education).

Past, Present, and Future of “Preparation for Work” in the USA:

- Like in Brazil and in the others countries already addressed, VTET in USA have been under pressure to reform in order to better perform.
- A series of reports including the Workforce 2000 (1987), The Forgotten Half (1988), America’s Choice: High Skills or Low Wages (1990), SCANS Report (1991), and others have addressed the various aspects of the VTET in the USA of the end of the 1980s and beginning of the 1990s, not only making a diagnose but also proposing changes.
- However, according to Hartley, Mantle-Bromley, and Cobb (1996), “there appears to be a lack of congruence between public demands for change and education’s willingness to acknowledge these demands” (p. 39).
- Despite the disagreements between the VTET stakeholders, VTET in USA (and also education in general) are not static and many reform proposals

have already been under experimentation (e.g., school-to-work models such as Career Academy, Occupational/Academic Clusters, Tech Prep, and Youth Apprenticeship, besides others), some for quite some time while others are more recent.

- However, authors like Copa and Plihal (1996) defend that instead of continuing to experiment with reform models which maintain “vocational[-technical] education as a collection of separate fields” (p. 97), there should be a shift to proposals that structure vocational-technical education “as a broad field of study” (p. 99).
- It is not known which proposals will work, if any, however none will be completely successful if VTET continue to be perceived as a second class education as in Brazil, England, France, and Germany.

Brazil in 2025

Process Question Number Thirteen

What are the most probable scenarios for Brazil by 2025?

Probable Scenarios for 2025 Originated from the Scenarios Developed by SAE for

2020:

- Scenario A (extrapolated from the Abatiapé scenario).
- Scenario B (extrapolated from the Baboré scenario).
- Scenario C (extrapolated from the Caaeté scenario).
- Desirable Scenario (equal to the Diadorim scenario).

Note: Money figures in 1997 dollars.

Situations That Were Understood as Immutables in

All Scenarios

Political-Institutional Domain:

- Territorial Unity.
- Democratic Political System Operating according to the Law.
- Citizenship Guarantee.

Socio-Cultural Domain:

- Population of 202.9 million people (80% of the USA 1995 population).
- Population growth = 1.006%.
- Population aging.
- Above 80% of the population living in urban areas.
- Consolidated traits of the Brazilian society.
- Multiracial acquaintanceship.
- Language unity.

Economic Domain:

- Economically Active Population of 111.7 million people (80% of the USA 1995 EAP).
- Economically Active Population Growth = 1.007%.

Situations That May Present Different Rhythms and
Speeds of Innovation

- Competitive insertion in the international economy.
- Computerization of society.
- New attributes of education.
- New labor relations.
- Structural unemployment.
- New sectors of economy.
- Decentralization of the dynamic actions of the development.
- Privatization/concession process.
- Inclusion of the exclusive economic zone.
- Ratification of the Principles of Agenda 21.
- Spatial redistribution of the economy.
- Inclusion, in the economic calculations, of factors connected to the sustainability of the development.

Probable Scenario A

Brazil is a solid and modern economic power, however it still presents significant social unbalances.

International Domain:

- Growing globalization in conjunction with emerging regional spaces in different continents and the sustainable and balanced liberalization of the international trade.
- The political-strategic poles diversify, in non conflictive basis, and organize themselves according to the circumstances and agendas of every regional space.

Political-Institutional Domain:

- Political-institutional stability (governance and governability capability preserved).
- Bigger political-administrative decentralization of the State (the states and municipalities administrations play a bigger role in terms of the management of resources and in the provision of services).
- Public investments geared prioritarily to the management of the economic stability and to the development of the market (recovering and enlargement of the economic infrastructure, particularly in transportation and energy, in order to assure the expansion and competitiveness of the economy).
- Bigger political presence in the international arena.
- Society reaches participative maturity (it pushes for its rights and plays an important role not only in the control of public government but also by supplementing and even substituting for, in some areas, the attributions of the State).

- Public safety (crime prevention and fighting) is a challenge to the political forces that push for the practice and improvement of democracy.

Socio-Cultural Domain:

- Social stability (but still substantial social and regional problems due to unbalanced wealth and productive structure distribution).
- Levels of schooling and qualifications for work still insufficient for the exigencies of the new technological standard.
- High concentration of wealth.
- 5.7% of the population in the poverty level (11.6 million people).
- Level of unemployment of 6.6 % of the Economically Active Population (EAP).
- Less intense migratory flux (as a result of public policies geared for the development of new economic initiatives which enable the regional populations to stay in their regions).
- Urbanization rate of 88% and growing (more than Germany and less than United Kingdom in 1995).
- Metropolitan deconcentrating (by slow population growth and by people leaving the metropolitan areas).
- Development a significant number of middle size cities integrated intra-regionally.
- Quality of life in the major cities is unsatisfactory.
- Major cities have problems of violence and environmental degradation.

Economic Domain:

- The Country is placed among the seven main economic powers of the globe.
- Economic stability.
- Low inflation.
- GDP of US\$ 4,586 billion (more than half of the present 1995 USA GDP).
- GDP per capita of US\$ 22,600 (bigger than 1995 Canada's GDP).
- High growth rates.
- Bigger presence in the world commerce (integration to the international market).
- Trade balance in equilibrium.
- Total international trade = US\$ 1,075 billion (bigger than 1995 Germany).
- Increased international partnerships (Europe, Asia, and Southern Africa), in special within Mercosul.
- Bigger physical and energetic integration with the South American neighbours.
- Bigger opening of the national economy.
- Consolidated competitive position in particular niches encompassing also high technology products.
- Internal market grows in a segmented way (as a result of the incomes unbalances which generate different demands for goods and services).
- Large capacity of public investment, with a meaningful attraction of foreign resources.

- Recovering and enlarging of the economic infrastructure.
- Diversified productive structure.
- Increase in the participation of the services sector.
- Moderate decrease in the participation of agriculture sector.
- Reduction of the capacity of generation of jobs in the formal market.
- New technologies are introduced and spread in internal productive process.

Environmental Domain:

- Medium degradation of the environment.
- Urban pollution in critical levels in the megalopolis.

Regional Domain:

- Less regional discrepancies than in the 1990s (however there are still significant regional unbalances in the distribution of the productive structure, in the quality of life, and in the social indicators).
- The southeast and south regions still concentrate most of the Brazilian economy (which were additionally favored by the consolidation of Mercosul).
- In the Amazon region, there is substantial exploration of extractive cultures of the local biodiversity (pharmaceutical products, essences, tropical fruits, oily plants/seeds) and development of biotechnology initiatives through the establishment of biotechnology centers.

- The environmental degradation in the Amazon region decreases substantially (as a result of adequate management and handling of the environment).
- In the northeast, the tourism industry is well established and agriculture expands in the semi arid area by using irrigation technologies and by better taking advantage of the São Francisco river area.
- In the centerwest will have increased in participation in the GDP, benefitting from the better offer of transportation infrastructure and from the major physical and energetic integration with the neighbouring South American countries.

Probable Scenario B

Brazil is a more just society. The Country turns more inward, expanding and diversifying the internal market.

International Domain:

- International setting with a certain worsening of the commercial protectionism, in particular from mature economies whose economic growth is declining, which result in a slower evolution of the world trade as a whole.
- In the political-strategic domain, there is a process of re-establishment of the regional spheres of power, not always in cooperative basis.

Political-Institutional Domain:

- Political-institutional stability (the governance and governability patterns change substantially due to the choice of social policies which garner wider political support for the public government).
- Brazilian State very decentralized (state and municipal levels play an important role in partnership with non governmental organizations).
- the State and society build wide and creative partnerships, allowing the NGOs take co-responsibility for certain public attributions, particularly regarding the social infrastructure.
- Public policies geared to the reduction of the social and regional unbalances (reduction of the absolute poverty and the gap between the rich and the poor); that happens through more taxation and not by the participation of the public sector in the economy.
- Public resources are prioritarily directed to the social infrastructure and for the wealth distribution (no presence of the State as an entrepreneur).
- Ample land reform through fiscal financing and selective dispossessions.
- Society (through NGOs) influences and controls the initiatives of collective interest such as public safety, the development of environmental policies and the use of natural resources.

Socio-Cultural Domain:

- Social stability.

- Meaningful improvement of the social and quality of life indicators (due to the public policies implemented).
- Offer of social infrastructure and educational opportunities at a satisfactory level.
- Low concentration of wealth (deconcentrated wealth distribution structure).
- Level of poverty of 2.7% of the population (5.5 million of people).
- Level of unemployment of 4.8% of the EAP (as a result of the policies of income and employment generation, and of the consolidation of the land reform).
- Reduced internal migratory fluxes (due to the increase of opportunities in the less economically advantaged regions).

Economic Domain:

- The Country is placed among the 12 biggest world economies (loss of position in relation to the present situation).
- Economic stability.
- Moderate inflation (inflationary level higher than the regional and international average).
- Gross Domestic Product = US\$ 2,937 billion (bigger than Germany's 1995 GDP).
- GDP per capita = US\$ 14,475 (bigger than Spain's today).
- Moderate economic growth.

- Brazilian economy vulnerable to increases in the protectionism and to decreases of international capital flow.
- Selective and partial integration with the world.
- Total international trade = US\$ 526 billion (comparable to 1995 France; still less than 1% of the total world trade).
- Limited partnerships out of the region.
- Priority to the internal and intra-regional market.
- International competitiveness in specific niches particularly in the agriculture and agri-industrial sector.
- Less competitiveness in the niches of high technology products.
- Dynamic internal market.
- Significant dependence of foreign investments to complement the internal resources.
- Low increase in private domestic investment rate (due to the substantial taxation directed to redistribution of the wealth).
- Bottle necks continue to exist in the economic infrastructure.
- Moderate diversification of the productive structure.
- Growth of the production activities geared to large scale consumption.
- Slow but continuous technological modernization of the productive structure.
- Relative technological delay in economic sectors of high international competitiveness.

- Use of alternative sources of energy (more diversified and conservationist power generation structure which takes advantage of the local energy resources).

Environmental Domain:

- Low environmental degradation and reduction of the pressure on the natural resources (due to the use of new technologies and proper environmental management).
- Involvement of municipal administrations, communities and non governmental organizations in the formulation of environmental policies.

Regional Domain:

- Reduction of the regional unbalances in the distribution of the productive structure and in the social indicators due the public policies implemented.
- The reduction of relative growth rate of the Southeast and South regions diminishes not only the level of spacial concentration of the productive structure but also the inter-regional gaps.
- New intermediary metropolis, in particular in the Southeast and South regions, impelled by the integration process of South America.
- In the Amazon, it is optimized the management of the environment and is implemented a security system that protects the economic-ecologic patrimony, minimize illegal actions and provides support to development the infra-structure system of the region.

- The “natural vocations” of the Northeast and Centerwest regions are supported boosting their economies.

Probable Scenario C

Brazil faces political and economic crises whose duration leads to the worsening of the social problems. The instability is due mainly to the non completion of the structural reforms which presently (since 1995) are under way. The lack of the latter diminishes substantially the State's resources for developing the social and economic infrastructure.

International Domain:

- Political and economic fragmentation of the international scenario.
- Growing protectionist practices worldwide.
- The system of free international trade under assault (each country takes unilateral initiatives to try to solve its trade problems instead of seeking for international cooperation).
- Disbelief in the multilateral instances such as the World Trade Organization and wearing out of Mercosul weaken the regional co-operation and integration alternatives.

Political-Institutional Domain:

- Political-institutional instability and disorganization (the governance and governability are compromised due to the fragmentation of the political support to the Federal administration and to the low level of consensus

among the various sectors of society, reducing the government management capability in the social and economic fields).

- Scattered public resources.
- The State has difficulty in guaranteeing the citizens' individual rights.
- The articulation between the State and society is minimal or non-existent.

Socio-Cultural Domain:

- Insufficient schooling and human resources development levels.
- High concentration of wealth.
- High social deficits.
- Poverty level = 13.7% of the population (28 million people).
- Unemployment = 8.4% of the EAP (besides informal jobs grow substantially).
- Intensified public migrations.
- High urbanization rate.
- Pronounced fall of the urban quality of life.
- Corruption spreads through society in general and in the public safety apparatus in particular.
- Not only violence is very present but also the feeling of defencelessness and impunity dominates.

Economic Domain:

- Economic stagnation.
- High inflation levels.

- GDP = US\$ 1,270 billion (close to France's present GDP).
- GDP per capita = US\$ 6,260 (bigger than Uruguay's present GDP).
- Very low growth (the Country's growth is affected by unfavorable international developments).
- The Country's vulnerability is increased (due to a prevailing international scenario of fragmentation in conjunction with the worsening of protectionism).
- Weak performance of exports and imports.
- Total international trade = US\$ 212 billion (comparable to 1995 Spain's).
- Low capacity for international competition.
- Protectionism and limited degree of external opening (Brasil loses shares in the international market).
- Reduced and dualist internal market (due to the concentration of wealth).
- Low capability of internal savings generation.
- Inefficient and dispersive allocation of the resources available.
- Insufficient investment rate for meeting the Country's development needs.
- Limited private domestic accumulation (due to the businesspeople lack of motivation).
- Restricted international capital flow (thus contributing for scarcity of resources for investments).
- Productive structure of limited diversification.
- Limited modernization of the productive structure with segmented and partial innovations in some sectors and branches of the economy.

- Limited labor productivity (due to the context of the limited modernization of the productive structure).
- Stagnated scientific and technological capability (it does not get to match the world state of the art).

Environmental Domain:

- Middle environmental degradation (elevation of the environmental degradation levels).

Regional Domain:

- High regional concentration of the productive structure in the Southeast and South (they present a much higher economic performance than the Country's average).
- North and Northeast regions dominated by stagnation (they neither get to improve their economic performance nor to overcome their social problems - a high percentage of the poor part of the population lives in these regions).
- The Centerwest does not get to improve its position in the national economy (as a result of the precarious transportation system existing in the region).

Desirable Scenario

Brazil is a sovereign, democratic, and developed nation with social equity, high quality of life, and educational level.

International Domain:

- Stable international scenario.
- Political multipolarity.
- Sustainable and equalitative liberalization of the international commerce which promote the harmonic interaction of the countries with different levels of economic development.

Political-Institutional Domain:

- Brazil is a sovereign nation.
- High governance and governability (through the strengthening of the political capacity and of the initiative of the social actors).
- Reconstruction of an efficient and Regulatory State geared to the social needs and to the development (the State must be an instrument to promote the socio-economic development, protect the environment, and guarantee human rights).
- Consolidation and widening of democracy (the political system must be stable and well developed).
- Strong citizenship.
- Organization of society (so that it has active participation in the decision processes).
- Land reform will be an appropriately addressed issue.

Socio-Cultural Domain:

- High level of schooling.

- Low wealth concentration.
- High level of employment.
- Strengthening of the citizenship.
- High quality of life.
- Very low poverty rate.
- Cultural identity and diversity (the former must be reinforced by the valuing of diversity of ethnicities, genders, creeds, and regions).
- Justice.
- Ethics.
- Human rights protection.

Economic Domain:

- Economic stability (solid and dynamic economy).
- GDP between Scenario A's (US\$4,586 billion) and Senario B's (US\$ 2,937 billion).
- GDP per capita: high and more homogenous.
- Economic growth retaken.
- Brazil occupies an important position in the world economy.
- Integration with the world and high external competitively with selective opening in specialized niches (strategic and selective integration).
- Strengthening and dynamization of the internal market.

- Highly diversified productive structure (including agri-business, food, and durable goods industries, and mainly services - tourism, entertainment, and educational and information services)

Environmental Domain:

- Environment conservation.
- Natural resources and biodiversity used in a sustainable way (technologies to make that possible will have been mastered).
- Recovering of degraded resources.

Regional Domain:

- Spatial deconcentration of national wealth and economy.
- Rural development

Ranking of the Dominant Desires of the Society:

Very High Occurrence Themes – Equity and Social Justice (first place), and Quality of Life (second place) (they are the central pillars of the desired future for 2025).

- Equity and Social Justice, understood as the basis of a more equalitarian society, with reversion of the present framework of inequalities and concentration of wealth.
- Quality of Life, understood as the general raise of the material conditions of the population existence.
- Sub themes in descending occurrence order: social equity, education, health, social justice, wealth distribution and others.

- Highest ranked sub themes: social equity and education (the others are down below).

High Occurrence Themes: Economic Development (in a distant third place) and Political-Institutional Development (fourth place).

- Sub themes in descending occurrence order: democracy, sustainable economic growth, provider and efficient State, culture, solidarity, reformed political system, cultural identity, others.
- Highest ranking sub themes: democracy, sustainable economic development, and provider and efficient State

Medium Occurrence Themes: Themes are listed in descending occurrence order as follows: citizenship, international insertion, high level of employment, strengthening of the civil society, environment conservation, quality of work, definition of a national project, and others. Citizenship is ranked high above the second theme

Low Occurrence Themes: Themes in descending occurrence order: regional development, justice, agriculture development, rural development, technological development, organization of society, respect to ethnic diversity, and others. Regional development and justice are ranked alongside each other.

Ranking of the Dominant Desires per Area of the Society per Region:

- North: social issues (34%), economy (12%), labor (10%), environment (7%), political development (5%), science and technology (5%), and others (27%).

- Northeast: social issues (38%), economy (9%), citizenship (8%), labor (8%), international issues (5%), political-institutional system (5%), political development (4%), agrarian issues (4%), environment (3%), regional issues (5%), and others (11%).
- Centerwest: social issues (50%), labor (12%), economy (9%), political development (6%), international issues (4%), political-institutional system (4%), agrarian issues (4%), environment (4%), and others (7%).
- Southeast: social issues (41%), labor (10%), economy (8%), citizenship (8%), international issues (8%), political development (8%), agrarian issues (6%), and others (13%).
- South: social issues (29%), economy (15%), labor (10%), science and technology (8%), and others (38%).

Aspirations of the North, Northeast, and Centerwest Regions:

North – Interest in the national recognition of the economic importance of Amazon for Brazil; conscience of the role of biodiversity in future Brazil; aspiration that the region develops in an autonomous and self sustained way; desire of strengthening the intra-regional and South American integration, and with the world; ecotourism appears as one the potentialities of the region.

Northeast – Perception of the importance of the balanced development of the various sectors of the economy, inclusive through the strengthening of science and technology, more value aggregation to the production, and the full development of the

cultural and tourism potentialities; the region intends to increase its contribution to solve national problems and not be seen as the “problem-region” of the Country.

Centerwest – Sees itself, overall, not only as the central axis for the Brazilian integration but also as the factor of integration of Brazil to South America and to the Pacific area; it seeks to consolidate itself as a strong exporter (being responsible for 10% of the Brazilian international trade); the importance of the existence of a wide and integrated transportation infrastructure is stressed.

Delphi Survey Findings

Process Question Number Fourteen

What should be the role of the Brazilian federal government in vocational-technical education and training in Brazil by the year 2025? Information to answer this question was gained from the Delphi phase of the study.

Delphi Survey Question Number One. Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025? If you envision different roles for different futures, be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with in future rounds, if necessary.

Responses for Rounds II and III (See Appendix H for a complete list of responses from Round I of the Delphi Study).

SCALE

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

OTHER ACRONYMS

AMR = Arithmetic Mean Response, NoR = Number of Respondents, LoC = Level of Consensus (Consensus occurred when 75% of respondents agreed/strongly agreed or disagreed/strongly disagreed with the statement) (See Appendix W for comments of agreement or disagreement by respondents).

- Policy

1. By 2025, the Brazilian Federal Government should be a conceiver of policies for VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	0	1	8	9	3.95	21	81	Agreement
3	0	3	0	4	13	4.35	20	85	Agreement

2. By 2025, the Brazilian Federal Government should be a monitor of public policies for VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	2	12	5	3.9	21	81	Agreement
3	1	2	0	13	4	3.85	20	85	Agreement

3. By 2025, the Brazilian Federal Government should articulate a national policy for VTET integrated with the public system of work and income generation.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	1	10	8	4.14	21	86	Agreement
3	0	2	0	12	6	4.1	20	90	Agreement

4. By 2025, the Brazilian Federal Government should have formulated quality standards for VTET which must be frequently updated.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	0	10	7	3.95	21	81	Agreement
3	0	2	0	11	7	4.15	20	90	Agreement

5. By 2025, the Brazilian Federal Government should define directives and strategic directions for the organization of VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	3	9	9	4.29	21	86	Agreement
3	0	0	0	12	8	4.4	20	100	Agreement

6. By 2025, the Brazilian Federal Government should play more of a leadership/guidance (vs operational) role in vo-tech education/training, serving as a catalyst for bringing about high quality program design and implementation at the state and local levels.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	1	13	3	3.71	21	76	Agreement
3	1	4	0	11	4	3.65	20	75	Agreement

7. By 2025, the Brazilian Federal Government should provide leadership to the VTET systems not only by developing an education action plan taking into consideration the national priorities, but also by supporting, and monitoring its implementation.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	0	11	5	3.67	21	76	Agreement
3	2	0	0	13	5	3.95	20	90	Agreement

8. By 2025, the Brazilian Federal Government should establish policies and directives in VTET. The policies and strategies at the federal level must count on partnerships with the states and municipalities, in consortium with the various segments of society. The federal policies must stimulate and respect the regional peculiarities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	0	9	12	4.57	21	100	Agreement
3	0	0	0	5	15	4.75	20	100	Agreement

9. By 2025, the Brazilian Federal Government should develop a national vo-tech education policy that differentiates the roles of the various providers and employers.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	9	8	4.1	21	81	Agreement
3	1	2	0	13	4	3.85	20	85	Agreement

10. By 2025, the Brazilian Federal Government should be responsible for establishing the national policies and directives for technological education (and not VTET), having input from the productive sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	1	10	6	3.81	21	76	Agreement
3	1	0	0	15	4	4.05	20	95	Agreement

11. By 2025, if a socialist group governs Brazil, the Federal Government should be developing policies for development for professions in conjunction with society.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	1	10	7	3.95	21	81	Agreement
3	1	1	1	10	7	4.05	20	85	Agreement

12. By 2025, the Brazilian Federal Government should be defining and setting the framework of educational policy goals for vo-tech education/training in collaboration with ministries of labour and education/culture.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	3	9	7	4	21	76	Agreement
3	1	3	0	11	5	3.8	20	80	Agreement

- Provider of Programs/Courses

13. By 2025, technical education (higher education level) should be offered by federally owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	8	2	6	1	2.62	21	57	Indecisive
3	1	13	0	5	1	2.6	20	70	Indecisive

14. By 2025, vo-tech education (secondary level) should be offered by federally owned supported and operated institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	8	3	5	1	2.57	21	57	Indecisive
3	2	12	1	5	0	2.45	20	70	Indecisive

15. By 2025, training (non formal VTET) should be offered by federally owned, supported and operated educational institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	6	12	1	2	0	1.95	21	86	Disagreement
3	3	12	1	2	1	2.26	19	75	Disagreement

16. By 2025, the Brazilian Federal Government should have expanded the present federally maintained and operated network of technological education facilities which will remain federal by then.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	3	10	2	3.35	20	57	Indecisive
3	3	1	1	14	1	3.45	20	75	Agreement

In Round II, Statement 16 Read By 2025, the Brazilian Federal Government

should have expanded its present network of technological education facilities.

17. By 2025, the Brazilian Federal Government should own, support and operate a reference network of VTET educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	5	8	2	3.24	21	48	Indecisive
3	1	3	0	14	2	3.65	20	80	Agreement

18. By 2025, if a socialist group governs Brazil, the Federal Government should be providing development for professions along with other providers.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	2	8	4	3.38	21	57	Indecisive
3	1	3	0	11	5	3.8	20	80	Agreement

19. By 2025, the Brazilian Federal Government should offer vo-tech education and training in occupational areas not spontaneously covered by other non totally public systems (S Systems and others).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	5	11	1	3.38	21	57	Indecisive
3	1	4	0	14	1	3.5	20	75	Agreement

20. By 2025, the Ministry of Education and Sports should be progressively disengaging or have disengaged of offering vo-tech education which should be transferred to states and/or municipalities. MEC will neither fund or operate.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	5	8	1	6	1	2.52	21	62	Indecisive
3	7	8	0	4	1	2.2	20	75	Disagreement

- Funding

21. By 2025, the Brazilian Federal Government should fund the whole VTET system, including teachers salaries, buildings, equipments and study materials.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	7	8	3	2	1	2.14	21	71	Indecisive
3	7	10	1	2	0	1.9	20	85	Disagreement

22. By 2025, the Brazilian Federal Government should provide funds for staff development for vo-tech education.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	2	12	4	3.81	21	76	Indecisive
3	1	1	0	15	3	3.9	20	90	Agreement

23. By 2025, the Brazilian Federal Government should provide funds for purchase equipment for vo-tech educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	2	11	3	3.52	21	67	Indecisive
3	1	1	1	16	1	3.75	20	85	Agreement

24. By 2025, the Brazilian Federal Government should provide funds for programs development and dissemination in vo-tech education.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	10	4	3.67	21	67	Indecisive
3	1	1	1	15	2	3.8	20	85	Agreement

25. By 2025, if a neoliberal group continues to govern Brazil, the Federal Government will be a development for professions public fund distributor (as it happens with the FAT presently) for which public and private institutions, NGOs, and others will compete for.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	2	7	8	0	3	20	38	Indecisive
3	3	1	5	9	2	3.3	20	55	Indecisive

In Round II, Statement 25 Read By 2025, if a neoliberal group continues to govern Brazil, the Federal Government will be a development for professions public fund (such as the FAT presently) distributor for which public and private institutions, NGOs, and others will compete for.

26. By 2025, the Brazilian Federal Government should be planning, suggesting and evaluating different options of funding vo-tech education/training. (To tell one functional experience from the other side of the world: The Nordic countries are funding the huge and organized VET systems by tax money that has created equal and democratic choices and opportunities to all people.)

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	1	12	6	4.05	21	86	Agreement
3	0	2	0	17	1	3.85	20	90	Agreement

27. By 2025, the Brazilian Federal Government should be a provider of funds to activities in technical education (higher education level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	1	13	4	3.9	20	81	Agreement
3	1	1	0	15	3	3.9	20	90	Agreement

28. By 2025, the Brazilian Federal Government should be a provider of funds to activities in vo-tech education (secondary level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	0	13	3	3.62	21	76	Agreement
3	1	0	1	15	3	3.95	20	90	Agreement

29. By 2025, the Brazilian Federal Government should be a provider of funds to activities in training (non formal VTET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	9	2	7	2	3	21	48	Indecisive
3	2	7	1	6	4	3.15	20	50	Indecisive

30. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in federally owned and operated schools/educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	1	10	3	3.45	20	62	Indecisive
3	1	4	1	11	3	3.55	20	70	Indecisive

31. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in state owned and operated schools/educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	1	13	1	3.45	20	67	Indecisive
3	1	3	1	14	1	3.55	20	75	Agreement

32. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in municipally owned and operated schools/educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	1	12	2	3.43	21	67	Indecisive
3	1	5	0	12	2	3.45	20	70	Indecisive

33. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the business and industry federations (such as the S System).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	5	2	8	2	2.95	21	48	Indecisive
3	3	5	0	11	1	3.1	20	55	Indecisive

34. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the workers unions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	5	3	9	0	2.81	21	43	Indecisive
3	3	5	0	12	0	3.05	20	60	Indecisive

35. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in private schools/educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	6	7	3	5	0	2.33	21	62	Indecisive
3	7	7	1	5	0	2.2	20	70	Indecisive

36. By 2025, the Brazilian Federal Government may fund selectively in some strategic areas, particularly the R&D of training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	2	9	10	4.38	21	90	Agreement
3	0	0	1	7	12	4.55	20	95	Agreement

In Round II, Statement 36 Read *By 2025, the Brazilian Federal Government may fund selectively in some strategic areas, particularly the R&D of training.*

37. By 2025, federal funds should be provided for support of research about vo-tech education and training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	2	11	7	4.14	21	86	Agreement
3	1	1	1	13	4	3.9	20	85	Agreement

38. By 2025, federal funds should be provided for support of teacher training for vo-tech education/training programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	11	8	4.24	21	90	Agreement
3	1	1	0	11	7	4.1	20	90	Agreement

39. By 2025, federal funds should be provided for support of leadership and administrative training for running vo-tech education and training programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	3	12	5	4	21	81	Agreement
3	1	1	1	14	3	3.85	20	85	Agreement

40. By 2025, federal funds should be provided for support of the national advisory council for vo-tech education and training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	1	5	9	3	3.38	21	57	Indecisive
3	2	2	4	10	2	3.4	20	60	Indecisive

- Others

41. By 2025, the Brazilian Federal Government should have no role in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	15	4	2	0	0	1.38	21	90	Disagreement
3	16	3	1	0	0	1.25	20	95	Disagreement

42. By 2025, the Brazilian Federal Government should not be setting standards in VTET themselves; however, they should help to manage a process by which high standards are set with the concurrence of all interested and affected parties.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	2	12	4	3.81	21	76	Agreement
3	0	0	0	17	3	4.15	20	100	Agreement

43. By 2025, the Brazilian Federal Government should provide technical assistance and information on best practices and leading innovation to providers and practitioners of VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	15	4	4	21	90	Agreement
3	0	0	0	16	4	4.2	20	100	Agreement

44. By 2025, the Brazilian Federal Government should ensure that disadvantaged and disabled individuals have access to services in VTET. The federal government must ensure access to high quality programs for all individuals, which means they must provide supplemental services in some cases where needed.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	3	11	6	4.05	21	81	Agreement
3	0	0	2	11	7	4.25	20	90	Agreement

45. By 2025, the Brazilian Federal Government should lead VTET through positive encouragement or incentive, not through overmanagement, overly prescribed regulation or negative consequences for certain behaviors.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	0	12	8	4.29	21	81	Agreement
3	0	0	0	15	5	4.25	20	100	Agreement

46. By 2025, the Brazilian Federal Government agencies and officials should model the kinds of behavior they expect from regional or local institutions and individuals in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	5	1	8	6	3.75	20	67	Indecisive
3	0	5	1	9	4	3.63	19	65	Indecisive

47. By 2025, the Brazilian Federal Government should have set up an infrastructure for curriculum development for VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	8	6	3.76	21	67	Indecisive
3	1	1	0	15	3	3.9	20	90	Agreement

48. By 2025, the Brazilian Federal Government should have set up a system for VTET teacher training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	4	12	5	4.05	21	81	Agreement
3	0	2	1	15	2	3.85	20	85	Agreement

49. By 2025, the Brazilian Federal Government should be using a balanced system of school-based and national testing in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	5	8	4	3.65	20	57	Indecisive
3	1	2	3	9	2	3.53	17	55	Indecisive

50. By 2025, the Brazilian Federal Government should have a system for school-into-work transition.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	11	3	3.62	21	67	Indecisive
3	1	1	2	14	2	3.75	20	80	Agreement

51. By 2025, the Brazilian Federal Government should provide incentives for the creation and maintenance of VTET schools that operate as Vocational-Technical/Technical Reference Centers for the regions where they are located and for the occupational areas for which they have programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	1	15	4	4.15	20	90	Agreement
3	0	0	0	20	0	4	20	100	Agreement

52. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for maintaining more effective program operations and management.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	0	14	6	4.19	21	95	Agreement
3	0	1	0	16	3	4.05	20	95	Agreement

53. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for establishing stronger partnerships between vo-tech/training programs and the private sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	13	6	4.14	21	90	Agreement
3	0	1	0	17	2	4	20	95	Agreement

54. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for assessing more frequently, and in different ways, regional manpower needs and job skill requirements.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	1	13	5	4	21	86	Agreement
3	0	1	0	17	2	4	20	95	Agreement

55. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for developing broader-based program curricula, materials, and instructional methodology.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	14	5	4.1	21	90	Agreement
3	0	1	0	17	2	4	20	95	Agreement

56. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for forming, and using more effectively, local program advisory committees.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	3	12	5	4	21	81	Agreement
3	0	1	1	16	2	3.95	20	90	Agreement

57. By 2025, the Brazilian Federal Government should provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., local actions for refining and expanding business/industry cooperative and other joint training ventures.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	11	6	4	21	81	Agreement
3	0	1	0	16	3	4.05	20	95	Agreement

58. By 2025, the Brazilian Federal Government should support research in the development of curricula, materials, and new approaches to teaching/learning in vo-tech education/training, as well as new modes of worker utilization, e.g., worker teaming, etc., and ways to respond more quickly to employer demands for new worker skills.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	2	10	8	4.19	21	86	Agreement
3	0	1	0	14	5	4.15	20	95	Agreement

59. By 2025, the Brazilian Federal Government should provide guidelines for state and local development/adaptation of curricula and materials for vo-tech education and training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	5	0	11	5	3.76	21	76	Agreement
3	1	2	1	14	2	3.7	20	80	Agreement

60. By 2025, the Brazilian Federal Government should provide incentives for state and local development/demonstration of exemplary programs in vo-tech education and training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	5	1	11	4	3.67	21	71	Indecisive
3	1	1	1	15	2	3.8	20	85	Agreement

61. By 2025, the Brazilian Federal Government should provide leadership and financial support to universities (selected competitively), possibly through states, for developing high quality and relevant teacher education/training, as well as special programs for developing vocational-technical/training leadership and administrative personnel to serve at the federal, state, and local levels.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	8	8	4.05	20	76	Agreement
3	1	3	2	8	6	3.75	20	70	Indecisive

62. By 2025, the Brazilian Federal Government should provide leadership to the states for assisting municipalities (local school districts are governed by them) in implementing effective student services programs, i. e., establishing computer-based job information programs for vocational/career counseling of secondary students.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	2	11	7	4.1	21	86	Agreement
3	0	0	0	16	4	4.2	20	100	Agreement

63. By 2025, the Brazilian Federal Government should provide leadership to the states for assisting municipalities (local school districts are governed by them) in implementing effective student services programs, i. e., establishing effective student/graduate placement programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	11	6	3.95	21	81	Agreement
3	0	0	1	16	3	4.1	20	95	Agreement

64. By 2025, the Brazilian Federal Government should provide leadership to states for establishing rapid response adult education/training programs to assist workers in job advancement, keeping abreast of new technology, career changes, etc.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	13	6	4.05	21	90	Agreement
3	0	0	0	18	2	4.1	20	100	Agreement

65. By 2025, the Brazilian Federal Government should establish a national advisory council to keep in touch with the nation's workforce needs and recommend federal policy on development, funding, and evaluation of the country's vo-tech/training system.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	6	7	5	3.67	21	57	Indecisive
3	1	2	6	7	4	3.55	20	55	Indecisive

66. By 2025, the Brazilian Federal Government should stimulate the private sector to be a provider of services in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	15	4	4	21	90	Agreement
3	0	0	0	19	1	4.05	20	100	Agreement

67. By 2025, the Brazilian Federal Government should have implemented the Technological Education National System, *which has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector (as it is said in the Act 8948/94).*

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	3	9	7	3.95	21	76	Agreement
3	1	1	1	12	5	3.95	20	85	Agreement

68. By 2025, the Brazilian Federal Government should be coordinating the Technological Education National System.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	2	10	6	3.86	21	76	Agreement
3	1	1	0	14	4	3.95	20	90	Agreement

69. By 2025, the Brazilian Federal Government should be promoting and making accessible secondary level basic development in 5-6 big occupational clusters, such as: Computer Science and Telecommunications; Mechanics and Electronics; Communications, Language and Arts; Business Administration and Accounting; Urban and Regional Planning and Environment; Health Occupations and Biotechnology.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	5	11	2	3.52	21	62	Indecisive
3	1	0	2	16	1	3.8	20	85	Agreement

70. By 2025, at the post secondary level, the Brazilian Federal Government should be primarily supporting, in partnership with the states, programs that are profession-related lasting 2-3 years targeting specific professions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	3	9	2	3.24	21	52	Indecisive
3	1	2	1	15	1	3.65	20	80	Agreement

71. By 2025, at the post secondary level, the Brazilian Federal Government should be primarily supporting, in partnership with the municipalities, programs that are profession-related lasting 2-3 years targeting specific professions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	10	4	5	0	2.65	20	52	Indecisive
3	1	10	3	6	0	2.7	20	55	Indecisive

72. By 2025, the Brazilian Federal Government should provide the political leadership needed to move vocational-technical education to the top of the national agenda.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	3	8	7	3.81	21	71	Indecisive
3	1	2	2	9	6	3.85	20	75	Agreement

73. By 2025, the Brazilian Federal Government serve a national “clearing house” function in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	2	11	3	3.65	20	67	Indecisive
3	0	3	1	14	1	3.68	19	75	Agreement

74. By 2025, the Brazilian Federal Government role should be largely framework-setting with greater control at provincial levels. Federalized systems probably will not be responsive to area needs. There is a positive, forceful role for government - but not as provider!

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	2	3	9	4	3.55	20	62	Indecisive
3	0	5	1	13	0	3.42	19	65	Indecisive

75. By 2025, the Brazilian Federal Government should promote all forms of vocational preparation and re-training through a mix of institutional approaches and should use a mix of incentives to insure that workforce entrants and participants - as well as employers at all levels - are induced to fully participate.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	1	13	3	3.67	21	76	Agreement
3	1	1	0	17	1	3.8	20	90	Agreement

76. By 2025, if a neoliberal group continues to govern Brazil, the development for professions will be under the Ministry of Labor and not anymore under the Ministry of Education and Sports.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	6	6	5	1	2	2.35	20	57	Indecisive
3	6	8	3	2	1	2.2	20	70	Indecisive

77. By 2025, if a socialist group governs Brazil, the Federal Government should be implementing a public, tuition-free, lay, universal, unitary and technological or polytechnic school system.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	6	3	5	3	2.86	21	48	Indecisive
3	2	9	1	5	3	2.9	20	55	Indecisive

78. By 2025, if a socialist group governs Brazil, the Federal Government should be democratizing the control of development for professions providers that use public funds.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	3	4	9	2	3.19	21	52	Indecisive
3	2	3	0	13	2	3.5	20	75	Agreement

79. By 2025, if a socialist group governs Brazil, the Federal Government should implementing legislation that favors the participation of youngsters and workers in development for professions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	2	3	9	4	3.43	21	62	Indecisive
3	2	3	0	12	3	3.55	20	75	Agreement

80. By 2025, the Brazilian Federal Government should have the role of organizer for the development of world-class VTET. Organize through strategic planning for the future, focusing on world-class VTET as a top priority for 2025.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	1	9	7	3.9	21	76	Agreement
3	0	2	1	13	4	3.95	20	85	Agreement

81. By 2025, the Brazilian Federal Government should have the role of facilitator for the development of world-class VTET. Facilitate the collaboration of the various ministries, organizations, businesses, industries and municipalities to achieve world-class VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	10	7	4.05	21	81	Agreement
3	0	2	1	12	5	4	20	85	Agreement

82. By 2025, the Brazilian Federal Government should have the role of “cheerleader” for the development of world-class VTET. Actively support (cheerleader) and publicize the movement toward world-class VTET, educating people in the need for world-class VTET and the contributions it can make to economic and social development.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	3	9	7	4	21	76	Agreement
3	1	1	1	12	5	3.95	20	85	Agreement

83. By 2025, the Brazilian Federal Government should be the coordinator of the development of human resources for the various occupational areas and skills levels required by the productive sectors.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	2	11	2	3.38	21	62	Indecisive
3	0	4	0	15	1	3.65	20	80	Agreement

84. By 2025, the Brazilian Federal Government should retain its normative role in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	2	8	3	3.25	20	52	Indecisive
3	1	2	1	13	2	3.68	19	75	Agreement

85. By 2025, the Brazilian Federal Government should retain its evaluation role in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	2	1	11	5	3.71	21	76	Agreement
3	1	1	0	14	4	3.95	20	90	Agreement

86. By 2025, the Brazilian Federal Government should be creating many optional models of vo-tech education and training including modern technology for people. Brazil is a large country with heterogeneous population. Different people with varied social backgrounds will need many choices.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	1	12	6	4	21	86	Agreement
3	1	1	1	11	6	4	20	85	Agreement

87. By 2025, the Brazilian Federal Government should be ensuring that vo-tech education and training is an essential and integrated part of the Brazilian educational system at all levels (kindergarten, primary, secondary, tertiary and adult education).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	2	7	7	3.8	20	67	Indecisive
3	2	4	0	9	5	3.55	20	70	Indecisive

88. By 2025, the Brazilian Federal Government should be to planning and suggesting optional educational pathways to advance in vo-tech education and training (e.g., school-based route, work-based or apprenticeship route, mixed routes, vo-tech education and training examination for adults recognizing prior learning etc.)

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	2	9	8	4.05	21	81	Agreement
3	1	1	1	12	5	3.95	20	85	Agreement

Process Question Number Fifteen

How should vocational-technical education and training in Brazil be organized by 2025? Information to answer this question was gained form the Delphi phase of the study.

Delphi Survey Question Number Two Based on your perception of how the future may be by the year 2025, how should vocational-technical education and training in Brazil be organized by the year 2025 - who should provide it, who should fund it, in which format, etc.? If you envision different forms of organization for different futures be free to express your opinions. Do not attempt to rank your predicted forms of organization; this issue will be dealt with in future rounds, if necessary.

Responses for Rounds II and III (See Appendix H for a complete list of responses from Round I of the Delphi Study).

SCALE

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

OTHER ACRONYMS

AMR = Arithmetic Mean Response, NoR = Number of Respondents, LoC = Level of Consensus (Consensus occurred when 75% of respondents agreed/strongly agreed or disagreed/strongly disagreed with the statement) (See Appendix W for comments of agreement or disagreement by respondents).

- Who to Provide It?

89. By 2025, there should exist a system of VTET that relies on many different providers.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	0	9	9	4.14	21	86	Agreement
3	0	0	0	12	8	4.4	20	100	Agreement

90. By 2025, there should be VTET schools organized and maintained by workers organized in unions and Union Centrals. Such schools would be funded by compulsory contributions of the kind as the union tax and the Assistance to the Unions contribution.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	8	1	10	0	3	20	48	Indecisive
3	2	3	0	14	0	3.37	19	70	Indecisive

In Round II, Statement 90 Read By 2025, there should be VTET schools organized, operated, and supported by workers organized in unions and Union Centrals, with compulsory contributions such as union tax and Assistance to the Unions contribution.

91. By 2025, VTET may be delivered in “public VTET centers” of triparty management (government, entrepreneurs and workers).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	3	11	5	3.9	21	76	Agreement
3	0	0	2	14	4	4.1	20	90	Agreement

In Round II, Statement 91 Read By 2025, VTET might be delivered in “public VTET centers” of triparty management (government, entrepreneurs and workers).

92. By 2025, VTET will be offered only by the companies. There will not be a government system (public) which offers VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	10	10	0	1	0	1.62	21	95	Disagreement
3	11	7	1	1	0	1.6	20	90	Disagreement

93. By 2025, there will be need to involve business and industry to a much greater extent for selected occupational areas, with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	3	14	2	3.71	21	76	Agreement
3	0	0	1	16	2	4.05	19	90	Agreement

In Round II, Statement 93 Read By 2025, there will be need therefore to involve business and industry to a much greater extent for selected occupational areas, with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-

based and yet more specialized training with more sophisticated equipment and teaching methodology.

94. By 2025, vo-tech schools will need to provide more in-service training for workers through joint ventures with local employers. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	0	1	17	2	3.9	21	90	Agreement
3	0	0	0	18	2	4.1	20	100	Agreement

95. By 2025, a system of regional vo-tech schools will be necessary for the basic, more general, training, with authority vested in the regions' perspective states for supervision and for ensuring that basic academic and training standards are being met. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	5	10	2	3.48	21	57	Indecisive
3	0	2	0	17	1	3.85	20	90	Agreement

96. By 2025, VTET should be offered by double partnerships (government/private sector) or triple ones (government/private sector/ society), or others, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	13	4	3.9	21	81	Agreement
3	0	0	0	16	4	4.2	20	100	Agreement

97. By 2025, technical education (higher education level) should be offered by state owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	6	2	10	0	3	20	48	Indecisive
3	1	3	1	15	0	3.5	20	75	Agreement

98. By 2025, vocational-technical education (secondary level) should be offered by state owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	3	10	0	3.05	20	48	Indecisive
3	1	5	1	13	0	3.3	20	65	Indecisive

99. By 2025, training (non formal VTET) should be offered by state owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	10	2	5	0	2.45	20	62	Indecisive
3	3	10	1	6	0	2.5	20	65	Indecisive

100. By 2025, technical education (higher education level) should be offered by municipally owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	11	2	4	1	2.55	20	62	Indecisive
3	1	12	1	6	0	2.6	20	65	Indecisive

101. By 2025, vo-tech education (secondary level) should be offered by municipally owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	8	3	6	1	2.8	20	48	Indecisive
3	1	10	2	7	0	2.75	20	55	Indecisive

102. By 2025, training (non formal VTET) should be offered by municipally owned, supported and operated educational facilities.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	7	1	8	1	2.85	20	48	Indecisive
3	2	4	2	12	0	3.2	20	60	Indecisive

103. By 2025, technical education (higher education level) should be offered by privately owned, supported and operated educational facilities (owned by companies or not).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	6	3	9	0	2.86	21	43	Indecisive
3	3	3	1	12	0	3.16	19	60	Indecisive

104. By 2025, vo-tech education (secondary level) should be offered by privately owned, supported and operated educational facilities (owned by companies or not).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	7	3	8	0	2.76	21	48	Indecisive
3	3	4	1	12	0	3.1	20	60	Indecisive

105. By 2025, training (non formal VTET) should be offered by privately owned, supported and operated educational facilities (owned by companies or not).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	4	3	11	0	3.05	21	52	Indecisive
3	2	3	1	14	0	3.35	20	70	Indecisive

106. By 2025, technical education (higher education level) should be offered by semi public educational facilities such as the S System ones.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	4	1	10	2	3.32	19	57	Indecisive
3	2	1	0	15	1	3.63	19	80	Agreement

107. By 2025, vo-tech education (secondary level) should be offered by semi public educational facilities such as the S System ones.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	1	9	2	3.26	19	52	Indecisive
3	1	2	1	16	0	3.6	20	80	Agreement

108. By 2025, training (non formal VTET) should be offered by semi public educational facilities such as the S System ones.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	2	10	2	3.37	19	57	Indecisive
3	1	2	0	16	1	3.7	20	85	Agreement

109. By 2025, technological education should be offered in specialized institutions, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favoring the professional competency of its employees). In our case, the present CEFETs constitute the reference model which can be improved, the later regarding to specific career and autonomy.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	4	9	5	3.8	20	67	Indecisive
3	1	0	1	14	4	4	20	90	Agreement

110. By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	0	11	3	3.5	20	67	Indecisive
3	1	5	0	10	4	3.55	20	70	Indecisive

111. By 2025, if a neoliberal group continues to govern Brazil - as it is presently -, education for professions should be mostly offered by the business or entrepreneurial world, through institutions such as Euvaldo Lodi, Herbert Levy and other traditional ones, transformed in service rendering companies for providing education for professions - SENAI, SENAC, SESC, SESI, etc.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	5	4	5	7	0	2.67	21	43	Indecisive
3	6	4	0	10	0	2.7	20	50	Indecisive

112. By 2025, if a socialist group governs Brazil, education for specific professions should be offered only by public institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	10	4	3	0	2.35	20	62	Indecisive
3	4	12	1	3	0	2.15	20	80	Disagreement

113. By 2025, initial development for professions should be provided by a mixed system, that is, through public vocational and training facilities, and semi public and private ones which operate in an articulated way.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	1	12	5	3.95	20	81	Agreement
3	0	1	2	15	2	3.9	20	85	Agreement

114. By 2025, any development for a profession after the initial one should be provided by the companies themselves.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	11	2	4	0	2.35	20	67	Indecisive
3	2	14	0	3	0	2.21	19	80	Disagreement

115. By 2025, basic development for professions (inclusive in areas of innovation) should be offered by public institutions in occupational areas not spontaneously covered by non totally public ones.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	3	11	0	3.2	20	52	Indecisive
3	1	1	0	17	1	3.8	20	90	Agreement

116. By 2025, basic development for professions (inclusive in areas of innovation) should be offered by private institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	9	2	8	0	2.85	20	48	Indecisive
3	2	12	0	5	1	2.55	20	70	Indecisive

117. By 2025, basic development for professions (inclusive in areas of innovation) should be offered by semi-public institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	2	11	0	3.15	20	52	Indecisive
3	1	4	2	12	1	3.4	20	65	Indecisive

118. By 2025, basic development for professions (inclusive in areas of innovation) should be offered by public institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	7	2	9	1	3.1	20	48	Indecisive
3	1	5	0	13	1	3.4	20	70	Indecisive

119. By 2025, basic development for professions (inclusive in areas of innovation) should be offered by public institutions in partnerships with private organizations.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	1	13	2	3.6	20	71	Indecisive
3	1	0	0	18	1	3.9	20	95	Agreement

120. By 2025, development for specific professions should be offered by private institutions/organizations.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	2	11	0	3.1	20	52	Indecisive
3	1	5	1	12	1	3.35	20	65	Indecisive

121. By 2025, the entrepreneurs will invest in highly specialized development for professions and, fundamentally, necessary to the productive processes.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	1	17	0	3.67	21	81	Agreement
3	0	2	0	18	0	3.8	20	90	Agreement

122. By 2025, the unions will have programs of retraining for professions by the means of the utilization of agreements with specialized institutions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	18	0	3.8	20	86	Agreement
3	0	0	0	20	0	4	20	100	Agreement

123. By 2025, the human resources development agencies directed to the entrepreneurs' interests, such as Senai, Senac, Senar, and others, should continue to exist.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	2	12	5	4.05	20	81	Agreement
3	0	1	0	14	5	4.15	20	95	Agreement

124. By 2025, the development of the individual (youngsters and adults) for the exercise of a profession only will be offered by governments. The offer of development for a specific profession will be independent of the demand of the latter by any company at that moment in time. Such offer will correspond solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create a company related to this profession, besides other motives. Such characteristic of development does not pass concretely in front of the critical view of the companies.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	4	6	6	2	3.1	20	38	Indecisive
3	3	3	5	8	1	3.05	20	45	Indecisive

In Round II, Statement 124 Read *By 2025, the development of the individual (youngsters and adults) for the exercise of a profession, independent of it being demanded by any company at that moment in time, corresponding solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create of company related to the doing of his/her profession, besides other motives, only will be offered by the*

governments, because such characteristic of development does not pass concretely in front of the critical view of the companies.

125. By 2025, there will be a wide range of private suppliers, particularly for short courses or those which combine modest costs and a vibrant labor market (such as computer science today).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	13	6	4.14	21	90	Agreement
3	0	1	0	15	4	4.1	20	95	Agreement

126. By 2025, foreign proprietary courses will compete successfully in some areas, often in joint ventures with local providers.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	1	14	3	3.71	21	81	Agreement
3	2	0	1	15	2	3.75	20	85	Agreement

127. By 2025, firms will invest in offering short and highly specialized training to its own workers (eventually opening these offerings to outsiders).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	2	14	5	4.14	21	90	Agreement
3	0	0	0	16	4	4.2	20	100	Agreement

128. By 2025, vo-tech education/training (VET) might be delivered in VET centers depending on needs of trainees and business life.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	1	14	4	3.9	21	86	Agreement
3	1	0	1	17	1	3.85	20	90	Agreement

- Who to Fund It?

129. By 2025, the funding of VTET will be public and private, combined and maximizing the various different existing funds (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	12	5	3.95	21	81	Agreement
3	0	0	0	17	3	4.15	20	100	Agreement

130. By 2025, all different existing funds for VTET (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments) should be articulated, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favor of the generation of work and income, as well as in the modernization of the productive sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	4	11	4	3.81	21	71	Indecisive
3	0	1	1	15	3	4	20	90	Agreement

131. By 2025, funding for VTET would come from the government but would be provided directly to individuals, as opposed to institutions or programs. Once an individual received funding support, based on need or some other criteria, he or she could use that support to pay for services from a wide range of providers, including the private sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	7	7	4	2	0	2.05	20	67	Indecisive
3	7	12	0	1	0	1.75	20	95	Disagreement

132. By 2025, the respective state governments will need to provide a portion (possibly ½) of the funds required for operation of the vo-tech schools. The remaining operational funds would need to be generated locally, e.g., from local taxes, private sector contributions, income earned from joint training ventures with business and industry, adult training tuition, etc.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	12	1	3.5	20	62	Indecisive
3	1	2	1	15	1	3.65	20	80	Agreement

133. By 2025, funding for VTET will come from the companies themselves, with some government incentives for programs considered to be strategic manpower development. That is, there will be no public funding for VTET - apart from what was specified above.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	9	4	4	0	2.38	21	62	Indecisive
3	3	15	0	2	0	2.05	20	90	Disagreement

134. By 2025, funding for VTET may come from double partnerships (government/private sector) or triple ones (government/private sector/ society), or others, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	13	6	4.14	21	90	Agreement
3	0	0	0	15	4	4.21	19	95	Agreement

135. By 2025, state governments should be providers of funds to activities in technical education (higher education level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	3	2	12	2	3.55	20	67	Indecisive
3	1	1	0	17	0	3.74	19	85	Agreement

136. By 2025, state governments should be providers of funds to activities in vocational-technical education (secondary level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	2	14	2	3.75	20	76	Agreement
3	1	1	0	17	0	3.74	19	85	Agreement

137. By 2025, state governments should be providers of funds to activities in training (non formal VTET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	2	9	2	3.2	20	52	Indecisive
3	1	3	0	16	0	3.55	20	80	Agreement

138. By 2025, municipal governments should be providers of funds to activities in technical education (higher education level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	7	2	8	2	3.15	20	48	Indecisive
3	1	10	0	9	0	2.85	20	55	Indecisive

139. By 2025, municipal governments should be providers of funds to activities in vocational-technical education (secondary level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	2	11	2	3.45	20	62	Indecisive
3	1	5	0	14	0	3.35	20	70	Indecisive

140. By 2025, municipal governments should be providers of funds of activities in training (non formal VTET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	2	11	2	3.4	20	62	Indecisive
3	1	2	1	16	0	3.6	20	80	Agreement

141. By 2025, semi public organizations should be providers of funds to activities in technical education (higher education level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	2	13	2	3.6	20	71	Indecisive
3	1	1	1	17	0	3.7	20	85	Agreement

142. By 2025, semi public organizations should be providers of funds to activities in vocational-technical education (secondary level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	2	13	2	3.65	20	71	Indecisive
3	1	0	1	18	0	3.8	20	90	Agreement

143. By 2025, semi public organizations should be providers of funds to activities in training (non formal VTET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	3	13	2	3.7	20	71	Indecisive
3	1	0	1	18	0	3.8	20	90	Agreement

144. By 2025, private organizations should be providers of funds to activities in technical education (higher education level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	1	10	2	3.25	20	57	Indecisive
3	1	1	0	18	0	3.75	20	90	Agreement

145. By 2025, private organizations should be providers of funds to activities in vocational-technical education (secondary level).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	1	12	2	3.45	20	67	Indecisive
3	1	0	0	19	0	3.85	20	95	Agreement

146. By 2025, private organizations should be providers of funds to activities in training (non formal VTET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	1	14	2	3.65	20	76	Agreement
3	1	0	0	19	0	3.85	20	95	Agreement

147. By 2025, private institutions, for profit or not, may receive subsidies for offering training (non formal VTET) based on a certain amount of money per slot offered or scholarships for enrollment.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	4	0	11	2	3.25	20	62	Indecisive
3	2	3	0	14	1	3.45	20	75	Agreement

148. By 2025, students enrolled in technical programs (higher education level) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	4	1	11	1	3.05	21	57	Indecisive
3	4	3	1	12	0	3.05	20	60	Indecisive

149. By 2025, students enrolled in vocational-technical programs (secondary level) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	5	7	1	8	0	2.57	21	57	Indecisive
3	5	5	1	9	0	2.7	20	50	Indecisive

150. By 2025, students enrolled in training programs (non formal VTET) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	4	2	11	0	2.95	21	52	Indecisive
3	4	3	1	12	0	3.05	20	60	Indecisive

151. By 2025, the S System institutions should have kept its present funding form.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	7	5	1	2.95	20	33	Indecisive
3	0	6	9	3	2	3.05	20	30	Indecisive

152. By 2025, student loans should be provided to individuals for getting VTET in private organizations.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	2	14	2	3.71	21	76	Agreement
3	0	1	2	17	0	3.8	20	85	Agreement

153. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	3	8	6	3.76	21	67	Indecisive
3	0	4	1	10	5	3.8	20	75	Agreement

154. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses being admissible complementary and additional forms of fund raising, through co-operative societies and service rendering (extension services must not be charged).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	3	10	6	4.05	20	76	Agreement
3	0	0	0	17	3	4.15	20	100	Agreement

155. By 2025, if any nation wants to be competitive it should have earmarked governmental funds for skill development.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	0	10	9	4.19	21	90	Agreement
3	0	1	0	11	8	4.3	20	95	Agreement

In Round II, Statement 155 Read *By 2025, if any nation wants to be competitive it should have earmarked governmental funds for skill development.*

156. By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	4	9	2	3.29	21	52	Indecisive
3	1	3	2	10	4	3.65	20	70	Indecisive

In Round II, Statement 156 Read *By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.*

157. By 2025, funding for vo-tech education/training will continue to be a critical issue. Much of the funding for vo-tech education/training should be private through various incentives - both push and pull. Loans to individuals under long term (repayment

provisions) may be an important means of shifting responsibility for a productive return to the beneficiary.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	7	4	3	3	2.71	21	52	Indecisive
3	3	11	2	3	1	2.4	20	70	Indecisive

158. By 2025, if a neoliberal group continues to govern Brazil, funding for VTET should, in part, come from the public fund in partnerships with the private sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	2	5	10	1	3.3	20	52	Indecisive
3	2	0	1	16	1	3.7	20	85	Agreement

159. By 2025, if a neoliberal group continues to govern Brazil, funding for VTET should, in part, come from students which would pay for certain programs/courses.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	3	4	8	1	2.95	20	43	Indecisive
3	3	5	0	12	0	3.05	20	60	Indecisive

160. By 2025, if a socialist group governs Brazil, development for specific professions should be funded only by public resources.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	9	3	5	0	2.5	20	43	Indecisive
3	2	14	0	3	1	2.35	20	80	Disagreement

161. By 2025, basic development for professions (inclusive in areas of innovation) should be supported by public funding.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	2	3	12	1	3.4	20	62	Indecisive
3	1	2	0	16	1	3.7	20	85	Agreement

162. By 2025, development for specific professions should be supported by private funding with public incentives.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	2	5	11	0	3.25	20	52	Indecisive
3	2	4	2	12	0	3.2	20	60	Indecisive

163. By 2025, funding for VTET will come from private interests when it meets their specific needs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	1	13	2	3.48	21	71	Indecisive
3	1	3	0	16	0	3.55	20	80	Agreement

164. By 2025, funding for VTET will come from public resources in order to meet the persons' needs independent of companies ones.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	2	8	4	3.38	21	57	Indecisive
3	1	4	0	14	1	3.5	20	75	Agreement

165. By 2025, the public sectors (not MEC) will concentrate on funding of expensive and long training, particularly in complex technologies.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	3	10	1	3.24	21	52	Indecisive
3	1	6	0	13	0	3.25	20	65	Indecisive

166. By 2025, expensive and long training, particularly in complex technologies will be delivered by private and semi public providers (the successors of the S System).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	4	10	0	3.2	20	48	Indecisive
3	0	3	0	16	0	3.68	19	80	Agreement

167. By 2025, longer and more expensive VTET programs will operate under a complex mix of cost recovery and public subsidies.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	4	11	2	3.52	21	62	Indecisive
3	0	3	1	16	0	3.65	20	80	Agreement

168. By 2025, public VTET will charge a variable fee from students.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	4	5	8	1	3.1	20	43	Indecisive
3	3	5	2	10	0	2.95	20	50	Indecisive

169. By 2025, private VTET will get subsidies.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	3	3	12	1	3.33	21	62	Indecisive
3	3	3	0	14	0	3.25	20	70	Indecisive

170. By 2025, students may get vouchers to attend chosen schools.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	4	3	12	0	3.19	21	57	Indecisive
3	1	5	1	13	0	3.3	20	65	Indecisive

171. By 2025, ability to pay and individual potential will generate complex algorithms to determine pay/subsidies for VTET programs/courses.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	8	4	4	4	3.2	20	38	Indecisive
3	1	12	2	5	0	2.55	20	65	Indecisive

- In What Format?

172. By 2025, VTET courses and programs will be offered based on the marketplace and workers demand (instead of depending on the offer of the VTET providers, as it happens today, which rarely takes into consideration the profile of the clientele and the needs of the labor market).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	1	12	6	4.05	21	86	Agreement
3	0	2	0	16	2	3.9	20	90	Agreement

173. By 2025, some amount of VTET would be provided through distance learning. This opens up a whole range of opportunities for individual learners, especially those who are in remote locations.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	0	12	8	4.29	21	95	Agreement
3	0	1	0	17	2	4	20	95	Agreement

174. By 2025, VTET programs, for adults already in the workforce, will be shorter and more often related directly to work needs and often provided on the job.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	0	13	8	4.38	21	100	Agreement
3	0	0	0	18	2	4.1	20	100	Agreement

175. By 2025, classroom teaching in VTET will have to be linked to real work applications and experiences.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	0	11	10	4.48	21	100	Agreement
3	0	0	0	15	5	4.25	20	100	Agreement

176. By 2025, further training beyond the first general qualification should be provided by the employers.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	14	3	4	0	2.52	21	67	Indecisive
3	0	17	1	2	0	2.25	20	85	Disagreement

177. By 2025, training of unemployed should be the responsibility of the State (Public Government).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	5	3	9	4	3.57	21	62	Indecisive
3	0	4	0	14	2	3.7	20	80	Agreement

178. By 2025, there should be a VTET system funded by the State (Public Government), tuition-free, open to unskilled individuals.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	2	12	5	3.95	21	81	Agreement
3	0	2	1	14	3	3.9	20	85	Agreement

179. By 2025, there should be a VTET funded by the State (Public Government), tuition-free, open to those that want to upgrade their current skills or to acquire new ones - it does not matter if the individual is employed or not.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	6	1	10	4	3.57	21	67	Indecisive
3	0	4	1	13	2	3.65	20	75	Agreement

180. By 2025, the present vocational-technical schools should have become Technology and Technical Reference Centers (Technical and Vocational-Technical Education Reference Centers) for the regions where they are located and for the occupational clusters in which they offer programs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	4	9	6	4.11	19	71	Indecisive
3	0	0	1	15	4	4.15	20	95	Agreement

181. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer training programs/courses (non formal VTET) - independent of the number of school years the candidate has completed before beginning a program.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	9	2	3.5	18	52	Indecisive
3	1	1	3	14	1	3.65	20	75	Agreement

182. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer secondary level assistant technicians programs: for those who completed K-8 grade education.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	4	10	2	3.58	19	57	Indecisive
3	1	0	2	16	1	3.8	20	85	Agreement

183. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer secondary level technician programs: for students that are in 9-11/12 grade school or who have completed this level of instruction.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	3	11	4	3.8	20	71	Indecisive
3	1	0	1	15	2	3.89	19	85	Agreement

184. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer associate of science programs: for those who completed 9-11/12 grade school.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	2	12	3	3.7	20	71	Indecisive
3	1	1	0	15	2	3.84	19	85	Agreement

185. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer work-targeted specialization, improvement and updating programs to individuals who have already joined the workforce or that have already been trained before.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	0	3	12	4	3.9	20	76	Agreement
3	0	0	1	16	3	4.1	20	95	Agreement

186. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer alternatives of vocational-technical certification for those who acquire their skills through work-based training, taking advantage of the non formal alternatives of development for work, or through self-learning. The criteria and parameters of this occupational certification will be agreed upon among the educators, workers and entrepreneurs, mediated by the Government.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	0	2	13	4	3.95	20	81	Agreement
3	0	0	0	17	3	4.15	20	100	Agreement

187. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. This will allow room in the curricula for expanding/increasing the general education content and for providing more generalized, broader-based technical instruction in preparation for the specialized training.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	1	10	5	3.67	21	71	Indecisive
3	2	1	0	13	4	3.8	20	85	Agreement

188. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. There will be need to build in some formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire program.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	2	12	4	3.71	21	76	Agreement
3	2	0	0	17	1	3.75	20	90	Agreement

189. By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without any interference or participation of the federal government.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	7	12	0	1	1	1.9	21	90	Disagreement
3	4	16	0	0	0	1.8	20	100	Disagreement

In Round II, Statement 189 Read *By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without no interference or participation of the federal government.*

190. By 2025, VTET will be offered through the format of specialized, short-term and for updating/recycling skills training, through continuing education.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	4	2	12	0	3.1	21	57	Indecisive
3	1	4	0	14	1	3.5	20	75	Agreement

191. By 2025, flexibility, rapidity, low cost, and virtuality will be for sure attributes of VTET. Such attributes are very important because there are more and more adults interested in participating in VTET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	4	11	3	3.62	21	67	Indecisive
3	0	2	1	13	4	3.95	20	85	Agreement

In Round II, Statement 191 Read *By 2025, flexibility, rapidity, low cost, virtuality will be for sure attributes of the VTET, and more so when there is an adult public interested in it.*

192. By 2025, creativity and openness to changes will have to be emphasized in VTET so that the new generations can each time more adapt themselves to the new age, contributing to its evolution.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	0	11	9	4.33	21	95	Agreement
3	0	1	0	14	5	4.15	20	95	Agreement

193. By 2025, it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education separately because globalization demands every person to have a sound general education.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	1	2	9	7	3.86	21	76	Agreement
3	0	0	0	13	6	4.32	19	95	Agreement

In Round II, Statement 193 Read By 2025, it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education for the globalization requires a sound general education.

194. By 2025, the basic development for professions - in one of the 5-6 clusters profession clusters - should occur mandatorily during 9-11/12 grade instruction, being part of the curriculum along with disciplines of general humanistic and scientific development: Communication, Social Studies, and Sciences. Contents more “applied” or of major applicability taught presently in 9-11/12 grade instruction will become part of the “profession-gear” curriculum.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	6	3	9	2	3.24	21	52	Indecisive
3	1	3	4	11	1	3.4	20	60	Indecisive

195. By 2025, mandatory 9-11/12 grade and profession geared instruction should be offered concomitantly or in the same school, public or private, or in Schools Consortiums where certain disciplines may be taken. In order to complete 9-11/12 grade instruction, the students will have to taken all the general and “profession-gearred” courses which will have an equivalent number of hours of instruction.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	4	8	2	3.14	21	40	Indecisive
3	2	3	3	9	2	3.32	19	55	Indecisive

196. By 2025, there should be allowed flexibility in VTET instruction at the regional and local levels.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	0	18	2	4	21	95	Agreement
3	0	0	0	18	2	4.1	20	100	Agreement

197. By 2025, most technical specific training should happen at the post secondary or apprenticeship levels. Much of the ground work and systems work for VTET should happen at the secondary levels. The 2+2 Tech Prep Associate Degree Program is an example of that. It is important to develop a seamless curricular program.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	1	14	3	3.81	21	81	Agreement
3	0	2	0	17	1	3.85	20	90	Agreement

198. By 2025, CEFETs or equivalent institutions should be in place to meet the demands of HR in their various levels of instruction of technological education which articulate naturally among themselves. In that way, those institutions must have as characteristics the verticality of instruction (all possible levels of instruction in the same institution), and strong interaction with the productive sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	3	10	6	4.16	19	76	Agreement
3	0	0	1	14	5	4.2	20	95	Agreement

199. By 2025, for school leavers at any age, hopefully 16-18 years, but even 14 years, a vocational option through training should be available.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	0	14	5	4	21	90	Agreement
3	0	1	0	15	4	4.1	20	95	Agreement

200. By 2025, adult vocational education (training) for those who have discontinued academic studies is a vital objective, whether for 14, 24, 34, or 44-year old person. Prosperity for all will not occur without societal intent to achieve full employment in a dynamic, technologically-advanced economy. A constantly churning vocational education system is a necessity.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	1	12	7	4.19	21	90	Agreement
3	0	0	0	16	4	4.2	20	100	Agreement

201. By 2025, if a neoliberal group continues to govern Brazil, the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector. In this sense the “theory” or ideology of the “competencies” or of the basic skills - offered by the empirism of the productive world - will be the parameter of the development of an individual for a profession.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	4	7	4	4	1	2.55	20	52	Indecisive
3	2	13	1	3	1	2.4	20	75	Disagreement

In Round II, Statement 201 Read By 2025, if a neoliberal group continues to govern Brazil, the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector. In this sense the “theory” or ideology of the “competencies” or of the basic skills - basic skills - offered by the empirism of the productive world - will be the parameter of the development of a individual for a profession.

202. By 2025, development for professions should be offered in the format of the classical school. Theoretically, the new scientific-technical base (under the aegis of the microelectronics, genetic engineering, and new sources of energy) structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, the classical format would constitute in the best format for development for a profession, even taking as a criteria only the economic dimension. Attached to that, it would also come, the development of citizens able to read critically the more and more complex reality and to organize themselves to demand the right to have a good living, even knowing that there is a decreasing need for workers in the marketplace.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	2	5	6	4	2	2.95	19	33	Indecisive
3	2	5	6	6	1	2.95	20	35	Indecisive

In Round II, Statement 202 Read By 2025, development for professions should be offered in the format of the classical school. Theoretically the new scientific-technical base, under the aegis of the microelectronics, genetic engineering, and new sources of energy, structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, such format would constitute in the best development for a profession, even taking as a criteria only the economic dimension. With this would come, however, also, the reality of a citizen able to read critically the reality more and more complex and to organize him/herself to have the right to a worthy life, even that the world of employment be more and more scarce and unnecessary.

203. By 2025, if a socialist group governs Brazil, development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction. K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnical.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	8	3	5	1	2.65	20	52	Indecisive
3	1	10	0	7	1	2.84	19	55	Indecisive

In Round II, Statement 203 Read *By 2025, if a socialist group governs Brazil, development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction. K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnic school.*

204. By 2025, if a socialist group governs Brazil, development for specific professions should be done after the completion of 9-11/12 grade polytechnic instruction or in parallel to the latter - this last option should be offered in a specific school system which provided both 9-11/12 grade polytechnic instruction and education for a specific profession in the same school with an increased school workload. In both situations, education should be public, tuition-free, lay, universal, unitary and technological or polytechnical.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	3	6	6	3	2	2.75	20	43	Indecisive
3	2	7	5	2	3	2.84	19	45	Indecisive

205. By 2025, the S System should be being run by a triparty administration (entrepreneurs, workers, and government) which would control all its aspects.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	7	7	3	3.45	20	48	Indecisive
3	1	0	7	10	1	3.53	19	55	Indecisive

206. By 2025, public centers of development for professions should be in operation. Such organizations would have flexible schedules and a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific type of development.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	4	8	6	3.9	20	67	Indecisive
3	0	0	1	16	2	4.05	19	90	Agreement

207. By 2025, Public Government will not get involved in the development of individuals for specific professions (the tendency would be the dissemination of the corporative education, interested in the organization of the production and capital).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	10	3	5	2	2.86	21	52	Indecisive
3	2	10	3	4	0	2.47	19	60	Indecisive

208. By 2025, there should be oversight for vo-tech education and training at the highest level of government through a joint council.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	6	5	4	3.29	21	43	Indecisive
3	1	3	7	7	1	3.21	19	40	Indecisive

209. By 2025, vo-tech education and training responsibilities should be detailed and those who are given certain responsibilities must be held accountable for results.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	5	11	3	3.67	21	67	Indecisive
3	1	1	1	13	3	3.84	19	80	Agreement

210. By 2025, curriculum links should have been forged between public vo-tech education and training and others to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	1	3	11	5	3.86	21	76	Agreement
3	1	1	1	16	0	3.68	19	80	Agreement

211. By 2025, the vocational-technical vs vocational (training) distinction will fade.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	7	4	8	1	3.05	21	43	Indecisive
3	1	6	2	11	0	3.15	20	55	Indecisive

212. By 2025, the fixed structures presently observed in vocational (training) and vocational-technical education will fade.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	6	4	10	1	3.29	21	52	Indecisive
3	0	7	1	12	0	3.25	20	60	Indecisive

213. By 2025, training in general will be offered through a number of delivery methods (combination of various instructional technologies packages will be pervasive).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	2	12	7	4.24	21	90	Agreement
3	0	0	1	14	4	4.16	19	90	Agreement

214. By 2025, simple courses will be franchised to smaller operators, such as MacDonald's or Yazigi's.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	4	5	9	1	3.25	20	48	Indecisive
3	1	3	3	12	1	3.45	20	65	Indecisive

215. By 2025, the states governments should monitor the efforts of meeting the policy goals of vo-tech education and training (VET).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	2	13	2	3.65	20	71	Indecisive
3	1	1	0	17	1	3.8	20	90	Agreement

216. By 2025, the municipalities governments should monitor the efforts of meeting the policy goals of VET.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	2	2	13	1	3.58	19	67	Indecisive
3	1	3	0	15	0	3.53	19	75	Agreement

217. By 2025, the types of providers of VET should be related to age groups and their needs.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	5	6	10	0	3.24	21	48	Indecisive
3	1	3	3	13	0	3.4	20	65	Indecisive

218. By 2025, one of the formats of delivering VET should be the school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	3	6	11	1	3.48	21	52	Indecisive
3	1	0	3	15	0	3.68	19	75	Agreement

219. By 2025, one of the formats of delivering VET should be the work-based model avoiding the disadvantages of the German dual system.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	4	5	12	0	3.38	21	57	Indecisive
3	1	1	2	15	0	3.63	19	75	Agreement

220. By 2025, one of the formats of delivering VET should be the mix of school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems and the work-based model avoiding the disadvantages of the German dual system (see the recent Austrian reforms).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	3	16	1	3.81	21	81	Agreement
3	1	0	1	17	1	3.85	20	90	Agreement

221. By 2025, one of the formats of delivering VET should be qualification-based examination for adults and experienced persons to recognize their competencies.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	1	2	14	4	4	21	86	Agreement
3	1	0	0	18	1	3.9	20	95	Agreement

- Other Aspects

222. By 2025, the tripartism (government, workers, and entrepreneurs) or multipartism in the management of public VTET schools/educational facilities must be implemented.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	14	5	4.05	21	90	Agreement
3	0	2	0	14	4	4	20	90	Agreement

223. By 2025, VTET should have eliminated the distance between intellectual and manual work. It is necessary to have brought closer the conception and execution functions.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	1	11	6	4.05	20	81	Agreement
3	0	0	1	13	6	4.25	20	95	Agreement

224. By 2025, VTET should go beyond the learning of simple technical applications for immediate entrance in the labor market. VTET involvement with the advancements of sciences and techniques become necessary for the establishment of the circle of participation among the generation, transfer and application of technologies. As a matter of fact, the selection, use and absorption of a technology requires a level of technological familiarity, of the same magnitude of the necessity to generate it.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	2	0	12	7	4.14	21	90	Agreement
3	0	0	0	13	6	4.32	19	95	Agreement

225. By 2025, it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss to the workers' revenues (wages/salaries).

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	1	5	1	10	2	3.37	19	57	Indecisive
3	0	2	1	14	2	3.84	19	80	Agreement

In Round II, Statement 225 Read *By 2025, it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss in their revenues (wages/salaries).*

226. By 2025, development for professions should develop individuals that, at the same time, are technically competent and that also have a scientific spirit and ability, and critic sense to integrate themselves effectively as citizens and influence on the decision about who and how many people science, technic, and production should serve.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	1	11	8	4.35	20	90	Agreement
3	0	0	0	14	6	4.3	20	100	Agreement

227. By 2025, the public policies and activities should not inhibit the VTET initiatives of the productive segments that belong to the private sector.

Round	SD	D	NO	A	SA	AMR	NoR	LoC (%)	Consensus
2	0	0	2	10	8	4.3	20	86	Agreement
3	0	0	0	16	3	4.16	19	95	Agreement

Summary

In order to be able to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country's needs in technological education by the year 2025, the investigator conducted research whose findings originated from a review of literature (case study and scenarios about Brazil in 2025) and a Delphi survey.

The case study findings are distributed around twelve process questions which cover Brazil, education in Brazil, vocational-technical education and training in Brazil, and vocational-technical education and training in England, France, Germany, and the United

States. Those findings provide an holistic view about the federal technological education system.

The findings originated from a review on scenarios development projects answered the process question about probable scenarios for Brazil in 2025. Those findings provide possible contexts that the Brazilian federal technological education system may face by the middle of the 21st century.

The Delphi survey findings are disposed around two process questions which inquired about the role the Brazilian federal government in VTET and the structure of VTET in Brazil by the year 2025. It was conducted as a preference probe. Those findings provide the experts's input for determining a desirable role and structure for the Brazilian federal technological education system in Brazil by the year 2025.

The findings which resulted from the review of literature and the Delphi survey allowed the research question to be properly answered, what is done in the last chapter through the conclusions and recommendations, thus meeting the purpose of the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The focus of this research was on the future of the Brazilian federal technological education system. The latter has its origins in the beginning of the 20th century and has been through many reforms since then. Currently it is owned, maintained, and operated by the Ministry of Education and Sports. During its past it has suffered the influence of national, regional, local, and international developments which remains true in the present.

Brazil is a country almost the size of the United States of America but with a smaller population that is growing a little bit faster. The Brazilian economy is about one tenth of the US economy, however it is the eighth economy in the World. The quality of life in Brazil is the 62th on the planet while the US ranks 4th. While the United States is the major world power and a developed country, Brazil is, maybe, the most powerful country of South America but still a developing country.

Both Brazil and the United States are federations being the latter forty-six years older than the former. They have a number of similarities but the development and present organization of their vocational-technical and education structures is more a display of differences.

The federal involvement over education in Brazil is much more significant than in the United States whose primary role in education belongs to the states. While Brazil has a federal network of VTET schools and centers, the USA has nothing of its kind.

The federal technological education system is spread throughout Brazil being part of a large structure of VTET providers around the country. Along with the Paula Souza System (São Paulo state), it is most known and respected presence in public VTET in Brazil. The S System is another very visible and respected provider but it is semi public. None of the three however are perfect. In fact, the whole system of VTET in Brazil is under reform as a result of federal government determinations issued in the second half of the 1990s. While preparing the reforms the federal government consulted internal stakeholders (representatives of employers, labor, providers of VTET, public agencies, educators, practitioners, students, and other non governmental organizations) and studied what was happening in other countries (mainly, England, France, Germany, and the United States of America). The present reform is not a consensual one and can be undone just by decrees and executive orders or just by its wide non-acceptance as has already happened in Brazil with other educational reforms.

While the non federal systems of VTET have a larger flexibility for implementing the reform on VTET, the federal one has precise determinations about what should be done. As the Cardoso administration was re-elected for an additional term until 2002 and as those in charge of VTET at the federal level, including the technological education system, remained in their positions, it is unlikely that the present reform will be halted until the end of 2002.

The federal schools and centers will remain federal however the federal system will not be expanded. They will continue to provide secondary level VTET but not in a joint mode with “academic” education as before. They will be more responsive to the market needs, and effectiveness and increased coverage are the buzzwords. All federal school were required to provide non formal VTET which previously was optional. A number of the federal schools are being authorized to offer associate of applied sciences programs. A “cefetization” policy (the upgrade of federal vocational-technical schools to also provide VTET higher education programs) was initiated and by the end of 1998, twelve ETFs (federal vocational-technical schools) were informed that they would be upgraded to federal technological education centers which are educational institutions with wider attributions than the schools. As a whole, the federal technological education system is being reshaped to serve as references (along with other non federal providers) for VTET in Brazil.

Purpose of the Study

The primary purpose of the study was to develop an informed strategy for the Brazilian federal technological education system so that it can participate in the efforts of meeting the country’s needs in technological education by the year 2025.

The research and data available on vocational-technical education and training in Brazil is minimal if compared to what is available in the United States. There is not an adequate body of knowledge or pool of information on the Brazilian experience in the field available to be consulted by public policy makers in Brazil to support planning the federal technological education system beyond 5 years let alone 30 years, as policy

makers develop a peoplepower training delivery system. The problem is that public policy makers in Brazil continue to make operational and policy decisions about the federal technological education system without an adequate knowledge base related to policy alternatives appropriate to the Brazilian culture.

The research question for the study was: What is the best strategy for the federal technological education system in Brazil to follow in order to contribute for the development of an appropriately trained civilian workforce for the first half of the 21st Century?

Summary of the Research

In order to be able to answer the research question, the investigator conducted a futures-oriented study whose findings originated from a review of literature and a Delphi survey.

The review of literature on Brazil, Brazilian education and vocational-technical education and training, and vocational-technical education and training in selected countries was developed as a case study. Twelve process questions guided the construction of the case study. The first three sections addressed the present and past of Brazil, Brazilian education, Brazilian VTET, each building on the top of the previous ones. They provided a holistic view of the federal technological education system. The fourth section described the present status of England, France, Germany, and the United States of America which have been the major international inspirers of VTET initiatives in Brazil. A brief description of the case study method was included in the review of literature.

The review on scenarios development projects aimed to answer the process question which inquired about probable scenarios for Brazil in 2025. After examining a number of studies, the researcher opted for transposing the scenarios generated by a study conducted by the Brazilian Secretariat for Strategic Affairs for 2020 to the year 2025. After the necessary modifications, the scenarios for 2020 gave birth to four scenarios for 2025. Three of them are exploratory scenarios while the fourth one is a desired scenario. The scenarios for 2025 provide possible contexts that the Brazilian federal technological education system may face by the middle of the 21st century.

The Delphi survey addressed two process questions which inquired experts about the role the Brazilian federal government in VTET and the structure of VTET in Brazil by the year 2025. It was used as a preference probe. The first round began with 30 participants and the last round (the third) ended with 20 participants. The participants were mostly Americans and Brazilians. Among them, there were experts in not only Brazilian education, VTET, and government policies but also in international VTET and future studies. The responses for the two survey questions generated 227 statements. In the last round, there was a consensus (at least 75% of respondents agree/strongly agree or at least 75% of respondents disagree/strongly disagree on a statement) on 72.7% of the statements or on 165 of them. The results of the Delphi survey were used to determine a desirable role and structure for the Brazilian federal technological education system in Brazil by the year 2025. A brief description of the Delphi technique was included in the review of literature.

The findings, which resulted from the review of literature (case study and scenarios about Brazil in 2025) and the Delphi survey, were organized in three respective

blocks. Within each block, the findings were distributed under the respective process questions. The adequate use of the findings allowed the research question to be properly answered. That is done in this chapter through the conclusions and recommendations, thus meeting the purpose of the study.

Findings about the Federal Technological

Education System

The study was organized in a format so that the possibilities about the future of Brazil and of the federal technological education schools and centers [FTESCs] system were wide open. Even the possibility of the FETSCs system non existence by 2025 was included.

The findings of the study regarding its focal point, the future of the federal technological education system, are:

Brazil and “Preparation for Work”

- Size and distribution of the territory, population and economy, and socio-economic, educational-cultural, and political-institutional Brazilian and international (mostly England, France, Germany, and USA) developments have influenced the organization of Brazilian “preparation for work” (and education in general too) throughout its history.

Brazil and “Preparation for Work” in the
Second Half of the 1990s

- The Constitution of 1988 states that education and work are two of the social rights of the Brazilian citizen.
- The Constitution of 1988 states that the fundamental goals of the Federative Republic of Brazil are the construction of a free, just, and solidary society; the guarantee of national development; the eradication of poverty and marginality; the reduction of social and regional inequalities; and the promotion of well-being of all.
- Brazil has been a developing country with significant regional and socio-economic unbalances.
- Brazilian economic growth has been below what is necessary for meeting the country needs.
- Federal, the state and municipal public finances continued to be unbalanced but efforts started to be made to solve the problems (such unbalance has left no room for any substantial extra expenditures in education at any level of government).
- Structural reforms pushed by the federal government have been under way including in the educational area (the proclaimed goal is a smaller and more efficient public government).

- The Cardoso administration reform on “preparation for work [PFW]” resulted from the perception by federal government officials that the FETSCs were not properly meeting their purposes of “PFW”.
- The only state that has been able to afford a “PFW system” of equivalent size, type and quality of services provided by the FTESCs system has been São Paulo state (Paula Souza system).
- No other “PFW system” has provided vocational-technical education to the extent and quality of the FTESCs and Paula Souza systems.
- Training (non formal PFW) has been predominantly provided by non public providers (the S system has been a major provider of the training).
- The Cardoso administration has been pushing for the upgrade of the FTE schools and the expansion of “PFW” services provided by the FTESCs but not for increase in the number of FTESCs.
- By 2003, if the new federal administration disagrees with the Cardoso administration reform on “PFW” (or on education in general), it may be legally undone just by decrees and executive orders, the same way it was mandated.

“Preparation for Work” in Selected Countries

In the Second Half of the 1990s

- The present organization of “preparation for work systems” of England, France, Germany, and the United States are result of the size and distribution of their territory, population, and economy, and past and

present socio-economic, educational-cultural, and political-institutional internal and international developments.

- The central governments in England, France, Germany , and the United States of America are involved to different extents in relation to the provision of “preparation for work” being the latter a matter of national interest (in the minimum the central governments have earmarked funds for “preparation for work”).

Brazil in 2025 and the Federal Technological

Education System

- The scenario of an economically stagnated and very regionally and socio-economically unbalanced Brazil in 2025 is not far away from the Brazil of the second half of the 1990s.
- The scenario of an economically richer society than today, but still regionally and socio-economically unbalanced Brazil in 2025, represents an advancement over the Brazil of the second half of the 1990s (the benefits of the former are still significantly unequally shared by the population).
- The scenario of an economically stable and substantially more regionally and socio-economically balanced Brazil in 2025 represents a substantial improvement over the Brazil of the second half of the nineties for the majority of the Brazilians (a more just Brazil).

- The desired scenario of an economically solid and dynamic Brazil in 2025 which is also regionally and socio-economically balanced is the Brazil of the dreams of most Brazilians.
- The federal technological education schools and centers [FTESCs] should remain federally owned, maintained, and operated.
- The present FTESCs system (or “network”) should be expanded.
- The FTESCs should provide technological education [TE] and/or vocational-technical education and training [VTET], whichever is necessary.
- The FTESCs should be national/regional references for “TE” and/or “VTET” but not the only ones.
- The FTESCs should provide vocational-technical education (secondary level) in occupational areas not spontaneously covered by other non totally public systems (S System and others).
- The FTESCs should not provide training (non formal VTET) except when not covered by non totally public providers (S System and others).
- The FTESCs should be part of a National System of Technological Education (as it is said in the Act No. 8,948/94) which should be implemented.
- The FTESCs should comply with policies and strategic directions set by the Ministries of Education and Labor [MEC and MTb] (the former should provide their input to the development of those).
- The FTESCs should not be micro-managed by the MEC.

- The FTESCs should participate in the implementation of national plans for “TE/VTET.”
- The FTESCs should have its operation monitored and evaluated by the federal government.
- The FTESCs should meet high “TE/VTET” quality standards developed by a process coordinated by the MEC/MTb which are set with the concurrence of all interested and affected parties.
- The FTESCs should have a triparty management (government, entrepreneurs, and workers) or a multiparty management.
- The FTESCs should be maintained and operated by federal funds offering tuition-free programs and courses with complementary and additional forms of fund raising being permissible.
- The FTESCs should offer “TE/VTET” programs and courses based on the marketplace and workers demand.
- The CEFETs or equivalent institutions should meet the demands of human resources in their various levels of “TE” which articulate among themselves.
- A greater part of the “TE/VTET” programs and courses provided by the FTESCs will be at the post secondary level.
- The programs provided by the FTESCs should have some formalized entry/exit points in their curriculum so that students may have flexibility in completing them.

- The curriculum of the programs and courses provided by the FTESCs should have the input of the enterprises but not be dominantly under their control.
- Curriculum links should have been forged by the FTESCs and others to create opportunities such as work-based learning, joint apprenticeships agreements, and school-based enterprises.
- The FTESCs should have flexibility in “TE/VTET” instruction.
- The teaching/learning process in the programs and courses provided by the FTESCs should be linked to real work applications and experiences.
- The programs delivered at the FTESCs should allow the students to continue their studies at a higher level.
- The programs and courses delivered at the FTESCs should develop students that are technically competent, have scientific spirit and ability, and also critic sense to function effectively as citizens and stakeholders in the decisions regarding to the use of technology.

Conclusions

The findings originated from this study lead the researcher to conclude that:

- The Federal Technological Education Schools and Centers [FETSCs] system should remain in existence and be expanded (the expansion would become less and less necessary as the country becomes more regionally and socio-economically balanced or the states and municipalities assume a larger financial role).

- The FTESCs should be national/regional references for technological education [TE] and/or vocational-technical education and training [VTET], and be part of a “National System of Preparation for Work.”
- The FTESC should provide high quality “TE/VTET” programs and courses (whichever is necessary) that are flexible, agile, and responsive to “TE/VTET” stakeholders needs.
- The FTESCs should focus more on providing degree-oriented (both secondary and post-secondary) programs rather than training.
- The FTESCs should comply with (and provide input to) federal policies and strategic directions, and be monitored and evaluated by MEC but not micro-managed.
- The FTESCs should have the input of entrepreneurs and workers regarding its management, program offer, and curriculum development/update.
- The FTESCs should be primarily funded by federal money offering tuition-free programs and courses with complementary and additional forms of fund raising being admissible.
- The programs delivered at the FTESCs should allow the students to continue their studies at a higher level and prepare them not as only technical experts but also as conscious citizens.

Recommendations about the Future of

“Preparation for Work” in Brazil

The recommendations about the future of Brazilian VTET are based on the findings of this study. The former is grouped in two blocks: those regarding the role of federal government in “preparation for work”, and those relating to “preparation for work” in general.

The Role of the Federal Government

In “Preparation for Work”

The Constitution of 1988 states that the fundamental goals of the Federative Republic of Brazil are the construction of a free, just, and solidary society; the guarantee of national development; the eradication of poverty and marginality; the reduction of social and regional inequalities; and the promotion of well-being of all. Also, education and work are among the social rights of the Brazilian citizen.

Quality education and work that enable a decent living for all Brazilians are two of the pre-requisites for the achievement of the goals to be met by the Federative Republic of Brazil. “Preparation for work” opportunities are among the various bridges that connect education and work.

Presently, apart from São Paulo state which is the economic powerhouse of the country, no other state (and the great majority of the municipalities) can provide quality “preparation for work” opportunities. In this context, the federal government is the major provider of secondary level vocational-technical education nationwide.

In order to ensure the necessary provision of quality “preparation for work [PFW]” in Brazil, the federal government [FG], in addition to what is indicated in the “conclusions” section of this chapter, should act as indicated below.

On Policy and Leadership:

- The FG should establish and monitor national public policies for “PFW” (for developing a world-class delivery system).
- Define national strategic directions for the organization of “PFW.”
- The FG policies and strategic directions for “PFW” should
 - originate from the Ministries of Education/Culture and Labor co-operation;
 - have the input of the states and municipalities, employers, workers and other segments of society;
 - take in consideration national and regional priorities;
 - be integrated with the public system of work and income generation; and,
 - differentiate providers’ roles and responsibilities.
- The FG should coordinate *but not micro-manage* “PFW.”
- The FG should not only develop national plans for “PFW” but also to support and monitor its implementation.
- The FG should provide leadership to move “PFW” to the top of the national agenda.

- The FG should implement and coordinate a “National System of Preparation for Work.”

On Funding:

- The FG should earmark governmental funds for “PFW” activities.
- The FG should plan, suggest, and evaluate different options of funding for “PFW.”
- The FG should fund activities in “PFW,” primarily in public providers.
- The FG should fund
 - the federal technological education system;
 - teacher, administrator, and staff training;
 - programs development and dissemination;
 - purchase of equipment; and,
 - research on “PFW.”

On Other Issues:

- The FG should not be setting standards in “PFW” themselves; however, they should help manage a process which established high standards, set with the concurrence of all interested and affected parties (those standards must be frequently updated).
- The FG should have a normative and evaluative role in “PFW.”
- The FG should plan, suggest, and create optional educational pathways to advance in “PFW.”

- The FG should provide technical assistance and information on best practices and leading innovations to providers and practitioners of “PFW.”
- The FG should serve a national “clearing house” function in “PFW.”
- The FG should support research in “PFW” issues including
 - models of “PFW;”
 - providers of “PFW”: operation, funding, effectiveness, coverage;
 - stakeholders of “PFW;”
 - “PFW” programs and courses offer, development, evaluation;
 - the development of curricula, materials, and new approaches to teaching/learning in “PFW;”
 - funding for “PFW;”
 - human resources development for “PFW” providers;
 - new modes of worker utilization;
 - ways to respond more quickly to employer demands for new worker skills;
 - self esteem among “PFW” students and practitioners; and,
 - the future of “PFW.”
- The FG should have ensured access to high quality programs for all individuals (those programs must provide supplementary services in some cases where needed).
- The FG should promote all forms of “PFW” through a mix of institutional approaches and should use a mix of incentives to insure that workforce

entrants and participants - as well as employers at all levels - are induced to fully participate.

- The FG should set up
 - an infrastructure for curriculum development for “PFW;” and,
 - a system for training “PFW” personnel (teachers, administrators, and staff).
- The FG should provide incentives for
 - the creation and maintenance of “PFW” schools that operate as reference centers; and,
 - development/demonstration of exemplary programs in “PFW.”
- The FG should serve as a catalyst for bringing about increasing participation of the states and municipalities in “PFW” initiatives (the offer of high quality programs by state and/or municipal schools and centers).
- The FG should provide guidelines for state and local development/adaptation of curricula and materials for “PFW.”
- The FG should provide leadership (and demonstration of exemplary initiatives through its reference schools and centers) to the states for establishing rapid response adult education/”PFW” programs.
- The FG should provide leadership (and demonstration of exemplary initiatives through its reference schools and centers) to the states for assisting state and municipal “PFW” schools and centers in assuring up-to-date, more efficient, “PFW” programs relevant to more rapidly changing employer/worker needs, e.g., actions for

- maintaining more effective program operations and management;
 - establishing stronger partnerships between “PFW” programs and the private sector;
 - assessing more frequently, and in different ways, regional manpower needs and job skill requirements;
 - forming, and using more effectively, local program advisory committees;
 - refining and expanding business/industry cooperative and other joint training ventures; and,
 - developing broader-based program curricula, materials, and instructional methodology.
- The FG should provide leadership (and demonstration of exemplary initiatives through its reference schools and centers) to the states for assisting state and municipal “PFW” schools and centers for establishing
 - computer-based job information programs for career counseling of secondary students; and,
 - effective student / graduate placement programs.
 - The FG should
 - require that the use of federal funds by non federal “PFW” providers have a triparty management (government, entrepreneurs, and workers); and,
 - push for the enactment of legislation that favors the participation of youngsters and workers in “PFW.”

“Preparation for Work [PFW]” in General

On Policy and Leadership:

- The State Governments [SGs] should establish and monitor policies for “PFW” within their territories in consonance with the national policies for “PFW.”
- The SGs should define strategic directions for the organization of “PFW” within their territories.
- The SGs policies and strategic directions for “PFW” within their territories should
 - originate from their Secretariats of Education/Culture and Labor co-operation;
 - have the input of the municipalities, employers, workers and other segments of society;
 - take in consideration national, state and local priorities; and,
 - be integrated with the public system of work and income generation.
- The SGs should coordinate *but not micro-manage* “PFW” within their territories.
- The SGs should not only develop state plans for “PFW” but also to support and monitor its implementation within their territories.
- The SGs should provide leadership to move “PFW” to the top of the states agenda.

- The SGs should implement and coordinate “State Systems of Preparation for Work” integrated to the “National System of Preparation for Work.”

On the Provision of Programs/Courses:

- There should exist a “PFW system” that relies on many different providers (public, semi public, private, and partnerships among them).
- There should be a “PFW system” funded by the Public Government, open to all Brazilians, and tuition-free for unskilled or unemployed individuals.
- The “PFW” of unskilled and unemployed individuals should be the responsibility of the Public Government.
- The states and municipalities should also provide quality “PFW” as soon as they could afford to.
- “PFW” schools and centers should provide in-service training for workers through joint ventures with local employers.
- Quality “PFW” schools and centers should become Reference Centers for the regions where they are located and for the program areas in which they have excellence.
- Credentialed schools and centers should not only offer programs and courses but also function as occupational certification posts.

On Funding:

- The funding for “PFW” activities should come from public and private sources or partnerships.

- All different existing funds for “PFW” should be articulated, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favor of the generation of work and income, as well as in the modernization of the productive sector.
- “PFW” public institutions should be funded by public funds being admissible complementary and additional forms of fund raising.
- The State Governments [SGs] should have earmarked funds for “PFW” activities.
- The SGs should fund activities in “PFW,” primarily in public providers.
- The SGs should fund
 - provision of “PFW” programs and courses;
 - teacher, administrator, and staff training;
 - programs development and dissemination; and
 - purchase of equipment.
- Municipal governments should fund “PFW” activities when they can afford to.
- Semi public organizations should be providers of funds to activities in “PFW.”
- Private organizations should be providers of funds to activities in “PFW.”
- Funding for “PFW” should come from private interests when it meets their specific needs.

On Formats:

- “PFW” should be provided through a number of different formats.
- “PFW” courses and programs should be offered based on the marketplace and workers demand.
- Most technical specific training should happen at the post secondary level.
- Among the formats for delivering “PFW” should be the school-based model (including internships in companies), the work-based model, a mix of both, and qualification-based examination for adults and experienced persons to recognize their competencies.
- “PFW” programs and courses (curriculum), delivery methods, and administration should take in consideration not only the changes in the marketplace but also the advancements in the teaching/learning knowledge base.
- “PFW” programs and courses curriculum, delivery methods, and administration should take in consideration the differences in students’ ages, learning styles, types of personalities, previous experiences, and types of intelligence.
- Students assessment and remediation centers should be in place at “PFW” schools and centers.
- “PFW” programs, for adults already in the workforce, should be shorter and directly related their needs.

- There should be formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire “PFW” programs.
- “PFW” should eliminate the distance between intellectual and manual work.
- “PFW” should go beyond the learning of simple technical applications for immediate entrance in the labor market.
- Classroom teaching in “PFW” should be linked to real work applications and experiences.
- “PFW” should develop individuals that, at the same time, are technically competent and that also have a scientific spirit and ability, and critic sense to integrate themselves effectively as citizens and influence on the decision about who and how many people, science, technic, and production should serve.
- The content to be taught in “PFW” programs/courses should not be, dominantly, under the control of the private sector.
- “PFW” should be offered through a number of delivery methods.
- There should be allowed flexibility in “PFW” instruction at the regional and local levels.
- Some amount of “PFW” should be provided through distance learning.
- Flexibility, creativity and openness to changes should be emphasized in “PFW.”

- Curriculum links should have been forged between “PFW” providers and entrepreneurs to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises.
- The “PFW” programs should allow students continue their studies at a higher level.
- “PFW” options for those who have discontinued “basic education” should be available.

On Other Issues:

- The State Governments should require that the use of state funds by non state “PFW” providers should have a triparty management (government, employers, and workers).
- The Municipal Governments should require that the use of municipal funds by non municipal “PFW” providers should have a triparty management (government, employers, and workers).
- Public “PFW” educational facilities should have the input of entrepreneurs and workers regarding its management, program offer, and curriculum development/update.

Recommendations for Further Studies

The different experiences on “preparation for work,” inside and outside Brazil, indicate that there seems not to be a universal solution on how to organize and deliver it.

In order to make fewer mistakes, it is advisable to know and study the various experiences on “preparation for work” in Brazil and abroad, always taking in consideration the contexts in which they happened or have been happening. Based on such a premise, the investigator proposes that additional research should be done on:

- the various formats for “preparation for work” proposed or implemented in Brazil and abroad;
- the other public, semi public, and private providers of “preparation for work” in Brazil;
- the effectiveness of the Brazilian federal technological system as a whole;
- the various stakeholders involved with “preparation for work” and their interests;
- the funding for “preparation for work;”
- human resources development for “preparation for work” providers;
- methods for determining the “preparation for work” programs/courses to be provided;
- methods of “preparation for work” programs graduates follow-up;
- curriculum development/update for “preparation for work;”
- delivery methods for “preparation for work;”
- self esteem among “preparation for work” students and practitioners; and
- the future of “preparation for work.”

While maybe most of these themes may have been substantially researched in developed countries, that is not the case for Brazil. Besides, as we live in fast times, “preparation for work” is on reform almost everywhere which requires research to

understand what has been happening and what are the possible pathways that may be taken.

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APPENDIXES

APPENDIX A

PANELISTS BIOGRAPHICAL INFORMATION

THE PANELISTS:
BIOGRAPHICAL INFORMATION

An initial group of 104 people was asked to participate in this study. Thirty of those agreed to participate in the Delphi survey. Twenty-three answered Round I Instrument. Twenty-one answered Round II Instrument. Twenty answered Round III Instrument, the final round. Summarized vitas of the participants of the last round of the survey are listed below.

João Augusto de Souza Leão A. Bastos is faculty and co-ordinator of graduate programs in Technological Education at Federal Technological Education Center of Paraná [CEFET-PR] located in Curitiba, Brazil. He is a former professor and administrator (Federal University of Sergipe [UFSE], Aracaju), national co-ordinator of associate of applied sciences programs at the Department of Higher Education Affairs (Ministry of Education and Sports [MEC], Brasília), general director (Technological Education Center of Bahia [CENTEC-BA], Salvador), and researcher (National Council for Scientific and Technological Development [CNPq], Brasília) in Brazil. He has published extensively on issues in the following areas: education, science, technology, and work. Dr. Bastos was born in Brazil.

Betsy Brand is president of Workforce Futures, Inc. located in McLean, Virginia, and board member of the National Child Labor Committee and of the Training and Development Corporation. She is a former legislative assistant and office manager to U.S. Representative E. Thomas Coleman, minority legislative associate (U.S. House of Representatives Committee on Education and Labor), professional staff member (U.S. Senate Labor and Human Resources Committee), member (National Advisory Board on

Child Abuse and Neglect, National Advisory Board for Kids and the Power for Work, and USDA Graduate School Board), and assistant secretary of Vocational and Adult Education (U.S. Department of Education [USDE]) in Washington, D.C. Ms. Brand was born in the United States of America.

Lloyd D. Briggs is the principal partner of International Education Consultants and member of the board of directors of Vanossa School's Foundation for Excellence in Education, both located in Ada, Oklahoma. He is a former electronics engineering technician (Sandia Corporation), science teacher (electronics) in secondary level pre-technical education program (Oklahoma City Public Schools), assistant professor and head (Electronics Technical Institute, Oklahoma City), assistant state supervisor of technical education (Oklahoma Department of Vo-Tech Education [ODVTE], Stillwater), associate professor of technical teacher education (Oklahoma State University [OSU], Stillwater), chief of Vocational Education Branch (U.S. Department of Education, Washington, D.C.), professor and director of the School of Occupational and Adult Education (Oklahoma State University, Stillwater), and principal education specialist and projects officer [Europe, Middle East, and North Africa Region, Latin America and Caribbean Region, Europe and Central Asia Region] (The World Bank, Washington, D.C.). Dr. Briggs has published extensively on issues in the following areas: VTET, higher education, and teacher education. He was born in the United States of America.

Claudio de Moura Castro is chief education advisor at the Inter-American Development Bank [IDB] located in Washington, D.C. He is a former professor of economics and education (Graduate Schools of Economics and Education at the Getulio Vargas Foundation, Rio de Janeiro, Brazil), senior economist at IPEA/INPES (the

research and planning branch of the Brazilian Planning Secretariat, Brasília, Brazil), associate professor (Graduate School of Education at the Pontifical Catholic University, Rio de Janeiro, Brazil), visiting professor (University of Chicago; University of Brasília, Brazil; Université de Genève, Switzerland; and Université de la Bourgogne, Dijon, France), co-ordinator of the ECIEL (Research Project on Educational and Economic Development, Rio de Janeiro), general director of CAPES (the Brazilian agency for graduate education, Brasília), executive secretary of National Center for Human Resources (Planning Secretariat, Brasília), chief of Training Policies Branch (International Labour Organisation [ILO], Geneva), and senior human resources economist [Europe, Middle East, and North Africa Region] (The World Bank, Washington, D.C.). Dr. Castro has published extensively on issues in the following areas: education (including VTET), science, and economic development. He was born in Brazil.

Francisco Aparecido Cordão is chief education adviser at the São Paulo Branch of National Service for Commercial Apprenticeship [SENAC] in São Paulo city, and member of the São Paulo state Council of Education [CEE-SP] in São Paulo city, and the National Council of Education [NCE], in Brasília, Brazil. He is a former secondary teacher of philosophy (EESGC Prof. Gualter da Silva, São Paulo), instructor (faculty in higher education institutions) of philosophy of education, and structure and organization of basic education, sociologist and social counselor (Social Service of Commerce [SESC], São Paulo city), member of the São Paulo city Council of Education, board member (Brazilian Association of Educational Technology [ABTE] and National Association of the School Administrators [ANPAE]), president of the Brazilian Association of Training and Human Resources Development [ABTD], and Brazilian representative (International Federation

of Training and Development Organizations [IFTDO]) in Brazil. Mr. Cordão has published substantially on issues in basic education and VTET. He was born in Brazil.

Francisco Luiz Danna is co-ordinator of the Department of Space Programs of the Brazilian Space Agency [AEB] in Brasília, Brazil. He is a former mechanical engineer (Brasilit Corporation, Utinga), instructor of mechanical engineering and administrator of the Technology College (University of Brasília [UnB]), technical adviser and program manager at the Secretariat of Industrial Technology (Ministry of Science and Technology [MIC], Brasília), co-ordinator of engineering sciences, executive secretary of the engineering instruction specialists committee, and general co-ordinator of programs and special projects at the Secretariat of Higher Education (Ministry of Education and Sports, Brasília), technological exchange manager (DIGIBRÁS), vice president (Brazilian Association of Engineering Instruction [ABENGE]), director of the engineering instruction committee (Panamerican Union of Engineers' Associations), special adviser (Ministry of Science and Technology, Brasília), head of staff and director of the Educational Policies Department at the Secretariat of Secondary and Technological Education (Ministry of Education and Sports, Brasília), and superintendent of the Federal District Science and Technology Institute, Brasília, in Brazil. Mr. Danna has published substantially on issues in engineering, technological education, basic industrial technology, and technological development. He was born in Brazil.

Curtis R. Finch is professor of Vocational and Technical Education [VTE], Department of Teaching and Learning, College of Human Resources and Education at Virginia Polytechnic Institute and State University [VSU] located in Blacksburg, Virginia, and director of the Virginia Tech Site, National Center for Research in Vocational

Education [NCRVE], headquartered at the University of California, Berkeley. He is member of the board of directors of the latter and is responsible for R&D management, proposal development, and coordination with other Center sites. Dr. Finch is a former U.S. Army Reserve officer (retired at the rank of Lieutenant Colonel), automotive instructor (Pittsburg State Vocational Technical Institute), senior instructor and administrator of Aircraft Electrical Training (U.S. Army Transportation School), vocational teacher educator, researcher, and assistant professor of vocational education (Pennsylvania State University), associate professor and director of performance based curricula program at the NCRVE (Ohio State University), and General VTE program chair and director of International Studies for the College of Education (VSU). He served as Editor of the Journal of Vocational Education Research and Occupational Education Forum and has held editorial board memberships on these journals as well as in five others including the International Journal of Vocational Education and Training. Dr. Finch's international assignments include serving as senior Fulbright scholar and VTET consultant in various countries. He has published extensively on issues in VTET. Dr. Finch was born in the United States of America.

Gaudêncio Frigotto is professor of Political Economy of Education and co-ordinator of the Center of Studies, Documentation and Data about Work and Education, Graduate Program in Education at the College of Education, Fluminense Federal University [UFF], Niterói, Brazil. He is a former member of the scientific committees of the CAPES Foundation (the Brazilian agency for graduate education), National Council for Scientific and Technological Development, Brazilian Association for Studies about Work [ABT], and the National Association for Research and Graduate Studies in Education [ANPEd]. Dr. Frigotto

was vice president of the latter. He has served as member of the editorial boards of five journals and has published extensively on issues in education (including VTET) and work. Dr. Frigotto was born in Brazil.

Sérgio Gertel is assistant professor at São Paulo State University [UNESP] at Araraquara, São Paulo state, Brazil. He is co-author of the book “End of century and globalization: the new map of the world.” Dr. Gertel was born in Brazil.

Murílio de Avellar Hingel is Minas Gerais state secretary of Secretariat of Education and professor emeritus of the Federal University of Juiz de Fora [UFJF]. He is a former school teacher, Juiz de Fora city secretary of Education, general director of the Institute for Research and Planning of Juiz de Fora, minister of Education and Sports, and president of National Institute for Communitary Development [INDEC]. Mr. Hingel was granted “honoris causa” doctoral degrees by five Brazilian universities. He was born in Brazil.

Jack J. Jennings is director of the Center on Education Policy located in Washington, D.C. He is a former chief expert on education for the U.S. House of Representatives. In Congress, Dr. Jennings worked in every reauthorization of the Elementary and Secondary Education Act, the Vocation Education Act, the School Lunch Act, the Individuals with Disabilities Act, and the Higher Education Act. His work in the area of federal aid to education for the U.S. Congress involved him for the past quarter century in nearly every major education debate held at national level. He represented the United States of America in various trips to countries such as China, the former U.S.S.R, Italy, besides others. His activities have included writing a book on national tests for schoolchildren, editing several books, writing a national legislative newsletter, and publishing numerous articles. Dr. Jennings was born in the United States.

Lahja Johanna Lasonen is project manager of the Institute for Educational Research at the University of Jyväskylä, Jyväskylä, Finland, and president of the International Vocational Education and Training Association [IVETA]. As project manager she co-ordinates and manages the European Commission's research project belonging under the Leonardo da Vinci Programme, Strand III.2.a Surveys and Analyses, titled "Finding New Strategies for Post-16 Education by Networking Vocational and Academic/General Education and Working Life to Improve the Parity of Esteem for Initial Vocational Training" (the partners come from seven different countries). She is a former senior lecturer in Pedagogy and Psychology and director of the Comprehensive Occupational Teachers' Training Department (Vocational Teachers' Training College, Jyväskylä), consultant (Finnish International Development Agency), senior researcher of the Institute for Educational Research (University of Jyväskylä), and vice president for Europe (IVETA) in Finland. Dr. Lasonen has published extensively on issues in the following areas: secondary education, VTET, and VTET teacher education. She is also member of the editorial board for the International Journal of Vocational Education and Training. Dr. Lasonen was born in Finland.

Átila de Freitas Lira is a federal congresspeople for Piauí state (his third legislature). He is a former Piauí state secretary of the Secretariats of Labor and Social Affairs, and of Education, in Teresina, and national secretary of the Secretariat of Secondary and Technological Education at the Ministry of Education and Sports, in Brasília, both cities in Brazil. Mr. Lira was born in Brazil.

Nassim Gabriel Mehedff is national secretary of the Secretariat of Preparation and Development for Professions, Ministry of Labor [MTb] located in Brasília, Brazil. He

is also associate professor at Fluminense Federal University (Niterói, Brazil), member (representative of South America) of the International Committee for Vocational-Technical Education of UNESCO, and consultant of the International Labour Organisation and UNESCO for various international projects. Dr. Mehedff is a former faculty at the California State University and senior specialist for basic education and VTET at the Inter-American Development Bank (Washington, D.C.). He has published extensively about issues on VTET. Dr. Mehedff was born in Brazil.

Oswaldo Vieira do Nascimento is visiting professor at the Federal Technological Education Centers of Minas Gerais (Belo Horizonte) and Paraná (Curitiba), both located in Brazil. He is a former secondary teacher (Colégios Tiradentes, Zacarias, Moacyr Bastos, and ETF Celso Suckow da Fonseca, Rio de Janeiro), electrotechnics technician, electrical engineer, and manager (in 8 different companies), assistant professor (Institute of Advanced Studies, Getulio Vargas Foundation, Rio de Janeiro), professor (Mato Grosso Federal University, Cuiabá), consultant for vocational-technical education [Brazil/Paraguay] (The World Bank), national co-ordinator of associate of applied sciences programs at the Department of Higher Education Affairs and MEC/The World Bank I project manager (Ministry of Education and Sports), associate professor (Federal Technological Education Center Celso Suckow da Fonseca, Rio de Janeiro), visiting professor (Oklahoma State University), general coordinator for technological education of the Secretariat of Secondary and Technological Education (Ministry of Education and Sports), and researcher (National Council for Scientific and Technological Development), in Brazil. Dr. Nascimento has written substantially on issues in VTET/technological education. He was born in Brazil.

Dale Parnell is professor emeritus of the Oregon State University and visiting professor of the Department of Educational Leadership, College of Education, at the University of South Florida, located in Tampa, Florida. He is a former teacher and coach at secondary level schools in Oregon, principal and vice principal (Springfield High School), superintendent (Lane County Schools, Oregon), founding president of Lane Community College and one of the founders of the Oregon Community College System, Oregon superintendent of Public Instruction (elected position), president (San Joaquin Delta College), chancellor (San Diego Community Colleges), president and chief executive officer (American Association of Community Colleges), professor of education (Oregon State University), visiting professor (8 different universities), consultant on education in several countries including the European Union, Germany, Greece, Great Britain, Israel, New Zealand, Australia, Taiwan, and Lebanon, Senior Fulbright Scholar (Australian College of Education Association), and lecturer at over 200 Community Colleges. In the past and present, he has been board member of several organizations and has served in various national committees and councils (he was appointed by the President of the United States as Chair of the National Council on Equal Education Opportunity). Dr. Parnell has published extensively on secondary education, Community Colleges, technical education, and employment development and training. His book “The Neglected Majority” is cited as the publication that defined and established the Tech Prep Associate Degree Program. Dr. Parnell was born in the United States of America.

João Manoel de Sousa Peil is a former secretary of the National Secretariat of Technological Education at the Ministry of Education and Sports, located in Brasília; general director of Federal Vocational-technical School of Pelotas [ETF-Pel, now

CEFET-Pel] located in Pelotas; and counselor of the Rio Grande do Sul Department of the National Service for Industrial Apprenticeship [SENAI-RS] in Porto Alegre, Brazil. He has written about issues on technological education. Mr. Peil was born in Brazil.

Cláudio Leopoldo Salm is faculty at the Institute of Economics, Federal University of Rio de Janeiro [UFRJ] located in Rio de Janeiro, Brazil. He is a former administrator and researcher of the Institute for Applied Economic Research [IPEA] at the Ministry of Planning and Budget [MPO], in Brasília, faculty at Campinas State University [UNICAMP], in Campinas, and director for Population and Social Studies at the Brazilian Census Bureau [IBGE], in Rio de Janeiro, Brazil. Dr. Salm is an specialist in Political Economics and Labor Economics. He was born in Brazil.

Fernando Spagnolo is co-ordinator of the Division for Studies and Scientific Communication at CAPES Foundation (the Brazilian agency for graduate education), Ministry of Education and Sports, in Brasília; faculty of the Masters' program in Education at the Catholic University of Brasília, in Brasília, consultant *ad hoc* of the National Council for Scientific and Technological Development, in Brasília; adviser *ad hoc* of FAPESP; and member of the PRONEX Evaluation Committee, representative of CAPES in the GPA/SBIO (PADCT III) and of other committees belonging to the Ministry of Education and Sports and the Ministry of Science and Technology, in Brasília, Brazil. He has published many articles in journals and book chapters on higher education, graduate studies, post-secondary instruction, human resources development, and programs evaluation. Dr. Spagnolo is the editor of INFOCAPES (CAPES Informative Bulletin). He was born in Brazil.

David A. Waugh is secretary general of the International Federation of Training and Development Organizations, Ltd. [IFTDO], located in Alexandria, Virginia. He served with the US Department of Labor in Personnel Management and Labor Law Administration, and the Chrysler Corporation as assistant personnel director at the Marine Division. Before taking his present position, Dr. Waugh worked for the USA branch of the International Labour Organisation for 19 years. His last position at ILO USA branch, was deputy director. He was board member (United States Association), secretary (Society for International Development), president (Industrial Relations Research Association, DC Chapter), besides being member of these and other associations and societies. Dr. Waugh has developed international work in several European, Asian, and Caribbean countries. He is a frequent speaker and contributor to literature on human resource management, human capacities development, industrial relations, international development, strategic planning, privatization, workforce development, institutional development of civil society. Dr. Waugh was born in the United States of America.

APPENDIX B

PILOT STUDY

PILOT STUDY

Memorandum

DATE: Friday, September 26, 1997.

TO: Dr. Garry R. Bice, Chair and Dissertation Advisor
Dr. James A. Gregson
Dr. Juanita W. Bice
Dr. Kenneth H. McKinley

FROM: Paulo T. C. Henriques

RE: IRB form and Delphi Round I Pilot Study

CC:

It is about time for me to start gathering appropriate information for my research "Changing of paradigm: developing a contemporary strategy for technological education in Brazil".

I would like your help not only in examining the form I will be submitting to IRB soon but also in participating in the Delphi Round I Pilot Study. I plan to submit that form plus its attachments to IRB by Wednesday, October 1.

If you agree to participate in the Pilot Study, I would like to get your answers to the questions asked in the questionnaire at most by Tuesday, September 30 - please, hand them to Dr. Garry Bice or call me on 744-2841 (home phone number).

Attached is a copy of the IRB form for my study including among other things the proposed Delphi Round I questionnaire and cover letter.

If you have any suggestions or help, please contact me on 744-2841 (home phone) or with Dr. Garry Bice.

Thank you in advance for your help.

Sincerely,

Paulo de Tarso Costa Henriques

PILOT STUDY

WRITTEN SOLICITATION

Month day, 1997.

&title& &fname& &lname&
 &department/o&
 &organization/o&
 &address/o&
 &city& &state& &zip code&

Dear &title& &lname&:

I am an Instructor at Escola Técnica Federal de Paraíba (ETFPB) in João Pessoa city, Paraíba state, Brazil, and a doctoral candidate in Occupational and Adult Education at Oklahoma State University. Besides my primary link to ETFPB, I have been working for the last 10 years in national and international projects for the Secretariat of Secondary and Technological Education which is part of the Brazilian Ministry of Education and Sports. I am currently conducting research to develop an informed strategy for the Brazilian federal technological education system to meet the country's needs in technological education by the year 2025 for which I am using a case study design in connection with the Delphi technique which will result in a futures-oriented study.

I would like to invite you to participate in a Delphi study of the future of the Brazilian federal technological education system. The Delphi method involves a selective panel (no more than 30) of professionals and educators who have knowledge and experience in future studies, in Brazilian government policy as a whole, in Brazilian government policies for education, in Brazilian government policy for vocational-technical education, in Brazilian government policy for training, in international vocational education and training, and in vocational-technical education and training from the private sector perspective. I have chosen prospective panelists based on my background reading of those who have significant experience in the alluded fields and/or specific knowledge about those. I chose you because of your position as an educator and author.

Your participation would involve filling out three short questionnaires, mailed to you over the next four months - I expect all probes to be completed by Month day, 1998. The questionnaires are designed to take a minimal amount of your time. However, you will be allowed a great amount of freedom in your responses. Your responses will be distributed anonymously to other panel members, and you will receive their responses. In the reporting of the data, I will not associate your name directly with any of your answers on the

questionnaires. The final report will include a biographical sketch of your professional experience. As a participant, you could also request a summary of the results of the study.

I would appreciate a response as to your willingness to participate by **week day, month day**. A reply form and a pre-addressed, stamped envelope are enclosed for your response. If you have any questions or prefer to respond by phone, please call me at one the numbers listed below. Thank you.

Sincerely,

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169

PILOT STUDY

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169

STUDY TITLE

Changing of Paradigm: Developing a Contemporary Strategy for Technological Education
in Brazil

DELPHI SURVEY

The Predicted Future of the Federal Technological Education System by the Year 2025

_____ Yes, I will be able to participate in your study.

_____ No, I will not be able to participate in your study.

Signed: _____
Name of the Expert

ROUND I COVER LETTER

Month day, 1997.

&title& &fname& &lname&
&department/o&
&organization/o&
&address/o&
&city& &state& &zip code&

Dear &title& &lname&:

Thank you again for agreeing to participate in my study of the future of the Brazilian federal technological education system. You are among &number& experts who will be providing valuable information for my research. I value your opinion and appreciate your contribution.

I have enclosed the first of three rounds of questionnaires that you will be asked to complete over the next few months. The purpose of this first round is to garner your predictions about the desirable role and structure for the federal technological education system in Brazil by the year 2025. I am also interested in the problems to be faced by the federal technological education system by the year 2025 in fulfilling its future role, and the solutions for such problems.

This round involves two open-ended questions. Please type or print legibly. For each question, use the back of the pages and extra paper if needed. **The deadline is week day, month day.**

As soon as the results of this first round have been analyzed and tabulated, you will receive the analysis and have an opportunity to express your opinion once again for further clarification. As mentioned in the first letter, the Delphi process preserves confidentiality; therefore names will not be used in tabulations.

Besides deriving a consensus of the future role and structure of the federal technological education system, Rounds II e III will also involve discussing possible problems to be faced by the federal technological education system by the year 2025 in fulfilling its role then, and the solutions for such problems.

I have assigned you a number on the answer sheets so I can keep an organized record of the returned questionnaires. However, as I told you before., during the course of this study, your name will not be revealed to the other participants in this study, and your name will not be associated directly with your responses. In my final report, I will include a list of the participants and my reasons for selecting them for this study.

Thank you again for you valuable time. If you have any questions, please do not hesitate to contact me.

Sincerely,

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169

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PILOT STUDY

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169
Expert Number: _____

ROUND I SURVEY INSTRUMENT

The Predicted Future of the Federal Technological Education System by the Year 2025

Directions: Please answer the following questions with, if possible, brief and concise statements. Feel free to use additional pages and include as many responses as you feel necessary.

QUESTION 1:

Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in technological education by the year 2025? If you envision different roles for different futures be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with future rounds.

QUESTION 2:

Based on your perception of how the future may be by the year 2025, how should technological education in Brazil be structured by the year 2025? If you envision different structures for different futures be free to express your opinions. Do not attempt to rank your predicted structures; this issue will be dealt with in future rounds.

NOTE: Each question will be listed on a separate page.

APPENDIX C

WRITTEN SOLICITATION FOR
PARTICIPATION

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

November 11, 1997.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Curriculum Studies/
 Supervision
 Educational
 Leadership
 Elementary,
 Secondary and K-12
 Education
 Occupational
 Education Studies
 Reading Education
 Special Education

I am an instructor at Escola Técnica Federal de Paraíba (ETFPB) in João Pessoa city, Paraíba state, Brazil, and a doctoral candidate in Occupational and Adult Education at Oklahoma State University. Besides my primary link to ETFPB, I have been working for the last 10 years in national and international projects for the Secretariat of Secondary and Technological Education which is part of the Brazilian Ministry of Education and Sports. I am currently conducting research to develop an informed strategy for the Brazilian federal technological education system to meet the country's needs in vocational-technical education by the year 2025 for which I am using a case study design in connection with the Delphi technique which will result in a futures-oriented study.

I would like to invite you to participate in a Delphi study of the future of the Brazilian federal technological education system. The Delphi method involves a selective panel of no more than thirty experts. For the purpose of this research, the latter will be professionals and educators who have knowledge and experience in future studies, in Brazilian government policy as a whole, in Brazilian government policies for education, in Brazilian government policy for vocational-technical education and training, in international vocational education and training, and in vocational-technical education and training from the private sector perspective. I have chosen prospective panelists based on my background reading of those who have significant experience in the alluded fields and/or specific knowledge about those. I chose you because of your position as an educator and author.

Your participation would involve filling out three short questionnaires, mailed to you over the next four months - I expect all probes to be completed by March 30, 1998. The questionnaires are designed to take a minimal amount of your time. However, you will

The Campaign for OSU



be allowed a great amount of freedom in your responses. Your responses will be distributed anonymously to other panel members, and you will receive their responses. In the reporting of the data, I will not associate your name directly with any of your answers on the questionnaires. The final report will include a biographical sketch of your professional experience. As a participant, you could also request a summary of the results of the study.

I would appreciate a response as to your willingness to participate by **December 2**. A reply form and a pre-addressed envelope are enclosed for your response. As I will only be in my home address in the USA by November 21, I could not stamp the return envelope - I will be glad to pay for any postage expenses, just let me know how much the amount was. If you have any questions or prefer to respond by phone, please call me at one the numbers listed below. You can also contact me through my email address. Thank you.

Sincerely,

Paulo de Tarso Costa Henriques

Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169
Email: ptchenriqu@aol.com

APPENDIX D

INFORMED CONSENT FORM

INFORMED CONSENT FORM

I, _____, hereby authorize or direct Paulo de Tarso Costa Henriques, or associates or assistants of his or her choosing, to include my name among those who will participate in the Delphi survey to be conducted as part of the following graduate studies research procedure.

The futures-oriented study to be performed - "Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in Brazil" - will make use of the case study method and Delphi technique in conjunction.

At first, the case study methodology will be used to develop a clear picture of the context in which the Brazilian federal technological system is inserted now as well its role, characteristics, and strengths and weaknesses. In order to achieve that, the education system, the vocational-technical education and training systems, and the federal technological education systems in Brazil will be studied through Brazilian and foreign agencies publications (reports, documents, memos, etc.), books, electronic information sources (CD-ROMs, INTERNET, etc.), journals, papers, dissertations, reports, newspapers, magazines, newsletters and other sources that may be identified later.

Second, still using the case study methodology, an analysis containing the main characteristics, and strengths and weaknesses of the vocational-technical education and training systems of the United States of America, France, Germany and England (and if necessary, other countries) will be developed. If there are change trends for the vocational-technical education and training systems in those selected countries, they will also be addressed. The resources to be used to prepare this phase of the research will be of the same type of the ones described in the third paragraph above.

Third, still using the case study methodology, it will be set up a description of the present views and the trends for the future indicated by international organizations that research and/or fund vocational-technical education and training systems around the world such as the International Labour Office, the World Bank, and the InterAmerican Development Bank. The resources to be used to prepare this phase of the research will be of the same type of the ones described in the third paragraph above.

Fourth, by taking advantage of the future studies research

available, it will be developed optimistic, pessimistic and conservative pictures of how Brazil will be by 2025 from the demographic, social, economical, political and government, and science and technological perspectives. The situation in the World, United States, and Latin America by 2025 will be considered carefully while developing such scenarios. Besides the broad pictures to be developed, specific emphasis will be placed on the aspects related to the Brazilian vocational-technical education and training needs by then.

Fifth, the last phase before starting the analysis of the results will be to use the Delphi technique to identify not only a desirable future role and structure for the federal technological education system in Brazil by the year 2025 but also the problems to be faced by the same in fulfilling its future role by that time, and the solutions for such problems.

The experts to be invited to take part in the Delphi survey will be selected taking into consideration their knowledge and experience in future studies, in Brazilian government policy as a whole, in Brazilian government policies for education, in Brazilian government policy for vocational-technical education and training, in international vocational-technical education and training, in vocational-technical education and training from private sector perspective and others to be identified later. Such knowledge and experience will be evaluated based on their publications and works in their areas of expertise, as well as in the positions they have occupied throughout their lives. A maximum of thirty individuals will participate in the panel of experts. The optimal number of forecasting rounds being aimed is three. The Kendall Coefficient of Concordance (W) will be used to determine the degree of association among experts on Delphi III.

Those who agree to participate in the Delphi survey will receive a questionnaire with two questions dated December 3, 1997. In the two last rounds, the experts will be asked to refine the responses given to the previously asked questions and to answer new ones if necessary. In every round, the questionnaires will be mailed to the experts which also receive a pre-addressed and stamped return envelope. The whole Delphi procedure is expected to be completed by March 30, 1998.

Participation in the project will not result in any discomfort or risk to the participant. Additionally, extreme efforts will be made to uphold individual participant

confidentiality. Each participant will be assigned a number picked randomly which will be placed in all instruments sent to him/her. This is only necessary to control if the experts who agreed to participate in the study will have returned the questionnaires sent to them in each round. Reports will neither include the participant identification number in any manner nor will identify which responses are linked to which participants. After every round, the participants' responses will be analyzed qualitatively and quantitatively - as the Delphi technique mandates. Due to such processing, a participant will not be able to identify which answers were provided by every expert. This totally removes the possibility for identification of results with individual subjects. The survey results will be kept in a secure place in possession of the researcher. At the conclusion of the study, all working papers, questionnaires, etc. will be shredded and disposed of accordingly.

The study will serve a benefit to educational practitioners involved in local and national educational policy development in Brazil. As there is not a body of structured knowledge or pool of information available to public policy makers in Brazil to permit them to plan the federal technological education system beyond 5 years let alone 30 years, as policy makers develop a manpower training delivery system, this study will help them to make operational and policy decisions with an adequate knowledge base appropriate to the Brazilian culture.

I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty after notifying the project director.

I may contact Paulo de Tarso Costa Henriques at (405) 744-2841. I may also contact University Research Services, 001 Life Sciences East, Oklahoma State University, Stillwater, OK 74078; Telephone: (405) 744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: _____ Time: _____
(a.m./p.m.)

Signed: _____
Signature of Subject

Person authorized to sign for subject, if required

APPENDIX E

ROUND I COVER LETTER

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

December 2, 1997.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Thank you for agreeing to participate in my study of the future of the Brazilian federal technological education system. I value your opinion and appreciate your contribution.

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

I have enclosed the first of three rounds of questionnaires that you will be asked to complete over the next few months. The purpose of this first round is to garner your predictions about the desirable role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025 and how vocational-technical education and training in Brazil should be structured by then.

This round involves two open-ended questions. Please type or print legibly. For each question, use the back of the pages and extra paper if needed. If you prefer, email me your answers. **I would like your response by Wednesday, January 7, 1998.**

As soon as the results of this first round have been analyzed and tabulated, you will receive the analysis and have an opportunity to express your opinion once again for further clarification. As mentioned in the first letter, the Delphi process preserves confidentiality; therefore names will not be used in tabulations.

Besides deriving a consensus of the future role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025 and how vocational-technical education and training in Brazil should be structured by then. Rounds II and III will also involve discussing possible problems to be faced by the federal government by the year 2025 in fulfilling its role then, and the solutions for such problems.



The Campaign for OSU

I have assigned you a number on the answer sheets so I can keep an organized record of the returned questionnaires. However, as I told you before, during the course of this study, your name will not be revealed to the other participants in this study, and your name will not be associated directly with your responses. In my final report, I will include a list of the participants and my reasons for selecting them for this study.

Thank you for your valuable time. If you have any questions, please do not hesitate to contact me.

Sincerely,

Paulo de Tarso Costa Henriques

Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075
Phone: (405) 744-2841
Fax: (405) 377-7169
Email: ptchenriqu@aol.com

APPENDIX F

ROUND I SURVEY INSTRUMENT

Paulo de Tarso Costa Henriques
Oklahoma State University
38 South University Place Apt. 7
Stillwater, Oklahoma 74075 - USA
Phone: (405) 744-2841
Fax: (405) 377-7169
Email: ptchenriqu@aol.com

ROUND I SURVEY INSTRUMENT

Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in
Brazil

Directions: Please answer the following questions with, if possible, precise and brief sentences. Feel free to use additional pages and include as many responses as you feel necessary.

Expert Number: 315

QUESTION 1:

Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025 ? If you envision different roles for different futures be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with in future rounds, if necessary.

QUESTION 2:

Based on your perception of how the future may be by the year 2025, how should vocational-technical education and training in Brazil be organized by the year 2025 - who should provide it, who should fund it, in which format, etc. ? If you envision different forms of organization for different futures be free to express your opinions. Do not attempt to rank your predicted forms of organization; this issue will be dealt with in future rounds, if necessary.

NOTE: Each question was listed on a separate page.

APPENDIX G

ROUND I FOLLOW-UP LETTER

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

January 11, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

As of today, I have not yet received your responses to the Round I questions of my study of the future of Brazilian federal technological education system. If you have already mailed your questionnaire back, please disregard this letter. I need your reply to continue with Round II.

Curriculum Studies/
 Supervision
 Educational
 Leadership
 Elementary,
 Secondary and K-12
 Education
 Occupational
 Education Studies
 Reading Education
 Special Education

In case you have misplaced the questionnaire, I am sending another copy of the Round I Survey Instrument and a pre-addressed and pre-stamped envelope. I would appreciate your responses as soon as possible.

You can **mail** your responses to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** your responses to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** your responses to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please feel free to contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841

The Campaign for OSU



APPENDIX H

ROUND I VERBATIM RESPONSES

QUESTION 1:

Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025? If you envision different roles for different futures be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with in future rounds, if necessary. [NOTE: Responses are listed in no particular order; the numbers do not represent particular respondents.]

Panelist 1:

By 2025, the reform of State in Brazil must have consolidated. Such reform imputes to the Federal Government a role that is essentially that of articulator, that is, of a conceiver and monitor of public policies. By then, the Federal Government will have ceased to operate as a goods producer and/or a direct provider of services, that is, as executor of actions. This profile also is valid for the area of vocational-technical education and training (educação profissional), tendency that we are already beginning to shape through the National Plan for Vocational-Technical Education and Training [Plano Nacional de Educação Profissional - Planfor] (see attached folder [*]).

[*] A translation of the folder is not provided, however, whenever necessary, the information it contains was used in the study.

Answer provided in Portuguese:

Por volta de 2025, deve ter se consolidado a reforma do Estado no Brasil, que atribui ao Governo Federal papel essencialmente articulador, de formulação e acompanhamento de políticas públicas, saindo de vez do campo da produção de bens e/ou da prestação direta de serviços, ou seja, da execução de ações. Esse perfil vale também para a área de educação profissional, tendência que já estamos começando a desenhar, por meio do Plano Nacional de Educação Profissional - Planfor (v. folder anexo).

PLANO NACIONAL DE EDUCAÇÃO PROFISSIONAL:

trabalho e empregabilidade

Brasília, junho de 1996
edição revista

1. O que é o Plano Nacional de Educação Profissional?

É um dos projetos prioritários do Governo Fernando Henrique, destacado no Plano Plurianual de seu Governo. O Plano Nacional de Educação Profissional tem a meta global de atingir, até 1999, oferta de educação profissional suficiente para **qualificar ou requalificar, anualmente, pelo menos 20% da PEA (população economicamente ativa), ou seja, 15 milhões de trabalhadores.**

O Brasil tem uma PEA de 70 milhões de trabalhadores, com menos de 4 anos de estudo (não de escolaridade) e cerca de 20% de analfabetos. Destes, aproximadamente 80% se encontram na faixa etária de 15 a 30 anos de idade, ou seja, em plena idade produtiva e com elevado potencial de empregabilidade. **Educação profissional, embora por si não crie empregos, é um componente essencial da empregabilidade de jovens e adultos.**

2. Como é implementado o Plano Nacional de Educação Profissional?

O Plano Nacional de Educação Profissional é implementado de forma descentralizada, por meio de **Planos Estaduais de Qualificação**, elaborados e coordenados pelas Secretarias Trabalho dos Estados.

Todos os Planos Estaduais de Qualificação passam pela aprovação das **Comissões Estaduais de Emprego, organismos tripartites e paritários**, com representação do governo, empresariado e trabalhadores de cada Estado.

Uma vez aprovados nos Estados, os Planos são apresentados à SEFOR (Secretaria de Formação e Desenvolvimento Profissional), do Mtb (Ministério do Trabalho), para análise técnica e elaboração de convênio, que garante o repasse de recursos para sua execução.

3. De onde vêm os recursos para os Planos Estaduais de Qualificação?

Os recursos vêm do **FAT (Fundo de Amparo ao Trabalhador)**, que é administrado pelo **CODEFAT (Conselho Deliberativo do FAT)** - também tripartite e paritário.

4. Em que programas são aplicados esses recursos?

Em **programas de qualificação e requalificação profissional** incluídos nos Planos Estaduais de Qualificação. Esses programas podem se colocar em três categorias:

- **programas nacionais**, voltados para clientela em desvantagem social e/ou setores ou regiões estratégicos para o desenvolvimento do país, tais como: turismo, pesca, construção civil, serviços pessoais, assentamentos e comunidades rurais, artesanato, jovens em situação de risco social, detentos e egressos do sistema penitenciário, servidores da administração pública, bancários, portadores de deficiência;
- **estaduais**, definidos pelas Secretarias de Trabalho e Comissões Estaduais de Emprego, em parceria com organismos do governo estadual ou municipal e outros atores locais, para atender demandas específicas de municípios ou regiões;
- **emergenciais**, voltados ao atendimento de situações de crise e/ou a processos de reestruturação produtiva, tais como: agricultura canaveira e cacaueteira, transportes ferroviários, setor portuário, indústria calçadista, têxtil e metalmeccânica, setor bancário.

Os recursos do FAT podem financiar também **projetos especiais**, de apoio conceitual e metodológico aos programas de qualificação e requalificação profissional - sempre incluídos nos Planos Estaduais de Qualificação.

5. Como estão os Planos Estaduais de Qualificação em 1996?

Em 29/4/96 foram assinados convênios com os 26 Estados e o Distrito Federal, no Palácio do Planalto, com a presença do Presidente da República, Ministros, Governadores e Secretários de Trabalho, para a implementação de Planos Estaduais de Qualificação para 1996-98, com as seguintes características:

- ações consolidadas em **programas nacionais, estaduais e emergenciais**;
- conteúdos modulados em **habilidades básicas, específicas e de gestão**, sempre com foco na **empregabilidade** dos treinandos, em face de potencialidades dos mercados de trabalho regionais ou locais;
- clientela diversificada, com **prioridade para desempregados** atendidos pela Intermediação do SINE, **trabalhadores sob risco de perda do emprego e outras populações em risco ou desvantagem social**;
- **meta mínima de 750 mil treinandos** (com perspectiva de chegar a 1 milhão) e **investimento total em torno de R\$300 milhões em 1996**;
- incluídos no total acima, de 1996, recursos da ordem de **R\$20 milhões para projetos especiais, de suporte técnico-metodológico**, a saber: pesquisas, produção de material didático e, principalmente, **avaliação e acompanhamento dos Planos nos Estados**;
- **previsão plurianual** com perspectiva de atingir, em 1997, **1,8 milhão de treinandos**, em 1998, **2,5 milhões e, em 1999, 3 milhões**.

6. Qual a importância dos Planos Estaduais de Qualificação?

- Constituem passo inicial, porém decisivo, para que o País consolide, até 1999, a capacidade de garantir a meta global do Plano Nacional, de qualificação e requalificação de pelo menos 20% da PEA, anualmente.
- A meta mínima dos Planos Estaduais, totalizando 750 mil treinandos em 1996, representa 1% da PEA. Outras agências - em especial SENAI, SENAC, SENAR, SENAT, ONGs, escolas livres, sindicatos,

universidades, fundações de empresas - progressivamente articuladas à política de trabalho e qualificação do país, deverão garantir 3,5 milhões de treinandos, atingindo-se portanto uma oferta superior a 4 milhões de treinandos, ou seja, perto de 6% da PEA, já em 1996.

- Os Planos começam a reverter o costume de se ofertarem cursos disponíveis na praça, repetidos a cada ano, sem levar em conta necessidades da clientela, potencialidades do mercado e, portanto, com baixo ou nulo índice de empregabilidade dos treinandos. Hoje, os programas estão focados no mercado e na clientela, sendo essa uma exigência básica para sua aprovação técnica.
- O processo de elaboração e implementação dos Planos aponta para a progressiva consolidação do papel estratégico das Secretarias de Trabalho, na articulação e implementação da política de trabalho e qualificação nos Estados, congregando não só recursos do FAT, como de todas as agências locais de educação profissional, em especial as que são financiadas com recursos públicos.

7. Como vão ser executados os Planos Estaduais de Qualificação?

Programas de qualificação e requalificação profissional, assim como projetos especiais, serão executados por meio da ampla rede de institutos, escolas e agências de educação profissional existente no Brasil. Essa rede pode ser estimada, por baixo, em quase 30 mil unidades (escolas, centros de treinamento, unidades móveis etc.), em condições de ministrar cursos de qualificação e requalificação, a saber:

- escolas técnicas/médias federais, estaduais, municipais e privadas - 12.500 unidades escolares;
- ensino livre - 10.000 escolas e centros de treinamento;
- SENAI, SENAC, SENAR, SENAT - 2.500 unidades de formação profissional, fixas ou móveis;
- ONGs - 2.000 centros ou núcleos de educação profissional (não contando um sem número de ONGs que atuam em projetos de cunho social, cultural ou de lazer)
- universidades federais, estaduais, municipais e privadas - 890 entidades, cada uma com um complexo de edificações bastante diversificado;
- sindicatos, empresas - 500 escolas e centros de treinamento.

8. Quem contrata essas entidades executoras?

As Secretarias de Trabalho, por meio de processos de licitação ou outros mecanismos previstos na Lei 8666/93.

A contratação é um processo aberto. Pode se candidatar a oferecer programas de educação profissional toda e qualquer entidade que reúna idoneidade, competência, experiência e infra-estrutura (instalações, equipamentos e recursos humanos) para o programa a ser ministrado.

9. Quem pode se beneficiar dos programas de qualificação e requalificação profissional?

Desempregados, trabalhadores do mercado formal e informal, micro e pequenos empresários e produtores, do mercado urbano e rural, jovens a procura de emprego, jovens em risco social, mulheres chefes de família, portadores de deficiência - em suma, toda e qualquer população que necessite competência para se estabelecer e trabalhar.

Para ter acesso aos programas, basta procurar, no Estado, a Secretaria de Trabalho.

10. Como obter mais informações sobre os Planos Estaduais de Qualificação e sobre o Plano Nacional de Educação Profissional?

- Nos Estados, procurando as Secretarias de Trabalho.
- No MTb, contatando a Gerência de Programas da SEFOR:
 - ⇒ telefone: (061) 223-6324/6078
 - ⇒ fax: (061) 224-7593

Planos Estaduais de Qualificação - 1996/99: número de treinandos por região				
(mil treinandos)				
Região	1996*	1997*	1998*	1999*
NORTE	75	200	250	300
NORDESTE	200	400	700	850
SUDESTE	235	600	800	950
SUL	157	340	400	500
CENTRO-OESTE	83	260	350	400
BRASIL	750	1.800	2.500	3.000

FONTE: MTb/SEFOR (Planos Estaduais de Qualificação - Secretarias Estaduais de Trabalho)

* Metas ajustadas para 1996 e projeções para anos seguintes.

Panelist 2:

In responding to this question, I must answer in a general fashion, as I have very limited knowledge about the Brazilian government and its current involvement in vocational-technical education and training. Secondly, my comments refer to vocational-technical education at the high school level as well as at the postsecondary school level (mostly technical colleges). Finally, these comments relate to education in general, as by 2025, all of education should be

focused on providing students with the skills needed to succeed in a career. By 2025, I hope there is no longer a division between education for those who are headed for a baccalaureate degree and those headed for a vocational-technical career. Certainly the government, not just vocational educators, should work towards bridging this gap.

I believe the major role of any government in the year 2025 should be: (1) to ensure a high quality system of vocational-technical education; (2) to provide technical assistance and information on best practices and leading innovation to providers and practitioners; (3) to ensure a connection between education and business in terms of creating an efficient labor market; and (4) to ensure that disadvantaged and disabled individuals have access to services. I believe the role of any government should be to lead through positive encouragement or incentive, not through overmanagement, overly prescribed regulation or negative consequences for certain behaviors. Government agencies and officials need to model the kinds of behavior they expect from regional or local institutions and individuals.

With regard to activity #1: Government should not be setting standards themselves; however, they should help to manage a process by which high standards are set with the concurrence of all interested and affected parties. Governments can “raise the bar” for performance targets on a continuous basis, but must provide assistance in order for schools and colleges to meet high performance, linking very tightly to activity #2.

Activity #2 should occupy the greatest amount of time, in my opinion, of government employees in the field of vocational-technical education. The government should be able to provide the best and most up-to-date information on innovative and effective programs and find cost effective ways of sharing that information to others. This service should include a strong focus on technology, distance learning, and partnerships with business. By providing information on best practice and high performance, they will be encouraging others to change and adopt such practices. Activities #1 and #2 go hand in hand.

Activity #3 relates to ensuring that students are prepared and trained in occupational fields in which good jobs exist. This could mean that the government needs to close down outdated training programs in some areas, but it means mostly that government in vocational-technical education must be very aware of the needs of the private sector to ensure that students are receiving the appropriate skills. As the workplace is changing so rapidly, by the year 2025, the most needed skill may that of how to learn on a continuous basis. In this case, schools and colleges need to teach their students these kinds of skills. This also would require the government to provide information on jobs and careers to individuals so they could access and understand it easily.

Activity #4 is fairly straightforward in concept but not always in practice. The government must ensure access to high quality programs for all individuals, which means they must provide supplemental services in some cases where needed. This implies that vocational-technical educators work closely with providers of other services for needs students and

adults. By the year 2025, all individuals in a society must be productive in some way or another, or the financial burden will overwhelm even strong economies.

Panelist 3:

The role of the Brazilian federal government in vocational-technical education and training by the year 2025 should be manifold:

- financing the system, including teachers salaries, buildings, equipment and study materials;
- setting up an infrastructure for curriculum development;
- setting up a system for technical-vocational teacher training;
- formulating quality standards for technical-vocational training;
- using a balanced system of school-based and national testing;
- having a system for school-into-work transition.

Panelist 4:

- Define directives and strategic directions for the organization of vocational-technical education and training in the various Units of the Federation.
- Articulate the activities of the various federative units (states and municipalities), having as a goal to guarantee a solid Basic Education (Educação Básica) for the biggest possible number of Brazilians (the objective is to guarantee a good quality Basic Education, lasting eleven years, for all citizens).
- Incentive for the creation and maintenance of Vocational-Technical Schools (Escolas Técnicas) that operate as Vocational-Technical Reference Centers for the regions where they are located and for the occupational areas in which they have programs.

Answer provided in Portuguese:

- Definir diretrizes e orientações estratégicas para a organização da Educação Profissional nas várias Unidades da Federação.

- Articular a atuação dos demais entes federativos (estados e municípios), objetivando garantir uma sólida Educação Básica ao maior número possível de brasileiros (a meta é a garantia de uma Educação Básica de boa qualidade, de onze anos, a todos os cidadãos).
- Incentivar a criação e a manutenção de Escolas Técnicas que se constituam em Centros de Referência Técnica e Tecnológica para as regiões onde estão implantadas e para os setores ocupacionais nas quais atuam.

Panelist 5:

Item #1: Role of Brazilian Federal Government in vo-tech education in the year 2025:

My view is that the Federal Government will need to play more of a leadership/guidance (vs operational) role in vo-tech education/training, serving as a catalyst for bringing about high quality program design and implementation at the state and local levels, in what is likely to be a more economically constrained environment for the education sector. In this context, the Federal Government will need to:

- Provide leadership to states for assisting local school districts in assuring up-to-date, more efficient, vo-tech education programs relevant to more rapidly changing employer needs, e.g., local actions for:
 - maintaining more effective program operations and management;
 - establishing stronger partnerships between vo-tech programs and the private sector;
 - assessing more frequently, and in different ways, regional manpower needs and job skill requirements;
 - developing broader-based program curricula, materials, and instructional methodology;
 - forming, and using more effectively, local program advisory committees;
 - refining and expanding business/industry cooperative programs and other joint training ventures;
- Support research in the development of curricula, materials, and new approaches to teaching/learning, as well as new modes of worker utilization, e.g., worker teaming, etc., and ways to respond more quickly to employer demands for new worker skills;
- Provide guidelines for state and local development/adaptation of curricula and materials;
- Provide incentives for state and local development/demonstration of exemplary programs;
- Provide leadership and financial support to universities (selected competitively), possibly through states, for developing high quality and relevant teacher education/training, as well

as special programs for developing vo-tech leadership and administrative personnel to serve at the federal, state, and local levels;

- Provide leadership to the states for assisting local school districts in implementing effective student services programs, i. e.,
 - establishing computer-based job information programs for vocational/career counseling of secondary students;
 - establishing effective student/graduate placement programs.
- Provide leadership to states for establishing rapid response adult education/training programs to assist workers in job advancement, keeping abreast of new technology, career changes, etc.
- Establish a national advisory council to keep in touch with the nation's workforce needs and recommend federal policy on development, funding, and evaluation of the country's vo-tech education system.

Panelist 6:

The tendency is that, around 2025, the role of the federal government as to vocational-technical education and training be only of "developing general political directives". Unfortunately, it will not have a decisive participation in this educational field. Business and industry will be the ones directly responsible for vocational-technical education and training. To the federal government may fit the role of financing part of this education, through incentives to business and industry and not through the educative way.

For sure it will be determined a total separation between vocational-technical education and training and education in its broader sense. In reality we will have: in one hand, permanent training for work provided by business and industry, through their own initiative and also stimulated by the federal government through generic public policies and on the other hand, a general education system, without providing any vocational-technical preparation. The government will be the big absentee in vocational technical education and training. What will be regrettable.

Answer provided in Portuguese:

A tendência é que, por volta do ano 2025, o papel governo federal quanto a educação profissional seja unicamente a de "formulação de diretrizes políticas gerais". Lamentavelmente, não haverá uma participação decisiva neste campo educacional. A empresa será a responsável direta pela formação profissional. Ao governo federal, poderá também

caber o papel de financiar parte desta educação, por meio de incentivos às empresas e não pela via educativa.

Por certo será determinada uma total desvinculação entre a educação profissional e a educação propriamente dita. Na realidade teremos: de um lado o treinamento profissional permanente via empresa, por iniciativa própria e até estimulado pelo governo federal por meio de políticas públicas genéricas e de um outro sistema educacional geral, sem caráter de formação profissional. O governo federal será o grande ausente da educação profissional. O que será lamentável.

Panelist 7:

I think that in an age of so rapid changes as the one we go through presently, reasoning for an horizon of 2025 is impossible, unless one wish to express inconsequent opinions or opinions that are disconnected from reality.

Even in an emerging country as Brazil, where changes happen in slower rhythm, in one year we would already have a very different picture, mainly in the technological field.

In this case, I choose to suggest a strategy of action for the government, that may be applied in any time, because it would be a methodology independent of time frames, and effective face the tendencies of evolution of the society.

Estimating that a capitalist order similar to the one present nowadays remains, the needs for an active presence regarding technology and employment will be always vital to the country and to the well-being of the society.

This way, we can infer that the irradiating center of all and any advancement of humankind is man. Man generates knowledge, but this contribution must also serve to satisfy one's basic needs.

In this sense, the fundamental role of education will be of enabling that this happens in the proper rhythm. There is no doubt that providing education to the people is a foremost function of the government, as presently it is even stated in the Constitution. So, it will always fall to the government a prominent role in stimulating the private sector and in acting directly in this field.

In this way, the proposed methodology for a governmental strategy for the promotion of education must be so established:

- research for establishing the economical and technological tendencies in the world presently.
- research for establishing a national strategy of the country leadership according to its comparative advantages, face the world.
- establishing policies for the development of the country strategic areas at national and local levels.
- establishing sectorial action plans of physical and social infrastructure.

In this item, it will be developed the education action plan, taking into consideration the national priorities, as well as the local needs of manpower development proper for the contribution to the economic development proposed for that region.

I think that all the plan must be pointed to the insertion of the man in the productive sector of the country, not rejecting the education pointed to research and to development of knowledge. The educational strategy must have a selective characteristic, attached to the national priorities, in all its levels: from pre-school to the university, not letting, however of encouraging the development of the individual potentialities.

In this sense, it must be included in this action plan, a constant update of the teaching staff so that there is possible a transformation not only of the curriculum part, but also of the instruction methodologies so that the educational system reaches its goals of construction of a new community.

It is not only the transference of knowledge and techniques that transform society, but mainly the creation of a new mindset and capabilities of thinking, criticizing, analyzing, arguing and solving problems. The stimulus to creativity is indispensable for new paths and solutions to appear. The country needs to develop innovative professionals and not simple task doers, skilled executors.

The establishment of objectives and priorities must be reviewed constantly so that one does not face the risk of obsolescence of goals and actions. However, the success will depend of the managerial ability of the government, as the main animator and orchestrator of the proposed actions.

Answer provided in Portuguese:

Penso que numa era de mudanças tão rápidas como a que atravessamos, raciocinar para um horizonte de 2025 é impossível, a não ser que se queira emitir opiniões inconseqüentes ou descompromissadas com a realidade.

Mesmo num país emergente como é o Brasil, onde as mudanças processam-se em ritmo mais lento, em um ano já teríamos um quadro bastante diferenciado, principalmente no campo tecnológico.

Neste caso, opto por sugerir uma estratégia de atuação para o governo, que pode ser aplicada em qualquer época, pois seria uma metodologia atemporal, e eficaz diante das tendências de evolução da sociedade.

Estimando-se que permaneça uma ordem capitalista similar à atual, as necessidades de atuação tecnológica e de emprego serão sempre vitais para o país e para o bem estar da sociedade.

Desta forma, pode-se inferir que o centro irradiador de todo e qualquer avanço da humanidade é o homem. O homem gera os conhecimentos, mas esta sua contribuição deve servir também para satisfazer suas necessidades básicas.

Neste sentido, o papel fundamental da educação será o de propiciar que isto aconteça no ritmo devido. Não há dúvida que prover educação ao povo é uma função precípua do governo, como até mesmo está, atualmente, disposto na Constituição. Assim sempre caberá ao governo um papel de destaque no estímulo do setor privado e na atuação direta neste campo.

Desta forma, a metodologia proposta para uma estratégia governamental de promoção da educação deve estar assim estabelecida:

- pesquisa para estabelecimento de tendências econômicas e tecnológicas no momento no mundo.
- pesquisa para estabelecimento da estratégia nacional de liderança do país segundo as suas vantagens comparativas, diante do mundo.
- estabelecimento de políticas para desenvolvimento das áreas estratégicas do país em nível nacional e local.
- estabelecimentos de planos de ação setoriais de infraestrutura física e social.

Neste item será desenvolvido o plano de ação da educação, levando em conta as prioridades nacionais, bem como as necessidades locais de preparação de mão de obra adequada à contribuição ao desenvolvimento econômico projetado para aquela região.

Penso que todo o plano deve estar voltado para a inserção do homem no setor produtivo do país, não se desprezando a educação voltada para a pesquisa e desenvolvimento do conhecimento. A estratégia educacional deve ter um cunho seletivo, atrelada às prioridades nacionais, em todos os seus graus: da pré-escola a universidade, sem deixar, no entanto de incentivar o desenvolvimento das potencialidades individuais.

Neste sentido, deve estar incluída neste plano de ação, uma constante reciclagem do corpo docente para que seja possível uma transformação não só da parte curricular, mas também das metodologias de ensino para que o sistema educacional alcance seus objetivos de construção de uma nova comunidade.

Não é só a transferência de conhecimentos e técnicas que transformam a sociedade, mas principalmente a criação de uma nova mentalidade e capacidades de pensar, criticar, analisar, argumentar e resolver problemas. O estímulo à criatividade é indispensável para que novos caminhos e soluções surjam. São profissionais inovadores que o país deve formar e não simples tarefeiros, executores adestrados.

O estabelecimento de metas e prioridades deve ser revisto constantemente para não correr-se o risco da obsolescência de objetivos e ações. Entretanto, o sucesso dependerá da capacidade gerencial do governo, como principal animador e orquestrador das ações propostas.

Panelist 8:

As to the role of the federal government around 2025, it is necessary to distinguish between secondary and post-secondary Technological Education (Educação Tecnológica, de nível médio e superior), and Basic Vocational-Technical Education and Training [VTET] (Educação Profissional Básica). On the contrary to the movement we are watching right now, I think that as to the former, the presence of the federal government will have to be strong, be directly, through the Federal Vocational-technical Schools and through Federal Universities, be indirectly, through providing funds to the non federal public schools and even to private schools.

As to Basic Vocational Education, I believe that the Federal Government must recede, leaving to be provided by the States, Municipalities and private, patronal, union, beneficent and profitable entities.

Answer provided in Portuguese:

Quanto ao papel do governo federal por volta de 2025, cabe fazer a distinção entre Educação Tecnológica, de nível médio e superior, e Educação Profissional Básica. Ao contrário do movimento que estamos assistindo agora, penso que para a primeira, a presença do governo federal deverá ser forte, seja diretamente, através de Escolas Técnicas Federais e de Universidades Federais, seja indiretamente através de repasses de verbas para as escolas públicas não-federais e até mesmo para as escolas privadas.

Já no que se refere à Educação Profissional Básica, creio que o Governo Federal deve se retrair, deixando-a a cargo dos Estados, Municípios e entidades privadas, patronais, sindicais, beneficentes e lucrativas.

Panelist 9:

1. I think that the first role is the implementation of the Technological Education National System, as it is said in the Act approved by the National Congress, but that has not been implemented by the current administration of the Federal Government. The system foresees the articulation among the various levels of the Public Power, the private initiatives and the semi-official institutions that operate in the area, such as SENAI and SENAC, as well as the Ministry of Labor. The articulation, as well as the definition of policies and directives about Technological Education would have as support a Committee which included governmental and non governmental representatives.

2. The Federal Government which operates an expressive network of technological education institutions which includes the CEFETs, ETFs, EAFs and decentralized units, must assure the good operation and expansion of such network, which offers technical and technological education of excellent level.

Answer provided in Portuguese:

1. Penso que o primeiro papel é a implantação do Sistema Nacional de Educação Tecnológica, nos termos de Lei aprovada pelo Congresso Nacional, mas que foi implementada pelo atual Governo Federal. O Sistema prevê a articulação entre os diferentes níveis do Poder Público, a iniciativa particular e as instituições semi-oficiais que atuam na área, tais como SENAI e SENAC, além do Ministério do Trabalho. A articulação, assim como a definição das políticas e diretrizes sobre a Educação Tecnológica teriam como suporte uma Comissão constituída por representantes governamentais e não-governamentais.

2. O Governo Federal que possui uma expressiva rede de educação tecnológica, constituída pelos CEFETs, ETFs, EAFs e unidades descentralizadas, deve assegurar o bom funcionamento e a expansão dessa rede, que oferece educação técnica e tecnológica de excelente nível.

Panelist 10:

In this first quarter of century, the professional [occupational] qualifications will have to go through constant revisions and updates in short intervals of time (2 years). The specific occupations and its updating will be the chief concern of business and industry or of

agencies/schools specialized in retraining individuals among areas alike or within the same area.

The role of the federal government will be of promoting and making accessible basic development at the secondary level [formação básica (em nível de 2º. Grau)] in 5-6 big occupational clusters, such as: Computer Science and Telecommunications; Mechanics and Electronics; Communications, Language and Arts; Business Administration and Accounting; Urban and Regional Planning and Environment; Health Occupations and Biotechnology.

The Federal Government may operate a few schools, in the various clusters, as Model Schools.

At the post-secondary level, the Federal Government will have to support primarily, in partnership with the States and Municipalities, programs professions-related lasting 2-3 years targeting specific professions.

Answer provided in Portuguese:

No primeiro quarto do próximo século, as qualificações profissionais deverão sofrer revisões e atualizações constantes em curtos intervalos de tempo (2 anos). As formações específicas e atualizações serão preocupação precípua das empresas ou de agências/escolas especializadas em reciclar profissionais entre áreas afins ou dentro da mesma área.

O papel do governo federal será de promover e tornar acessível a formação básica (em nível de 2º. Grau) em 5-6 grandes troncos de formação, tais como: Informática e Telecomunicações; Mecânica e Eletrônica; Comunicação, Língua e Artes; Administração e Contabilidade; Planejamento Urbano e Regional e Meio Ambiente; Profissões da Saúde e Biotecnologia.

O Governo Federal poderá manter algumas escolas, nas várias orientações, como Escolas-Modelo.

Em nível pós-secundário, o Governo Federal deverá apoiar prioritariamente, em parceria com os Estados e Municípios, cursos profissionais de 2-3 anos objetivando formações específicas.

Panelist 11:

In the future, nations' economies will be more interconnected than they are now, and there will be more economic competition among industries than there is now. Therefore, any nation has to think of how its citizens can be well-trained to produce goods and services that

are competitive with those being produced in other countries. Constant upgrading of skills and changing of skills would seem to be important, as well as flexibility in providing this training which will be responsive to these competitive pressures.

Panelist 12:

The Federal Government will play and have an important role in vocational-technical education and training. It is responsible for establishing policies, directives, implementation strategies and concrete actions. The policies and strategies at the federal level must count on partnerships with the States and Municipalities, in consortium with the various segments of society. The federal policies must stimulate and respect the regional peculiarities.

It is not easy to define concretely the future around 2025. Some tendencies may, however, be foreseen based on the techniques more and more important of technological anticipation.

Summarizing, in general terms, some points are mentioned here:

1. Intensification of economic competition in global scale not only among countries but also among companies which fight for a share of the international market of goods and services;
2. access to more and more sophisticated networks for the acquisition and circulation of information;
3. changes will occur at all levels and spheres, with speed and intensity, requiring a definition of strategic themes of investigation, as well as adequate preparation of human resources for the processes and techniques of technological innovation;
4. the competition among countries and companies will be attached not only to the capacity of anticipating technological tendencies, but also to the ruptures and discontinuities of the process of development;
5. the difficulties must be anticipated such as: an environment of quick and profound changes in the organization of the work and production processes, in the content of the modern technologies, in the growing climate of political and social consciousness of the citizens, of economical crisis, of scarcity and mutation in the jobs profile, of work and also of the continuous modifications in the world order;
6. decisions will have to be made by governments and the productive sectors, based in indicators the most exact the possible of future scenarios;

7. arises, then, the need to establish connections and communication channels between the “power” and the “knowledge”;

8. economic competitiveness will be more and more attached to the shortening of the time intervals between the scientific advances and the introduction of the technological innovations;

9. the very quick speed of the technical-scientific progress tends to reduce the temporal horizons, bringing near the scales considered to be of middle and long terms;

10. the small and middle companies will have a preponderant role in these scenarios as levers of the process of innovation and as absorbers of human resources.

Answer provided in Portuguese:

O Governo Federal do Brasil desempenhará e terá papel importante no que diz respeito à educação profissional. É responsável pelo estabelecimento de políticas, diretrizes, estratégias de implementação e ações concretas. As políticas e estratégias na esfera federal devem contar com as parcerias dos Estados e Municípios, em consórcio com os vários segmentos da sociedade. As políticas federais devem estimular e respeitar as peculiaridades regionais.

Não é fácil definir concretamente o futuro na esfera de 2025. Algumas tendências podem, no entanto, ser antevistas com base nas técnicas cada vez mais importantes de prospecção tecnológica.

Resumidamente, em termos gerais, alguns pontos são aqui enunciados:

1. Intensificação da competição econômica em escala global tanto entre países quanto entre empresas que disputam o mercado internacional de bens e serviços;

2. acesso a redes cada vez mais sofisticadas para aquisição e circulação de informações;

3. mudanças ocorrerão em todos os níveis e esferas, com rapidez e intensidade, exigindo a definição de temas estratégicos de investigação, bem como a preparação adequada de recursos humanos para os processos e técnicas de inovação tecnológica;

4. a competição entre países e empresas estará vinculada à capacidade de antecipar tendências tecnológicas, bem como as rupturas e descontinuidades do processo de desenvolvimento;

5. dificuldades devem ser previstas, como: ambiente de mudanças rápidas e profundas na organização dos processos de trabalho e de produção, no conteúdo das tecnologias

modernas, em clima de crescente conscientização política e social dos cidadãos, de crises econômicas, escassez e mutação no perfil dos empregos, do trabalho e também de contínuas modificações na ordem mundial;

6. decisões deverão ser tomadas por parte dos governos e dos segmentos produtivos, com base em indicadores os mais exatos possíveis de cenários futuros;

7. surge, então, a necessidade de estabelecer conexões e canais de comunicação; entre o “poder” e o “saber”;

8. a competitividade econômica estará mais e mais vinculada ao encurtamento dos intervalos de tempo entre os avanços científicos e a introdução de inovações tecnológicas;

9. a vertiginosa velocidade do progresso técnico-científico tende a reduzir os horizontes temporais, aproximando as escalas consideradas de médio e longo prazos;

10. as pequenas e médias empresas terão um papel preponderante nesses cenários como alavancas do processo de inovação e absorvedoras de recursos humanos.

Panelist 13:

Role # 1:

Develop a national vocational-technical education policy that differentiates the roles of the various providers and employers.

Role #2:

Provide the political leadership needed to move vocational-technical education to the top of the national agenda.

Role #3:

Provide funds for staff development, purchase equipment, and develop programs.

Role #4:

Serve a national “clearing house” function.

Panelist 14:

The role of the federal government as to technological education (*), (and not vocational-technical education and training [e não educação profissional]), regarding the

horizon of the year 2025, must be the one of being responsible for establishing the national policies and directives, having input from the productive sector.

It must exercise the function of coordinator of the technological education national system, integrated by all national technological education institutions, having responsibility for the authorization and accreditation of programs and, in articulation and with the co-participation of the representatives of the productive sectors, exercise, the role of evaluation of the quality of the programs and, in consequence, for the approval of the continuation of the operation of the technological education institutions.

(*) Technological education must be understood as the education variant that has the purpose of preparing and capacitating professionals able to immediately join the work market, in all areas of knowledge. It differentiates from academic education because of the instructional methodology it uses. That is, besides making use of optimized curricular structures, for instance: without repetition of the same topic/subject in various courses, it must favor the practical activities of the profession, inclusive of interactive form with the productive sectors for the attainment of professional practices during, at least, one school semester, exclusively in the correspondent professional sector. Besides that, the student must produce a graduation final work, regarding to a real situation in his/her area of actuation/development.

Complementing, the instructors of the technological education institutions, mainly of the technical courses, must have not only solid workplace practice in their professional area, but also capacitation (masters and doctoral degrees) in qualified institutions of graduate studies in technological education.

So, technological education seeks to meet quickly the demand for the work market, which must be each time more diversified and specialized.

Answer provided in Portuguese:

O papel do governo federal no que diz respeito à educação tecnológica (*), (e não educação profissional), tendo em vista o horizonte do ano 2025, deve ser o de responsável pelo estabelecimento da política e diretrizes nacionais, ouvido o setor produtivo.

Deve exercer a função de coordenador do sistema nacional de educação tecnológica, integrado por todas as instituições de educação tecnológica nacionais, cabendo-lhe a responsabilidade pela autorização e reconhecimento dos cursos e, em articulação e com a co-participação de representantes dos setores produtivos, exercer, também o papel de avaliação da qualidade dos cursos e, em consequência, pela aprovação ou não da continuidade do funcionamento das instituições de educação tecnológica.

(*) A educação tecnológica deve ser entendida como a vertente educacional que objetiva formar e capacitar profissionais aptos ao ingresso imediato ao mercado de trabalho, em todas as áreas do conhecimento. Se diferencia da educação acadêmica pela metodologia de ensino adotada. Ou seja, além de dispor de estruturas curriculares otimizadas, por exemplo: sem repetição de um mesmo tópico/assunto em várias disciplinas, deve privilegiar as atividades práticas da profissão, inclusive de forma interativa com os setores produtivos para a realização de práticas profissionais durante, pelo menos, um semestre letivo, exclusivamente no correspondente ao setor profissional. Além disso, o estudante deve realizar um trabalho final de formatura, concernente à uma situação real de sua área de atuação/formação.

Complementando, os professores das instituições de educação tecnológica, principalmente das disciplinas profissionalizantes, devem ter sólida vivência prática de sua área de atuação, bem como capacitação (mestrado e doutorado) em instituições qualificadas de pós-graduação em educação tecnológica.

Assim, a educação tecnológica busca atender rapidamente a demanda do mercado de trabalho, que deve ser cada vez mais diversificada e especializada.

Panelist 15:

Assumptions. That Federal roles should be largely framework-setting with greater control at provincial levels. Federalized systems probably will not be responsive to area needs. So a framework proposition, adult vocational education for those who have discontinued academic studies is a vital objective, whether for the 14, 24, 34, or 44-year old person. Prosperity for all will not occur without societal intent to achieve full employment in a dynamic, technologically-advanced economy. A constantly churning vocational education system is a necessity. The government should promote all forms of vocational preparation and re-training through a mix of institutional approaches and should use a mix of incentives to insure that workforce entrants and participants - as well as employers at all levels - are induced to fully participate. There is a positive, forceful role for government - but not as provider!

Panelist 16:

As Althusser remind us in his memoirs, the “future lasts very long”, but the scenarios may change with a certain speed. From the societary point of view, with the “end” of the Cold War, collapse of the Real Socialism, apparently it was created a one way future - the eternization of the mercantile or capitalist society, this is, in last analysis, the deepest meaning of the work “The end of history” by F. Fukuyama. This conjuncture of end of century, apparently calm for the capital format, conversely highlights its deepest crisis - structural crisis

of unemployment (no return), limits to the logic of the industrial development by the destruction of the environment and asymmetric power among the economic blocks etc. All that has as consequence a profound social exclusion - a society, in the words of Viviane Forrester - of "economic and social horror". The option for solving the crisis, in a general manner, despite not equal in intensity, has been the adoption of neoliberal policies [neoconservative in the USA] that retake the market as the sovereign regulator of the social relations. The right is not assured by a public sphere anymore. The right to education, health, culture, leisure, retirement, etc. metamorphose in services that are bought in the market. What may happen is a subsidy or an assistencial policy that originate from the public government. Therefore, public sphere, the sphere of the right, atrophies.

In Brazil, particularly since the 1990s, it is defined a conservative hegemony - built historically by a vanguard of the backwardness bourgeoisie, as it is understood by F. Rangel or non contemporanian to the contemporaneity, in the words of Prado Caio Júnior, that adopted the neoliberal doctrine [neoconservative in the USA] in its core. The Reforms of the State, the reform on education, the social security and labor legislation, emblematically delimited by the violence of the temporary contract of labor.

Vocational-technical education [VTE], if the hegemony is consolidated in the planned way - a minimum period of 20 years, will be the completion of which is in process. VTE leaves the sphere of the Ministry of Education and is sheltered by the Ministry of Labor. The role of the government will be of a distributor of public fund (as it happens with the FAT nowadays) for which public and private institutions, NGOs, and offices that negotiate phantom programs etc. apply. Depending on the power of the civil society, this fund may have a bigger or lesser control. The role of the State will be, therefore of a funder in part (each time less) and above all of evaluator. SENAI, SENAC and the other organizations that are part of the S System, instead of changing to have to a triparty administration, as it was defended during the Constituent process and still part of the society defends, will become units that sell services, this is the clear option of SENAI nowadays (see José Rodrigues' doctoral thesis - UNICAMP, 1997).

If public administrations of different political inclination, as it is the case of the Federal District [Brasília] and Porto Alegre city administrations, get to reach power at Federal level [elect the President of Brazil], I believe that the proposals that had been negotiated in the Federal House of Representatives but that were defeated [later] during the making of the Directives and Basis of Brazilian Education Act, may be retaken. In relation to that refer to the attached paper (Pages 4 a 6 [*]).

[*] Pages 4 through 6 of the alluded paper:

(Beginning of page 4.)

“ **2 - The conception and organization of the Development for Professions Instruction (Ensino Técnico-profissional) within the clashes of the construction of antagonistic societal projects.**

The dispute around the conceptions and control of the development for professions (formação técnico-profissional) is present, clearly, since the 1920s and, more specifically starting from the 1930s, with the specter of forces, which we alluded above, which postulate, on one hand, a democratic societal project, in a perspective of self-sustained economical-social development, articulated in sovereign form in the international scenario, and a project associated and subordinated to the international capitalism.

The literature which addresses critically the dispute of the conceptions and policies of development for professions instruction (ensino técnico-profissional) throughout the last half century, is abundant. In recent analysis Cunha (1997) analyzes the management policies that relate 9-11/12 grade instruction (ensino médio) and development for professions instruction (ensino profissionalizante), in this long period, and call them ‘zigzag,’ to characterize the discontinuities, advancements, and retrocessions.

2.1 - The Unitary and Public Development for Professions (Formação Técnico-Profissional): Assumption to a Real Democracy in the Political and Economic-Social Setting (Democracia Efetiva no Plano Político e Econômico-Social).

In the long process of reconstruction of democracy in Brazil, particularly in the 1980s in the context of the constituent assembly and, later in the formulation of the bill that originated Directives and Bases of National Education Act (Lei de Diretrizes e Bases da Educação Nacional), one of the chapters, in the education field, which becomes a kind of *Gordian knot*, with intense dispute, was the one addressing the development for professions (formação-técnico-profissional). Such dispute occurs clearly in two levels: the one of the conception of the development for professions (formação-técnico-profissional), and the one of the its political and organizative control.

Which are the basic ideas which define the conceptual and organizative axis of the development for professions (formação -técnico-profissional) by educators and by the other social forces compromised with a democratic, self-sustainable societal project, which postulates the inclusion of all in the access to material and cultural goods and which articulates in a autonomous format to the globalization and universalization processes?

The guiding axis of the conception of the development for professions (formação-técnico-profissional), in the constituents and the making of the LDB debates, fed by the critical analysis of the conceptions and educational policies originated during the dictatorship³ cycle, rotated around the defense of the public, tuition-free, lay, universal, unitary and technological or polytechnic school.⁴

³ - About the educational reforms during the military cycle see Saviani (1998).

⁴ - Around the use of the concept “technological and polytechnical”, there is a controversy in the progressive field of education. In reality, in both cases, I think, what matters is the signification or re-signification that both take in the concrete historical setting. Because that and within this perspective, I use in the text both as synonyms. Technology as creation and extension of the human senses which “*transforms the nature having in sight human collective goals (...). Natural material transformed in organs of the human will which exerts itself over nature or from the participation of the human nature over the nature*”. (Bottmore, org., 1988). ‘Politecnia’ as a conception of unitary and omnilateral human development (formação humana unitária e omnilateral) that is, which develops the multiple dimensions of the human being while a being of material, cultural, aesthetic, affective and ludic needs.”

(End of page 4.)

(Beginning of page 5.)

“The proposal of development for professions instruction (ensino técnico-profissional) in the conception of the unitary, technological or polytechnical school (escola unitária, tecnológica ou politécnica) has as assumption and purpose the overcoming of the dualism and of the fragmentation, of the dichotomy between the general and specific, technical, humanist and political preparation (formação geral e específica, técnica, humanista e política). It delimits, too, the rupture with the productivist and marketing conception (concepção produtivista e mercadológica) of the human development (de formação humana). It is a development (formação), syntheses of the universe, which encompasses all the dimensions of human life. A democratic development (formação democrática) in the method, shape and content. This perspective on its turn, for authors like Saviani (1988) , Machado (1989), Frigotto (1987 and 1991), and Rodrigues (1993), places as exigency a concomitant struggle for the overcoming of the capitalist social relations (relações sociais capitalistas). It is about a fight that, as Saviani observed, need to be put in practice from now on, even in adverse conditions.

‘However, it matters to make stand out that, if the implementation of such proposal presupposes transformations, even radical ones, in the present Brazilian society setting, it is possible to work from now on that direction, even because such effort already constitutes, itself, in an integrant moment of the same process of radical transformation of the present conditions’ (Saviani, 1988:88).

The text of the first proposal for the LDB introduced by representative (deputado) Otávio Elísio in December, 1988 and the Jorge Hage substitutive, as makes evident Saviani’s analysis (1997), incorporated in a very broad manner the conception set off above, reflecting, in good measure a certain equilibrium of the forces in the dispute, not only in the educational field, but also in the social broader one. In the same direction, it was defended the chapter about the social rights in the Constituent Assembly. In relation to the 9-11/12 grade and development for professions instruction (ensino médio e técnico-profissional), the article 53.1,

of the Jorge Hage substitutive indicated that the 9-11/12 grade instruction (ensino médio) curriculum ‘will highlight the basic technological education (educação tecnológica básica), the comprehension of the science, of the letters and of the arts, the historical process of transformation of the society and the culture. (...) The access to knowledge and the exercise of the citizenship.’

The conception of unitary and technological or polytechnical development (formação unitária e tecnológica ou politécnica), in the context of the 1980s debates, had as horizon, also, the overcoming of the duality existent today in the 9-11/12 grade level (nível médio) which maintains the secondary level technical industrial instruction (ensino técnico industrial de nível médio) in a separate system. The unity of 9-11/12 instruction (ensino médio), with the perspective of technological or polytechnical development (formação tecnológica ou politécnica), would mean the rupture, as we indicated above, of the dualisms - general-specific (geral-específico), humanistic-technical (humanístico-técnico), technical-political (técnico-político), unsustainable not only from the epistemological point of view but also and, mainly, from the ethical-political point of view. What becomes prominent is that, particularly in the historical context in which we live, the unitary development (formação unitária), which includes the graduation from 9-11/12 grade level (nível médio), is fundamental condition to the real citizenship and for the comprehension of the new technological basis of the world of production.

In relation to the development for a specific profession (formação profissional e qualificação específica) the directive, present in the article 53 of that substitutive, is that such development be done after the unitary, technological or polytechnical development (formação unitária, tecnológica ou politécnica) which encompasses 1-11/12 grade instruction (ensino fundamental e médio), or face the reality in the present moment it can be concomitant but with an increase of the school workload and in a specific system. It is in this understanding that all the debates of the chapter of education in the constituent assembly and later in the preparation of the LDB that the educators and social forces compromised with the overcoming of the formal democracy and citizenship for a few, worked and defended, in relation to the development for a specific profession (formação profissional específica), chiefly for youngsters and adults, three complementary positions to be guaranteed at the legislation level:

a) - Break the unacceptable sole and private control of National Confederations of Manufacturing (Industry) and Commerce (Confederações Nacionais de Indústria e Comércio) over the public fund granted to them for the management of SENAI, SENAC, SESI, and SESC as well the exclusivity of the conception and practice of the development for professions (formação técnico-profissional) delivered at these institutions. In the possible limit of a”

(End of page 5.)

(Beginning of page 6.)

“representative democracy, it has been defended and is defended the triparty management of such public fund and of the conception of development for professions (formação profissional).

b) - Another thesis widely developed was the creation of public centers for development for professions (centros públicos de formação profissional). It is about organizations with flexible schedules and with a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific development (formação específica).

c) - Set, in the legislation, the reduction of the number of work hours (redução da jornada de trabalho) of the youngsters and adults that are going through development for professions (formação profissional), without loss for their revenues (wages/salaries).

Around these conceptions, here selectively centered the forces of the educators' organizations (more than 34 constituted the FORUM) and other institutions and organizations which sought to articulate the interests of the excluded persons and of the working class.

2.2 - Development for Professions (Formação Técnico-Profissional) Market-Gearred, Fragmentary and Dualist as Adjustment to Excludent Globalization project (projeto de Globalização Excludente).

The new LDB completes in December a year of existence. Various books and essays analyze, comparatively, what was approved (the Senate (Senado) bill) and what was refused (The House of Representatives (Câmara dos Deputados) bill). I distinguish and recommend the reading of the text by Saviani (1997) - **The new education act: LDB - trajectory, limits and perspectives** (A nova lei da educação: LDB - trajetória, limites e perspectivas). The crucial point that I would like to raise attention to is related to the idea that the minimalist feature, non regulatory of the approved LDB is what serves philosophically and politically to impose, by autocratic measures - decrees, regulations, executive orders and experts' opinions - the educative project formulated according to the interests of the neoconservative hegemony in power today in Brazil in consonance with the impositions to the structural adjustment to the excludent globalization process.

The option for a “minimalist LDB”, matched with the thesis of the minimum State” and with the triad of the structural adjustment: deregulation, decentralization and privatization and, as Saviani observes, that lets “the path free to the presentation of punctual reforms, topical, localized, translated in measures as the so-called “Teachership Valorization Fund (Fundo de Valorização do Magistério)”, the National Curricular Parameters (Parâmetros Curriculares Nacionais)”, the development for professions reform act (lei de reforma do ensino profissional e técnico). (...). (Saviani, 1997:200).

The perspective of the function of the LDB minimalist feature, in relation to development for professions instruction (ensino técnico-profissional), explicits emblematically, the idea that the conservative group on power, has a global educative project that has to be imposed at any price. Project itself the precedes the approval of the LDB. In relation to development for professions instruction (ensino técnico-profissional), since the moment this administration was inaugurated, it was started a large quantity of propositions produced by Brazilian technicians, Ministry of Education and Sports advisers and linked to the World Bank - the grand mentor and guide of the educational reforms in Brazil today and the regulation proposals. The Bill N° 1603/96 meets that arsenal of propositions which are in agreement with the government project for development for professions instruction (ensino técnico-profissional).

The bill was sent to Congress, collided with the dispute of the educators, specially those connected to the Federal System of Industrial Technical Instruction (Sistema Federal do Ensino Técnico Industrial), which claimed for alterations in the direction of the conception of a unitary technical [academics and technical contents taught in the same facilities for the same students], technological, or”

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“polytechnical instruction and tuition-free (ensino técnico unitário, tecnológico ou politécnico e de caráter público). The approval of the minimalist LDB relieved the Executive of this pressure and, immediately it withdrew the bill from Congress and transformed it, autocratically, in the Decree n° 2208, April 17, 1997. Legally, but not legitimately, the government is imposing the reform that since the very beginning it wanted to do, meeting the associated conservative interests associated to the orientation of the World Bank.

In relation to the secondary level technical industrial instruction (ensino técnico industrial) the new legislation condensed in the Decree N°. 2,208/97, represents a regression and exacerbation of the dualism, fragmentation and, under the false excuse of high costs and that it presently meets the needs of an elite, a clear privatization process of this level of instruction.”

(End of paragraph.)

Answer provided in Portuguese:

Como nos lembra Althusser em suas memórias, o “futuro dura muito tempo”, mas os cenários podem mudar com certa velocidade. Do ponto de vista societário, com o “fim” da Guerra Fria, colapso do Socialismo Real, aparentemente criou-se um futuro de mão única - a eternização da sociedade mercantil ou capitalista, esta, é em última análise a significação

mais profunda da obra “O fim da história” de F. Fukuyama. Esta conjuntura de fim de século, aparentemente tranqüila para a forma capital, ao contrário explicita a sua crise mais profunda - crise estrutural do desemprego (sem volta), limites à lógica do desenvolvimento industrial pela destruição do meio ambiente e poder assimétrico entre blocos econômicos etc. Isto tudo tem como consequência um profunda exclusão social - uma sociedade, na expressão de Viviane Forrester - de “horror econômico e social”. A opção de resolução da crise, de maneira geral, ainda que não de forma igual em intensidade, tem sido a adoção das políticas neoliberais que reassumem o mercado como regulador soberano das relações sociais. O direito não é mais assegurado por uma esfera pública. O direito de educação, saúde, cultura, lazer, aposentadoria, etc. metamorfoscam-se em serviços que se compram no mercado. O que pode ocorrer é um subsídio ou uma política assistencial por parte do estado. Atrofia-se, pois a esfera pública, a esfera do direito.

No Brasil, particularmente desde os anos 90, define-se uma hegemonia conservadora - construída historicamente por uma burguesia vanguarda do atraso, como a entende F. Rangel ou não contemporânea à contemporaneidade, na expressão de Prado Caio Júnior, que adotou a doutrina neoliberal no seu âmago. As Reformas do Estado, a reforma educacional, a legislação previdenciária e trabalhista, emblematicamente demarcada pela violência do contrato temporário de trabalho.

A educação profissional, caso esta hegemonia se consolide na ótica planejada - um período mínimo de 20, será a consumação do que está em processo. A educação profissional sai da esfera do Ministério da Educação e se aninha no Ministério do Trabalho. O papel do governo será de distribuidor de fundo público (como é o FAT hoje) para o qual se candidatam instituições públicas e privadas, ONGs, escritórios que trafegam cursos fantasmas etc. Dependendo da força da sociedade civil este fundo pode ter um maior ou menor controle. O papel do Estado será, pois de financiador em parte (cada vez menos) e sobretudo de avaliador. SENAI, SENAC e demais organizações do Sistema S, ao contrário de passarem ter uma gestão tripartite, como se defendeu durante o processo Constituinte e ainda parta da sociedade defende, se transformarão em unidades de venda privada de serviços, esta é a opção clara do SENAI hoje (Ver a tese de doutorado de José Rodrigues - UNICAMP, 1997).

Se governos de espectro político diverso, como é o caso do Distrito Federal e da Prefeitura de Porto Alegre ascenderem ao poder do Estado Brasileiro, creio que as teses derrotadas na LDB que foi negociada na Câmara dos Deputados, podem ser retomadas. Ver a esse respeito texto em anexo (Pgs. 4 a 6 [*]).

[*] Páginas 4 e 6 do texto mencionado:

(Início da página 4.)

“ 2 - A concepção e organização do Ensino Técnico-profissional dentro dos embates de construção de projetos societários antagônicos

A disputa em torno das concepções e controle da formação técnico-profissional se faz presente, de forma clara, desde aos anos 20 e, mais especificamente a partir do anos 30, dentro do espectro de forças, que aludimos acima, que postulam, de um lado, um projeto societário democrático, numa perspectiva de desenvolvimento econômico-social auto-sustentado, articulado de forma soberana no plano internacional e um projeto associado e subordinado ao capitalismo internacional.

A literatura que resgata criticamente a disputa das concepções e políticas do ensino técnico profissional ao longo deste último meio século, é abundante. Em recente análise Cunha (1997) analisa as políticas de gestão que relacionam o ensino médio e ensino profissionalizante, neste longo período, e as denomina de “zig-zag”, para caracterizar as descontinuidades, avanços e retrocessos.

2.1 - A Formação Técnico-Profissional Unitária e Pública: Pressuposto para a Democracia Efetiva no Plano Político e Econômico-Social.

No longo processo de reconstrução da democracia no Brasil, particularmente nos anos 80 no contexto da constituinte e, posteriormente na formulação do projeto de Lei da Diretrizes e Bases da Educação Nacional, um dos capítulos, no campo educativo, que se constitui numa espécie de *nó górdio*, com intensa disputa, foi o relativo à formação-técnico-profissional. Esta disputa dá-se claramente em dois níveis: o da concepção de formação técnico-profissional e do controle político e organizativo da mesma.

Quais as idéias básicas que definem o eixo conceptual e organizativo da formação técnico-profissional pelos educadores e demais forças sociais comprometidas com um projeto societário democrático, auto-sustentável, que postula a inclusão de todos no acesso aos bens materiais e culturais e que se articula de forma autônoma aos processos de globalização e universalização?

O eixo norteador da concepção da formação técnico-profissional centra-se, nos debates constituintes e da formulação da LDB, alimentados pelas análises críticas das concepções e políticas educacionais do ciclo da ditadura³, girava em torno da defesa da escola pública, gratuita, laica, universal, unitária e tecnológica ou politécnica.⁴

³ - Sobre as reformas educacionais do ciclo militar ver Saviani (1998).

⁴ - Em torno do uso conceito “tecnológica e politécnica”, existe uma polémica no campo progressista da educação. Na realidade, tanto num caso como noutra caso, penso, o que importa é a significação ou ressignificação que os mesmos assumem no plano histórico concreto. Por isso e dentro desta perspectiva, utilizo neste texto ambos como sinónimos. Tecnologia como criação e extensão dos sentidos humanos que ‘transforma a natureza tendo em vista objetivos coletivos humanos (...). Material natural transformado em órgãos da vontade humana que se exerce sobre a natureza ou da participação da natureza humana sobre a natureza’. (Bottmore, org., 1988). Politecnia como uma concepção de formação de formação humana unitária

e omnilateral ou seja, que desenvolva as múltiplas dimensões do ser humano enquanto um ser de necessidades materiais, culturais, estéticas, afetivas e lúdicas.”

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“A proposta de ensino técnico-profissional na concepção da escola unitária, tecnológica ou politécnica tem como pressuposto e propósito a superação do dualismo e da fragmentação, da dicotomia entre a formação geral e específica, técnica, humanista e política. Demarca, também, a ruptura com a concepção produtivista e mercadológica de formação humana. Trata-se de uma formação, síntese do diverso, que engloba todas as dimensões da vida humana. Uma formação democrática no método, forma e conteúdo. Esta perspectiva por sua vez, para autores como Saviani (1988), Machado (1989), Frigotto (1987 e 1991) e Rodrigues (1993), coloca como exigência uma luta concomitante para a superação das relações sociais capitalistas. Trata-se de uma luta que, como observava Saviani, necessita ser posta em prática desde já, mesmo em condições adversas.

‘No entanto, importa destacar que, se a implantação da referida proposta pressupõe transformações, até mesmo radicais, no quadro da sociedade brasileira atual, é possível trabalhar desde já nessa direção, mesmo porque tal empenho já se constitui, ele próprio, num momento integrante daquele mesmo processo de transformação radical das condições atuais’ (Saviani, 1988:88).

O texto do primeiro projeto de LDB apresentado pelo deputado Otávio Elísio em dezembro de 1988 e o substitutivo Jorge Hage, como evidencia a análise de Saviani (1997), incorporavam de forma bastante ampla a concepção acima assinalada, refletindo, em boa medida um certo equilíbrio de força na disputa, não só no campo educacional, mas social mais amplo. Na mesma direção defendia-se o capítulo sobre os direitos sociais na constituinte. Em relação ao ensino médio e técnico-profissional, o artigo 53.1, do substitutivo Jorge Hage indica que o currículo do ensino médio ‘destacará a educação tecnológica básica, a compreensão da ciência, das letras e das artes, o processo histórico de transformação da sociedade e da cultura. (...) Acesso ao conhecimento e exercício da cidadania’.

A concepção de formação unitária e tecnológica ou politécnica, no contexto dos debates dos anos 80, tinha como horizonte, também, a superação da dualidade existente hoje no nível médio que mantém o ensino técnico industrial de nível médio num sistema à parte. A unidade do ensino médio, com a perspectiva da formação tecnológica ou politécnica, significaria a ruptura, como apontamos acima, com os dualismos - geral específico, humanístico-técnico, técnico-político, insustentáveis tanto do ponto de vista epistemológico quanto e, principalmente, do ponto de vista ético-político. O que fica realçado é que, particularmente no contexto histórico em que vivemos, a formação unitária, que inclui o término do nível médio, é condição fundamental para a cidadania efetiva e para a compreensão das novas bases tecnológicas do mundo da produção.

Em relação à formação profissional e qualificação específica a diretriz, contemplada no artigo 53 daquele substitutivo, é de que a mesma seja feita após a formação unitária, tecnológica ou politécnica que engloba o ensino fundamental e médio, ou face à realidade dada no presente possa ser concomitante mas com ampliação de carga horária e num sistema próprio. É nesta compreensão que deste os debates do capítulo de educação na constituinte e posteriormente na elaboração da LDB os educadores e forças sociais comprometidas com a superação da democracia formal e cidadania para poucos, trabalharam e defenderam, em relação à formação profissional específica, mormente de jovens e adultos, três posições complementares para serem asseguradas a nível da legislação:

a) - Romper com o inaceitável controle único e privado das Confederações Nacionais de Indústria e Comércio sobre o fundo público a elas concedido para a gestão do SENAI, SENAC, SESI e SESC bem como a exclusividade da concepção e prática da formação técnico profissional ministrada nestas instituições. No limite possível de uma”

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“democracia representativa, defendia-se e defende-se a gestão tripartite deste fundo público e da concepção de formação profissional.

b) - Outra tese amplamente desenvolvida foi o da criação de centros públicos de formação profissional. Trata-se de organizações com horários flexíveis e com uma proposta político-pedagógica capaz de adaptar-se à diversidade de situações particulares de diferentes grupos de jovens e adultos que demandam esta formação específica.

c) - Fixação, na legislação, da redução da jornada de trabalho dos jovens e adultos que estejam efetivando a sua formação profissional, sem prejuízos de seus proventos.

Em torno destas concepções, aqui assinaladas seletivamente centraram-se as forças das organizações dos educadores (mais de 34 constituíram o FORUM) e outras instituições e organizações que buscam articular os interesses dos excluídos e da classe trabalhadora.

2.2- Formação Técnico-Profissional Mercadológica, Fragmentária e Dualista como Ajuste ao projeto de Globalização Excludente.

A nova LDB completa em dezembro um ano de existência. Vários livros e ensaios analisam, comparativamente, o que se aprovou (Projeto do Senado) e o que se refutou (Projeto da Câmara). Destaco e recomendo a leitura do texto de Saviani (1997) - **A nova lei da educação: LDB - trajetória, limites e perspectivas**. O ponto crucial que gostaria de chamar a atenção diz respeito à idéia de que o caráter minimalista, não regulamentador da LDB aprovada é o que serve filosófica e politicamente por impor, por medidas autocráticas -

decretos, regulamentações, portarias e pareceres - o projeto educativo formulado dentro dos interesses da hegemonia neoconservadora instalada hoje no Brasil em conformidade com os ditames ao ajuste estrutural ao processo de globalização excludente.

A opção por uma “LDB minimalista”, se coaduna com a tese do Estado mínimo” e com a tríade do ajuste estrutural: desregulamentação, descentralização e privatização e, como observa Saviani, isso deixa ‘o caminho livre para a apresentação de reformas pontuais, tópicas, localizadas, traduzidas em medidas como o denominado “Fundo de Valorização do Magistério”, os Parâmetros Curriculares Nacionais”, a lei de reforma do ensino profissional e técnico. (...)’ (Saviani, 1997:200).

A perspectiva da função do caráter minimalista da LDB, em relação ao ensino Técnico profissional, explicita emblematicamente, a idéia de que o bloco conservador no poder, tem um projeto educativo global que tem de ser imposto a qualquer preço. Projeto este que precede a aprovação da LDB. Em relação ao ensino técnico-profissional, desde o momento que o atual governo assumiu, desencadeou-se uma grande bateria de proposições produzidas por técnicos brasileiros, assessores do Ministério da Educação e vinculados ao Banco Mundial - grande mentor e orientador das reformas educacionais hoje no Brasil e propostas de regulamentação. O projeto de Lei n.º. 1603/96, contempla esse arsenal de proposições condizentes com o projeto do governo para o ensino técnico-profissional.

O projeto de Lei enviado ao Congresso, esbarrou com a disputa dos educadores, especialmente os vinculados aos Sistema Federal do Ensino Técnico Industrial, que disputaram alterações na direção da concepção de um ensino técnico unitário, tecnológico ou”

(Final da página 6.)

(Início da página 7.)

“politécnico e de caráter público. A aprovação da LDB minimista aliviou o executivo desta pressão e, imediatamente retirou o referido PL e o transformou, autocraticamente, em Decreto n.º. 2208 de 17.04.97. Legalmente, mas não legitimamente, o governo está impondo a reforma que desde o início postulava, contemplando interesses conservadores internos associados à orientação do banco Mundial.

Em relação ao ensino técnico industrial a nova legislação condensada no Decreto n.º. 2.208/97, representa uma regressão e exacerbação do dualismo, fragmentação e, sob o falso pretexto de custos elevados e do atendimento a uma elite, um processo de privatização clara deste nível de ensino.”

(Fim do parágrafo.)

Panelist 17:

In essence, education in general must be professional. Education is the technical instrument number *zero* necessary for intellectual work. Because the sustainability of education is in the permanent promotion of the creation of new professional activities. The State has, among other incumbencies of inexorable form, to provide education for its population. Its role is permanent in relation to education. Education is an intermediary of the human nature, of the human relations in an information based world. However, the world is not a configuration purely state like or mercantile, really it is a civilizatory process whose conflict is human.

It will take 28 years to get to the year 2025, therefore, the pathway that will be taken corresponds to a significant extent to current interests. So far education has been treated as merchandise and not as a structural element of the human daily life. Education is, therefore, a nexus of the union between the private and the public, let's say, between the individual and the collectivity [community]. Why not? In this sense, education is what allows the professionalization. The qualified profession through intellectual work. This requires a specific technical instrument: the education. So it is the task that education has ahead: to enable communication among human beings through intellectual work, the real human work..

The professional has a relation to the trade. It is the specialist of an act of work.. Since long ago work was classified, the professional became a specialist, who may be considered from independent to dependent. The professionalization is a selection process among the various types of professional work. Classification among the typified official activities of work (from manual to intellectual) in specific trades. Trades that become merchandise in the production and consumption process, that is, such merchandise promote the capitalist system. Professional work is part of the capitalist system of the world.

Profession is, then, something that is learned in the specific system of things production. Presently we are facing an articulation process between the human activity and the activity of machines. Learn a trade is, nowadays to learn to handle machines for specific purposes; directed to the merchandise production characteristically selective, discriminatory through the various capacities of consumption - of salary or income, made possible by professional valuing.

The professional distinction started to belong to educational system. Education also became systemic. The system differentiated distinct levels of professional capability. The independent professional (the qualified autonomous professional) must pass through all the grid of the educational system. The dependent professional (qualified autonomy) passes through part of the grid in direction to the labor market (mechanical) of the productive

system.. Education is a business like any other requiring, also, a specialization in the education (development for professions).

The role of the State is much more subject to the conjunctures than with the structure. Even if that it is hypothetically the opposite of what the nation needs. The structure would be a problem of the essence of the national territory, the survival conditions of the certain population that inhabits the place. The market gets involved with the populations of various localities. The Market is only national having the State as the reference - of a State; in the other manner, the Market interferes in various territories according to the distribution of the production, of the particular productive circuit. It acts according to interests above nations, these influence to the point of being reeducated. It creates the professional of the machine who is necessarily recyclable in function of the mechanical agility.

We live through times of the transitoriness of the forms of work. The inequalities dictate the rules and the compositions of the labor forces diverge according to the revenue of the companies and the respective productive arena, without taking in consideration the local societies. Because of this, the role of the State must be centered in the social needs of the recomposition of the productive force of the nation.

Development for professions was encouraged by the State along with the commercial and industrial associations of the various states of the Union. Secondary schools were established which would qualify the students for joining the traditional labor market of the industrial productive organization. These schools are permanently aiming to be updated in the professions that are taught by them. They do not avoid the technological modernization, but, they do not go after a methodical and scientific investigation. They follow the market exigencies for the professional requalification of the mass of workers that can not search for it in a particular and individualized way. In practice, what happens is a requalification in generations, that is, instruction being provided along with secondary education allows learning only to the new elements of the workforce and not to all workforce. To the rest of the latter, the requalification is done, whenever possible, through partial programs of qualification for new activities that develop from the new habits of the consumerist and automaton life, necessary to the capital.

The inequalities establish the norms for the social groups. The geographical space is unequal according to the capitalist nature. We are going to the next century along with structural inequalities. An incomplete traditional instruction, a late permanent renewing. Traditional illiterates and technological illiterates, we will never develop national citizens. In Brazil the territorial divergences are widely known and historical, at the urban and regional levels. Among the companies and the institutions, from the market and the state.

The professional disqualification due to the technological modernization is structural, maybe part of the so called structural unemployment. Another part, certainly, is involved in the logic of the localized disqualification implemented by the human resources development

of the productive arena. We are facing a set of possibilities that are intentionally reached. There is the supply and demand determined by the human conditions. This is what the federal government should take care of, the strategy that the nation should build for not succumbing to the market logic of the global companies. The dissemination of professional disqualification is part of this logic. The production capability is not homogenous, on the contrary, the different capabilities generate the true revenues.

For the Brazil of the year 2025, democracy as a national property is what will enable the discussions about the true conditions of the national society versus the global clash. It is expected a world of global relations much more intense than those in the end of this century. But only with very well defined and applied national finalities is that it will be known the true position of the nation in a global system.

The federal sphere is for Brazil the one that governs the nation. It establishes the relation of the general interests of the different state governments (regional). The nation is a patchwork quilt of very uneven patches. The regional inequalities are similar to the global inequalities. Well equipped and poorly equipped, provoking the concentration of the educational system of excellence in particular states. The educational system as a whole shows this situation. The federal government aimed to appease such discrepancies throughout a system of federal schools that, precisely in this end of century, goes through an alteration, that seems to be disastrous. The disarticulation of the federal education system will increase the inequalities among the states.

At the level of an education geared for professions, the system is linked to the federations of the market economy and the federal government can not be the main investor and funder. It should attract the interests of the various economic agents for the constitution, or better, the sustenance of the best possible labor force. The disqualification should be fought with a global educational policy, but the existing local specificities may be fomented directly when they may perform a role not exclusively local - for the local level there should exist the federal-state-municipal government system. The qualified professionalization conducted by an educational system articulated with the economic activities is that at the disposition of society nowadays and always will be. The present project of professional recycling takes care of a part of the productive forces, the social question raised by unemployment is always put in second place.

To think about development for professions requires considerations about the structural unemployment that is a product of the capitalist system. Professional development through education would be the answer to structural unemployment, that feeds from the "excess (exército de reserva)" of qualified manpower. As the problem is global, it requires a collective strategy. The federal State would mediate the adequate investments necessary for the national development, aiming to adequate the financial resources to the regional inequalities. It would search for private resources, as the product of investment will also be of private demand, with a public management.

Besides that, it is the role of the State to design the policy for the development of craftsmanship and technological work. Work and education are items that must evolve together, that is something that should be being organized in parallel by the year 2025. This is a problem that should be addressed from now on. Nevertheless, by what is happening nowadays, unemployment is a problem of the Market, because of this, it is not a problem to find a social solution.

The role of the Brazilian federal government may not be any by the year 2025, if the educational concerns are geared to basic education (K/11-12 and higher education). If we take in consideration that to educate is the role of the State; develop the citizen is its primary goal. But that may be also questioned. For the interests of those who employ the citizen, the educational system should subsidize him/her to the world of work, as a qualified trade. That requires, then, a particular pedagogy.

In any way, the educational system will be involved with the individual and collective development of the citizen-worker. Because of that, the trades must be offered throughout the traditional system, inserted in curriculum aiming that every apprentice makes a decision as to his/her possibilities and that he/she explores them communicatively, that is, productively.

Answer provided in Portuguese:

Em essência, a educação em geral deve ser profissional. A Educação é o instrumento técnico número *zero* necessário ao trabalho intelectual. Porque a sustentabilidade da educação está na promoção permanente de criação de novas atividades profissionais. Ao Estado cabe, entre outras incumbências de forma inexorável, a educação de sua população. O seu papel é permanente frente a educação. A educação é um intermediário da natureza humana, das relações humanas num mundo informacional. Porém, o mundo não é uma configuração puramente estatal ou mercantil, de fato é um processo civilizatório cujo conflito é humano.

Acontece que para se chegar ao ano 2025 faltam 28 anos, portanto, o percurso que será seguido corresponde em boa parte aos interesses atuais. Até agora a educação foi tratada como uma mercadoria e não como um elemento estrutural do cotidiano humano. A educação é, pois, um nexos de união entre o privado e o público, digamos assim, entre o indivíduo e a coletividade. Porque não? Nesse sentido, a educação é o que permite a profissionalização. A profissão qualificada através do trabalho intelectual. Este exige um instrumento técnico específico: a educação. Assim é o trabalho que a educação tem pela frente: permitir a comunicação entre os seres humanos através do trabalho intelectual, o verdadeiro trabalho humano.

O profissional é um referente ao ofício. É o especialista de um ato de trabalho. Há muito tempo o trabalho foi classificado, passando o profissional a ser um especialista, podendo ser considerado de independente a dependente. A profissionalização é o processo de seleção entre os diversos tipos de trabalho profissional. Classificação entre as atividades

oficiais tipificadas do trabalho (de manual a intelectual) em ofícios específicos. Ofícios que se tornam mercadorias no processo de produção e consumo, ou seja, tais mercadorias que promovem o sistema capitalista. O trabalho profissional é parte do sistema capital do mundo.

A profissão é, então, algo que se aprende dentro de um sistema específico de produção das coisas. Agora estamos diante de um processo de articulação entre a atividade humana e a atividade das máquinas. Aprender um ofício é, hoje aprender a lidar com máquinas para fins específicos; dirigidos à produção de mercadorias caracteristicamente seletivas, discriminatórias através das diferentes capacidades de consumo - do salário ou da renda, possíveis pela valorização profissional.

A distinção profissional passou a pertencer ao sistema educacional. A educação também se tornou sistêmica. O sistema distinguiu diferentes graus de capacitação profissional. O profissional independente (autônomo qualificado) deve percorrer toda a grade do sistema educacional. O profissional dependente (autonomia qualificada) percorre parte da grade em direção ao mercado de trabalho (maquinal) do sistema produtivo. A educação é um negócio como outro qualquer exigindo, também, uma especialização na educação (profissionalizante).

O papel do Estado se sujeita muito mais às conjunturas do que com a estrutura. Mesmo que hipoteticamente seja o contrário que a nação necessite. A estrutura seria um problema da essência do território nacional, as condições de sobrevivência de determinada população do lugar. O mercado se envolve com as populações de diversas localidades. O Mercado só é nacional a partir do Estado - de um Estado; de outro modo, o Mercado interfere em diversos territórios segundo a distribuição da produção, do circuito produtivo específico. Age segundo interesses acima das nações, estas influem ao ponto de serem reeducadas. Cria o profissional da máquina que é necessariamente reciclável em função da agilização maquinal.

Vive-se a transitoriedade das formas de trabalho. As desigualdades ditam as regras e as composições das forças de trabalho divergem segundo o rendimento das firmas e a arena produtiva respectiva, sem a consideração das sociedades locais. Por isso, o papel do Estado deve estar centrado nas necessidades sociais da recomposição da força produtiva da nação.

O ensino profissionalizante foi incentivado pelo Estado junto com as associações comerciais e industriais dos diferentes estados da União. Criaram escolas secundárias que qualificariam os estudantes para atuação no mercado de trabalho tradicional da organização produtiva industrial. Estas escolas estão permanentemente empenhadas na atualização das profissões ali capacitadas. Não evitam a modernização tecnológica, porém, não correm atrás com uma investigação metódica e científica. Cumpram as exigências mercadológicas para a requalificação profissional da massa de trabalhadores que não pode buscá-la de maneira particularizada e individualizada. Na prática o que se coloca é para uma requalificação em gerações, quer dizer, o ensino sendo ministrado juntamente com o segundo grau limita o aprendizado aos novos elementos da força de trabalho e não à toda força de trabalho. À esta,

a requalificação é feita, quando possível, através de cursos parciais de qualificação para novas atividades que surgem com os novos costumes da vida consumista e autômato, necessária ao capital.

As desigualdades são as normatizadoras das formações sociais. O espaço geográfico é desigual segundo a natureza capitalista. Passaremos ao próximo século com desigualdades estruturais. Um ensino tradicional incompleto, uma renovação permanente tardia. Analfabetos tradicionais e analfabetos tecnológicos, nunca formaremos cidadãos nacionais. No Brasil as divergências territoriais são notórias e históricas, ao nível urbano e regional. Entre as firmas e instituições, do mercado e do estado.

A desqualificação profissional com a modernização tecnológica é estrutural, talvez parte do tal desemprego estrutural. Uma outra parte, certamente, está envolvida na própria lógica da desqualificação localizada pela capacitação dos recursos humanos da arena produtiva. Estamos diante de um conjunto de possibilidades que são intencionalmente atingidas. Existe a oferta e a procura determinadas pelas condições humanas. É disto que o governo federal deve se ocupar, da estratégia que a nação deve construir para não sucumbir as lógicas mercadológicas das empresas globais. A disseminação da desqualificação profissional é parte desta lógica. A capacidade produtiva não é homogênea, muito ao contrário, são as diferentes capacidades que propiciam os verdadeiros rendimentos.

Para o Brasil do ano 2025, a democracia com bem nacional é o que propiciará as discussões de fundo sobre as verdadeiras condições da sociedade nacional frente o embate global. Espera-se um mundo de relações globais muito mais intensas que no final deste século. Mas só com as finalidades nacionais muito bem definidas e aplicadas é o que se saberá qual vai ser a verdadeira posição da nação num sistema global.

A esfera federal é para o Brasil aquela que governa a nação. Estabelece a relação dos interesses gerais dos diferentes governos estaduais (regionais). A nação é uma colcha mal retalhada. As desigualdades regionais se assemelham às desigualdades globais. Muito equipados e pouco equipados, provocando a concentração do sistema educacional de excelência em governos estaduais precisos. O sistema educacional como um todo apresenta esta situação. O governo federal procurou amenizar as discrepâncias através de um sistema de escolas federais que, precisamente neste final de século, passa por uma alteração, ao que parece desastrosa. A desarticulação do sistema federal de educação acentuará os desníveis estaduais.

Ao nível de uma educação profissionalizante, o sistema é atrelado as federações da economia de mercado e o governo federal não pode ser o grande investidor e fomentador. Ele deve atrair os interesses dos diversos agentes econômicos para a constituição, ou melhor, a manutenção da melhor força de trabalho possível. A desqualificação deve ser combatida com uma política de educação global, porém, as especificidades locais existentes podem ser fomentadas diretamente quando puderem desempenhar um papel não exclusivamente local -

para o nível local deve existir o sistema de governo federal-estadual-local. A profissionalização qualificada por um sistema educacional articulado com as atividades econômicas é aquela posta à sociedade hoje e será sempre. O projeto atual de reciclagem profissional dá conta de uma parte das forças produtivas, a questão social que o desemprego provoca é sempre colocada em segundo plano.

Pensar o ensino profissionalizante requer uma reflexão sobre o desemprego estrutural próprio do sistema capitalista. A capacitação profissional via educação seria a resposta ao desemprego estrutural, que vive do “exército de reserva” da mão-de-obra qualificada. O problema sendo de ordem global, requer uma estratégia coletiva. Ao Estado federal caberia mediar os investimentos adequados ao desenvolvimento nacional, buscando adequar recursos financeiros com a desigualdade regional. Ele buscaria a utilização de recursos privados, uma vez que o produto do investimento também será de demanda privada, com uma gestão pública.

Além disso, é papel do Estado que cabe traçar a política de desenvolvimento do trabalho artesanal e tecnológico. Trabalho e educação são rubricas que devem evoluir junto, isto é algo que deverá ser normatizado concomitantemente por volta do ano 2025. Este é um problema que deve ser abordado a partir do hoje. Porém, pelo que se esboça atualmente, o desemprego estrutural é um problema do Mercado, por isso, não é um problema a obter solução social.

O papel do governo federal do Brasil poderá ser nenhum no ano de 2025, caso as preocupações educativas estejam voltadas para a educação básica (1o., 2o. e 3o. graus). Considerando aí que educar é papel do Estado; formar o cidadão é seu objetivo primaz. Mas isso também pode ser questionado. Para os interesses de quem emprega o cidadão, o sistema educacional deveria subsidiá-lo ao mundo do trabalho, com um ofício qualificado. Isto requer, então, uma pedagogia específica.

De qualquer forma, o sistema educacional estará envolvido com a formação individual e coletiva do cidadão-trabalhador. Por isso, os ofícios devem ser oferecidos ao longo do sistema tradicional, inseridas nos currículos buscando fazer com que cada aprendiz se defina quanto as suas possibilidades e as explore comunicativamente, quer dizer, produtivamente.

Panelist 18:

In the future there will be an increase in the need for world-class workers to work in world class businesses and industries. The Brazilian federal government should have the role of organizer, facilitator, and “cheerleader” for the development of world-class vocational-technical education and training (VET).

- *Organize* through strategic planning for the future, focusing on world-class VET as a top priority for 2025.
- *Facilitate* the collaboration of the various (ministries), organizations, businesses, industries and (counties) to (achieve) world-class VET.
- *Actively support* (cheerleader) and publicize the (movement) toward world-class VET, (educating) people in the need for world-class VET and the contributions it can make to economic and social development.

Note: The words in parentheses are not perfectly readable - the answer was provided in handwriting.

Panelist 19:

1. Ensure universal basic education at excellence level.
2. Offer development for professions at basic level in areas not spontaneously covered by the private sector (SENAI system and others).
3. Encourage the private sector to develop vocational-technical and training initiatives, directly (companies) or in association (trade associations).

Answer provided in Portuguese:

1. Assegurar nível de excelência na educação básica universal.
2. Oferecer formação básica profissional em áreas não espontaneamente desenvolvidas pelo setor privado (sistema SENAI e outros).
3. Estimular o setor privado a desenvolver iniciativas de educação profissional, diretamente (empresas) ou associativamente (entidades classistas).

Panelist 20:

Despite the conclusions of researchers about the evolution of human societies, I believe that the present trend of progressive weakening of governments (minimum state projects) will be stopped by the need for programs to reclaim the citizenship that will have so broad dimensions that only strong governments will be able to execute them.

The day will come when the survival of capitalist societies will depend on the strengthening of the purchasing power of their members. By then, actions for the drastic reduction of the number of excluded ones (those that have been marginalized in the societies) will happen. And the main interested ones in the social reintegration of those will be the big economic corporations.

When the limits of the financial expansion do not expand anymore, destructive speculative competition behaviors occur. The competition by itself will not be of interest anymore, only the survival. And there will not be limits for the dirty game of the economic power. And then, either the societies will protect themselves under the shadows of strong governments or social chaos will redesign new profiles for human organizations.

It is important to visualize that strong governments are not naturally governments with a substantial number of executive positions. However, whatever exist in terms of government will prioritarily have to take care of the fundamental matters of societies: education for life and the structures for good quality of life. In order to adequately meet such matters, education will be the base for the construction of a new structural configuration of the human societies. And as it will be necessary to spend many resources in the educational process, it will only reach the goals of new social constructions, if the efforts are coordinated by governments. On the other side, the projects can only be non excludent if equally they are subordinated to common policies to sensible governments to the needs of overcoming the social chaos that is getting closer quickly in our time (progressive increase of unemployment, increase in the marginalization of individuals, increase in the informal economic activities, increase of taxes on the formal system production, educational inadequation of man to the new productive processes, etc...).

Having in mind that context, I consider very important that education is viewed as fundamental process of the insertion of the individual in society. Besides, with the slow and progressive disappearance of the importance of any type of titles (or of the social expression of the family), good quality educational development becomes one of the means of leveling of human potentialities in the search for the decrease of the extreme limits of the inequalities. If societies believe that they should make man more equal in social possibilities, they will need to reduce the distances of the human capabilities, which can only be held through educational processes that have as goal the constructive integration of the individual to the social process. And the pathway for reaching this goal will be done through the road of education, grounded in the universalization of quality basic education and in objectives of development for professions that aim employability, that is, the citizen should be prepared for the scientific and technological doing, besides, of course, for having the command of the humanities, without having the concern for a job. We should instrumentalize the individual with the necessary knowledge for the good social performance and not, for the company which is by characteristic mutable and adaptable to distinct processes in each time. Man should be the fundamental goal of development for professions. Any other goals will warp this educational proposal.

Man will have to start to learn again that every person needs to know how to do something. Having an occupation will be indispensable for individuals to understand the world in another way. The concept is not new. Conversely, it is very old, but still essential for man and woman respect other men and women.. Labor, professional work will need to be recovered in their values of construction of the human personality.

As the professional activities are, in the areas of technologies, increasingly, wide and deep, the best prepared for the development of the technical functions will be those that have a generalist technological development with a deep scientific base and a concrete view of the human issues. And this developmental procedure will be used in any level of resources development, that is the basic (professional qualification [training] and secondary level technician) or the higher (associate of applied sciences, engineers, bachelors, and others).

In Brazil, twenty five years from now, vocational-technical education and training [VTET] will have the characteristics described in the previous paragraphs becoming again an executive responsibility of the federal, state and municipal governments. The complexity of the development will eliminate the possibilities of the private companies to reach satisfactory results. However, they can do so by spending a lot. Human resources development conducted within the company will be very expensive. It will be easier to hire a well prepared generalist and then format him/her for the needs of the company with the proper professional guidance. The adaptation process to the technological system of production will cost much less than any partial process or totally funded by the company.

The role of the federal government will be planning and coordinating the developments at the various levels and, within them, the various needs of professionals [trained individuals] for the productive sectors. It, however, can never abandon its activities as provider of VTET because the states and municipalities face difficulties in meeting the most simple needs of the destitute populations in priority educational areas.

The big private agencies of VTET, such as Senai, Senac and Senar, are being directed to satisfy the interests of the big business corporations or selling services, despite being funded with public money, and, for this reason, they are losing their originality and finality.

The currents, that nowadays defend the removal of governments from the task of maintaining the various proposals for VTET wishing that private companies be primarily maintainers of these proposals, will have to review their terms face the linking of the educational processes to the interests each time stronger of the big corporations, remaining the big quantity of middle and small companies (those which really promote the growth of jobs) at drift, without the conditions of growing or widening their spaces and, consolidating the tendency to the concentration of capital in the hands, each time more, of a smaller number of mega companies. Not considering here the floating capital that move around the world, speculating and creating serious problems for the emerging nations; because, they may provoke the disorganization of the world economy, producing a financial hecatomb of

unimaginable size. And, then, the world would change to barbarity. If that happens, no search for the future will help.

Answer provided in Portuguese:

Em que pese considerações de estudiosos sobre a evolução das sociedades humanas, acredito que a tendência atual de enfraquecimento progressivo dos governos (projetos de configuração de estados mínimos) acabe estancada pela necessidade de programas de resgate da cidadania que terão dimensões tão amplas que somente governos fortes poderão realizar.

Chegará o dia em que a sobrevivência das sociedades capitalistas dependerá do fortalecimento das capacidades de consumo de seus membros. Acontecerão então ações para redução drástica do número de excluídos (aqueles que ficaram marginalizados nas sociedades). E os principais interessados na reintegração social destes serão as grandes corporações econômicas.

Quando os limites de expansão financeira não mais se expandem, surgem comportamentos de competição especulativa destrutiva. A concorrência por si só não interessará mais, somente a sobrevivência. E não haverá limites para o jogo sujo do poder econômico. E aí, ou as sociedades se protegerão nas sombras de governos fortes ou caos sociais redesenharão novos perfis de organizações humanas.

É importante visualizar que governos fortes não são naturalmente governos com expressivo número de representações executivas. No entanto, o que houver de governo terá que cuidar prioritariamente de questões fundamentais das sociedades: educação para a vida e as estruturas de boa qualidade de vida. Para a possível satisfação destas questões, a educação terá importância de alicerce na construção de nova configuração estrutural das sociedades humanas. E como será preciso despender muitos recursos no processo educacional, ele só atingirá os objetivos de novas construções sociais, se forem os esforços coordenados pelos governos. Por outro lado, somente poderão ser projetos não excludentes, se igualmente estiverem subordinados a políticas comuns a governos sensíveis às necessidades de superação de caos sociais que se avizinham rapidamente de nosso tempo (aumento progressivo do desemprego, aumento de marginalização dos indivíduos, aumento de atividades econômicas informais, aumento de impostos sobre a produção do sistema formal, inadequação educacional do homem para os novos processos produtivos, etc...).

Diante deste quadro, considero muito importante que se pense educação como processo fundamental de inserção do indivíduo na sociedade. Aliás, com o desaparecimento lento e progressivo da importância de quaisquer tipos de títulos (ou da expressão social da família), configura-se a formação educacional de boa qualidade como um dos meios de nivelamento das potencialidades humanas na busca da diminuição dos limites extremos das desigualdades. Se as sociedades acreditarem que devam tornar os homens mais iguais em possibilidades sociais, precisam reduzir as distâncias das capacidades humanas, o que somente

poderá ser realizado através de processos educacionais que tenham como objetivo a integração construtiva da pessoa ao processo social. E o caminho para o atingimento deste objetivo será feito pela estrada da educação, fundamentada na universalização da educação básica de qualidade e em metas de profissionalização que visem a empregabilidade, isto é, que o cidadão ou a cidadã sejam preparados para os fazeres científico e tecnológico, além é claro de domínio das humanidades, sem a preocupação com o posto de trabalho. Devemos instrumentalizar o indivíduo de saberes necessários ao bom desempenho social e não, a empresa que é caracteristicamente mutável e adaptável a processos distintos em cada tempo. O homem é que deve ser o objetivo fundamental da educação profissional. Quaisquer outros objetivos desvirtuarão esta proposta educacional.

O homem terá que voltar a aprender que toda pessoa precisa saber fazer alguma coisa. Uma prática profissional será indispensável para que o mundo possa ser lido de outra forma. O conceito não é novo. Ao contrário, é muito antigo, mas ainda essencial para que o homem e a mulher respeitem os outros homens e mulheres. A vida, o trabalho profissional precisarão ser resgatados em seus valores de construção da personalidade humana.

Como as atividades profissionais são, nas áreas das tecnologias, crescentemente, amplas e profundas, os melhores preparados para o desenvolvimento das funções técnicas serão os que tiverem uma formação tecnológica generalista com aprofundada base científica e concreta visão das questões humanas. E este procedimento formativo será utilizado em qualquer nível de capacitação, ou seja o básico (qualificação profissional e técnico de nível médio) ou no superior (tecnólogos, engenheiros, bacharéis e outros).

No Brasil, daqui a vinte e cinco anos, a educação profissional terá as características descritas no parágrafo anterior e voltará a ser uma responsabilidade executiva dos governos federal, estaduais e municipais. A complexidade das formações eliminará as possibilidades de empresas privadas alcançarem resultados satisfatórios. No entanto, poderão fazê-lo, gastando muito. A formação de recursos humanos na própria empresa será altamente dispendioso. Ficará mais fácil, contratar um generalista bem preparado e formatá-lo às necessidades da empresa com a orientação profissional adequada. O processo de adaptação ao sistema tecnológico de produção terá custo muito inferior a qualquer processo parcial ou totalmente financiado pela empresa.

O papel do governo federal será o de planejar e coordenar as formações nos vários níveis e, dentro deles, as várias necessidades de profissionais para os setores produtivos. Ele, no entanto, nunca poderá abandonar execuções próprias de processos de educação profissional, visto que, os estados e municípios enfrentam dificuldades para atenderem as necessidades mais singelas das populações carentes em áreas educacionais prioritárias.

As grandes agências privadas de educação profissional, como Senai, Senac e Senar, estão sendo dirigidas para a satisfação dos interesses das grandes corporações empresariais

ou vendendo serviços, apesar de serem mantidas com verbas públicas, e, por isso, estão perdendo sua originalidade e finalidade.

As correntes que hoje, proclamam o afastamento dos governos da manutenção das várias propostas de educação profissional, querendo que as empresas privadas sejam prioritariamente as mantenedoras destas propostas, terão que revisar seus termos diante do atrelamento dos processos educacionais aos interesses cada vez mais fortes das grandes corporações, ficando a grande quantidade de empresas médias e pequenas (aquelas que verdadeiramente promovem o aumento de empregos) à deriva, sem as condições de crescer e ampliar seus espaços, e consolidando a tendência à concentração do capital nas mãos, cada vez mais, de um número menor de mega empresas. Sem considerarmos aqui os capitais flutuantes que andam mundo a fora, especulando e criando sérios problemas as nações emergentes; pois, eles poderão provocar a desorganização da economia mundial, produzindo uma hecatombe financeira de proporções inimagináveis. E, aí, a cara do mundo mudaria para a barbárie. Se isto acontecer, nenhuma prospecção futura ajudará.

Panelist 21:

As public authority, the Federal Government will have a role of policies generator and directives inducer source. All operational mechanism will leave the public sphere and will be under the responsibility of the productive sector.

Vocational-technical education and training will not be anymore a concern of the Government. The latter will be a partner, but not the leader.

Answer provided in Portuguese:

Como instância pública, o Governo Federal terá um papel de gerador de políticas e de fonte indutora de diretrizes. Todo o mecanismo operacional sairá da esfera pública e ficará sob a responsabilidade do setor produtivo.

A educação profissional não mais será ocupação do Governo. Este será um parceiro, porém, não, condutor.

Panelist 22:

In order to answer this question I split vocational from technical education, because the treatment of each is slightly different.

Vocational. Federal government or a federally mandated budget will continue to fund good part of the training. But delivery will remain in private or semi-private hands (descendants of SENAI, MTB/FAT etc.). There may be changes in the origin of the funds (from levy to regular budgets) but central government will have to remain a major funder - even though it will be losing market share to other levels of government and the private sector.

Technical. Progressive disengagement of MEC from this training which should be transferred to states and municipalities. MEC will neither fund nor operate.

But Federal Government will retain its policy, normative and evaluation role. In addition, federal government may fund selectively in some strategic areas, particularly the R&D of training.

Panelist 23:

As Brazil is the large country with heterogeneous population the role of the federal government is to create many optional models of vocational education and training (VET) including modern technology for people. Different people with varied social backgrounds will need many choices. The role of the federal government might be:

- to define and set the framework of educational policy goals for VET in collaboration with ministries of labour and education/culture,
- to ensure that VET is an essential and integrated part of the Brazilian educational system at all levels (kindergarten, primary, secondary, tertiary and adult education),
- to plan and suggest optional educational pathways to advance in VET (e.g., school-based route, work-based or apprenticeship route, mixed routes, VET examination for adults recognizing prior learning etc.), and
- to plan, suggest and evaluate different options of funding VET. (To tell one functional experience from the other side of the world: The Nordic countries are funding the huge and organized VET systems by tax money that has created equal and democratic choices and opportunities to all people.)

QUESTION 2:

Based on your perception of how the future may be by the year 2025, how should vocational-technical education and training in Brazil be organized by the year 2025 - who should provide

it, who should fund it, in which format, etc. ? If you envision different forms of organization for different futures be free to express your opinions. Do not attempt to rank your predicted forms of organization; this issue will be dealt with in future rounds, if necessary. [NOTE: Responses are listed in no particular order; the numbers do not represent particular respondents.]

Panelist 1:

We count on that by 2025, a new institutionality of vocational-technical education and training (educação profissional) may have consolidated in the country, in terms of actors, agents, programs, pedagogical and management models. In this new institutionality, courses and programs will be offered based on the marketplace and workers demand (instead of depending on the offer of the vo-tech education and training providers, as it happens today, that is, vocational-technical education and training in Brazil, historically, has been organized based on the offer of available or possible programs, rarely taking into consideration the profile of the clientele and the needs of the labor market; it is very common the offer of training “packages” such as TWIs - training within the industry - which were popular in the 1970s).

Besides this, there must be outlined and operational, a network of vocational-technical education and training that includes a wide diversity of existing institutions, from the public and private sector: vocational-technical schools; universities; unions, Non Governmental Organizations (NGOs), associations and foundations of workers and employers. As to the latter, they can be not only unions but also class associations. In the case of employers, for instance, there are various sectorial associations - textile, electroelectronics etc., which are present in vocational-technical education and training (educação profissional). Workers also have cultural, assistance or educational associations, independent from the unions.

The tripartism or multipartism in the management of vocational-technical education and training (educação profissional) must be implemented. The financing will be public and private, combined and maximizing the various different existing funds (as the FAT - Worker Support Fund [Fundo de Amparo ao Trabalhador], compulsory tributes such as those that fund the S System - a nationwide vo-tech education and training system run by business and industry -, external sources and productive sector investments [*]).

[*] The FAT is a public fund, managed by a triparty council, which guarantees, among other actions, the funding of the Public System of Employment in Brazil; the so called S System - Senai/Sesi, Senac/Sesc, Senar, Senat/Sest, Sebrae - is funded by compulsory contributions over the pay-roll of the companies connected to each entity (in the case of Senar, the contribution over the revenue); there are also direct investments of the companies and foreign loans, from the Inter-American Development Bank (IDB) and the International Bank for

Reconstruction and Development - The World Bank (IBRD), among others, in vocational-technical education and training (educação profissional). All the mentioned sources constitute today, in Brazil, a considerable mass of resources applied in vocational-technical education and training (something like R\$4 billion per year - around US\$3.6 billion). Its use, however, is done in a non articulated way, rarely submitted to some kind of evaluation/supervision. The vision of the future is to articulate all those sources, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favor of the generation of work and income, as well as in the modernization of the productive sector.

Answer provided in Portuguese:

Contamos em que, por volta de 2025, possa ter se consolidado uma nova institucionalidade da educação profissional no país, em matéria de atores, agentes, programas, modelos pedagógicos e de gestão. Nessa nova institucionalidade, cursos e programas serão ofertados a partir da demanda do mercado de trabalho e dos trabalhadores (em lugar de partir da oferta das entidades formadoras, como hoje acontece, isto é, a educação profissional no Brasil, historicamente, tem se organizado com base na oferta de cursos disponíveis ou possíveis, raramente levando em conta o perfil da clientela e as necessidades do mercado de trabalho; é muito comum a oferta de "pacotes" de treinamento, a exemplo dos TWIs - training within the industry - popularizados nos anos 70).

Além disso, deverá estar desenhada e operante uma rede de educação profissional que envolva a ampla diversidade de instituições existentes, do setor público e privado: escolas técnicas; universidades; sindicatos, ONGs, associações e fundações de trabalhadores e de empregadores. Quanto a estas últimas, podem se tratar tanto de sindicatos, quanto de associações de classe. No caso dos empregadores, por exemplo, há diversas associações setoriais - têxtil, eletroeletrônica etc., que atuam em educação profissional. Trabalhadores também têm associações culturais, assistenciais ou educacionais, independentes de sindicatos.

O tripartismo ou multipartismo na gestão da educação profissional deverá estar implementado. O financiamento será público e privado, juntado e maximizando os diferentes fundos existentes (como o FAT - Fundo de Amparo ao Trabalhador, contribuições compulsórias como as que financiam o Sistema S, fontes externas e investimentos do setor produtivo [*]).

[*] O FAT é um fundo público, administrado por um conselho tripartite, que garante, entre outras ações, o financiamento do Sistema Público de Emprego no Brasil; o chamado Sistema S - Senai/Sesi, Senac/Sesc, Senar, Senat/Sest, Sebrae - é financiado por contribuições compulsórias sobre as folhas de pagamentos das empresas vinculadas a cada entidade (no caso do Senar, a contribuição se faz sobre o faturamento); há ainda investimentos diretos das empresas, assim como empréstimos externos, do BID e BIRD, entre outros, em educação profissional. Todas as fontes indicadas compõem hoje, no Brasil, uma considerável massa de

recursos aplicados em educação profissional (algo como R\$4 bilhões ao ano). Sua aplicação, no entanto, se dá de forma desarticulada, raramente sujeita a algum tipo de avaliação/supervisão. A visão de futuro é articular todas essas fontes, sem prejuízo de sua aplicação descentralizada, garantindo, ao mesmo tempo, a participação dos principais interessados - trabalhadores e empresários - na definição de sua aplicação, em prol da geração de trabalho e renda, bem como da modernização do setor produtivo.

Panelist 2:

Not knowing much about the current funding and structure of vocational-technical education in Brazil, I will take a stab at answering this and hope my comments aren't too outlandish or just completely foolish.

By the year 2025, I would encourage a system of vocational-technical education that relies on many providers and that gives individuals a great deal of choice, based on performance, of where they want to obtain their education and training. For younger students, there would be less choice involved than for older students or adults. However, students could choose certain programs based on their career interests and the quality of those programs.

Funding would come from the government but would be provided directly to individuals, as opposed to institutions or programs. Once an individual received funding support, based on need or some other criteria, he or she could use that support to pay for services from a wide range of providers, including the private sector. I would see a system that encourages quality of service, and any provider that could meet quality standards could be eligible to accept students with government funds.

I also believe that by 2025 some amount of vocational-technical education would be provided through educational technologies and distance learning. This opens up a whole range of opportunities for individual learners, especially those who are in remote locations. For adults already in the workforce, programs will be shorter and more often related directly to work needs and often provided on the job. Classroom teaching will have to be linked to real work applications and experiences. Students will demand more hands-on teaching and learning.

I would see the government being very supportive of vocational-technical education and training, as they see the value of improving the skills of their citizens. Funds for these programs could come from a training tax on employers, although small employers would be exempt.

As you can see from this sketch, I envision a loosely organized system of vocational-technical education and training, drawing upon the best providers, wherever they may be. Competition

between public and private will help to ensure that quality remains high. Distance learning and educational technology will be a predominant part of this scenario.

Students, both young and old, will have the information (on performance and outcomes) available to them to select the best provider of education and training to meet their needs.

Panelist 3:

Vocational-technical education should be provided by the educational system, basically funded by the state. This holds for the first general qualification that should give all the graduates of the system an opportunity to enter the labor market. When having a first job in line of one's vocational-technical education, the employer will have the responsibility of further training. This may be organized on-the-job, but also off-the-job, oriented towards skills and knowledge in the present jobs as well as those needed in future jobs (career development training). When individual interests prevail, the individual can also invest in his/her own further training (in free time, taken courses of educational programs from the public educational system). Training of unemployed should be the responsibility of the state.

Panelist 4:

1. The government (levels: Federal, State and Municipal) will have guaranteed a solid Basic Education (Educação Básica), of good quality, of eleven years for almost all Brazilian citizens.

Scenario: 90% of the Brazilian in the fifteen/sixteen age group would have completed K-8 grades [Ensino Fundamental]; 80% of the twenty-year-olds would have completed 9-11 grades [Ensino Médio]; 1/3 of the young population, in the 18 to 30 age group would have access to Higher Education [Educação Superior] (Technology, Baccalaureate and Licentiatehip [Licenciatura = Teacher Education]).

2. The Vocational-technical Schools [Escolas Técnicas] will become Technology and Reference Centers [Centros de Referência e Tecnologia] for the regions where they are located and for the occupational clusters in which they offer programs.

Scenario: 50% of the young population, in the 15 to 25 age group, would have access to the beginning programs of Vocational-Technical Education and Training [Educação Profissional] (Basic Preparation for Work [Qualificação Profissional], in the levels Basic [Básico], Technical Assistant [Auxiliar Técnico], Secondary Level Technician [Técnico de Nível Médio] and Associate of Applied Sciences [Tecnólogo de nível superior]); 2/3 of the working

population would have access to work-targeted programs of specialization, improvement and updating.

3. Alternatives of Vocational-technical Schools [Escolas Técnicas]:

- Vocational-technical Schools organized, maintained and, operated by the Public Government: Federal, State and Municipal.
- Vocational-technical Schools organized, maintained, and operated by Companies organized in Unions and Federations, with compulsory contributions, such as SENAI and SENAC.
- Vocational-technical Schools organized, maintained, and operated by workers organized in unions and Union Centrals, with compulsory contributions such as union tax and Assistance to the Unions contribution.
- Vocational-Technical Education and Training Public Centers, of triparty Management (government, entrepreneurs and workers) which articulate efforts and resources from the resources of the Vocational-technical Schools supported by the Government, by the entrepreneurs and by the workers, as well as the resources present in the community (Educational Institutions at all levels. NGOs, Enterprises, Unions, local Governments, local leaderships).
- Vocational-technical Schools supported and operated by private initiative, with and without agreements with companies located in the region.

4. The Vocational-technical Schools as Technology and Technical Reference Centers:

- They will offer initial Preparation for Work [Qualificação Profissional inicial]:
 - Basic: independent of the number of schools years the candidate has completed before beginning a program;
 - Technical Assistant: for those who completed K-8 [Ensino Fundamental].
 - Secondary Level Technician: for students the are in high school (9-11 grades) or completed high school [Ensino Médio].
 - Associate of Science: for those who completed high school [Ensino Médio].
- They will offer Work-targeted Specialization, Improvement and Updating programs to individuals who have already joined the workforce or that have already been trained before.
- They will offer alternatives of vocational-technical certification [certificação profissional] for those who acquire their skills through work-based training, taking advantage of the non formal alternatives of Preparation for Work [Qualificação Profissional], or through self-learning. The criteria and parameters of this vocational-

technical certification will be agreed upon among the educators, workers and entrepreneurs, mediated by the Government.

5. Vocational-technical Schools of the future will have less to do with the present Vocational-technical Schools. They will basically point to the workers, in articulation with Business and Industry. The students will have work-related and educational experiences in integrated situations of laboratory, research and supervised workplace internships. Vocational-technical Schools will become a meeting point for researchers, entrepreneurs and workers interested in the technical and technological development.

Answer provided in Portuguese:

1. O governo (níveis: Federal, Estadual e Municipal) terá garantido uma sólida Educação Básica, de boa qualidade, de onze anos a quase todos os cidadãos brasileiros.

Cenário: 90% dos brasileiros da faixa etária dos quinze/dezesseis anos teria concluído o Ensino Fundamental; 80% na faixa etária dos vinte anos teria concluído o Ensino Médio; 1/3 da população jovem, na faixa etária dos 18 aos 30 anos teria acesso à Educação Superior (Tecnologia, Bacharelado e Licenciatura).

2. As Escolas Técnicas se constituirão em Centros de Referência e Tecnologia para as regiões onde estão implantadas e para os setores ocupacionais nos quais atuam.

Cenário: 50% da população jovem, na faixa etária dos 15 aos 25 anos, teria acesso a programas iniciais de Educação Profissional (Qualificação Profissional, nos níveis Básico, Auxiliar Técnico, Técnico de Nível Médio e Tecnólogo de nível superior); 2/3 da população trabalhadora teria acesso a programas profissionalizantes de especialização, aperfeiçoamento e atualização.

3. Alternativas de Escolas Técnicas:

- Escolas Técnicas organizadas e mantidas pelo Poder Público: Federal, Estadual e Municipal.
- Escolas Técnicas organizadas e mantidas por Empresas organizadas em Sindicatos e Federações, com contribuições compulsórias, tipo SENAI e SENAC.
- Escolas Técnicas organizadas e mantidas pelos trabalhadores organizados em sindicatos e Centrais Sindicais, com contribuições compulsórias do tipo imposto sindical e contribuição Assistencial aos Sindicatos.
- Centros Públicos de Educação Profissional, de Administração tripartite (governo, empresários e trabalhadores) que articulem esforços e recursos das Escolas Técnicas mantidas pelo Governo, pelos empresários e pelos trabalhadores, bem como recursos

presentes na comunidade (Instituições Educacionais de todos os níveis. ONGs, Empresas, Sindicatos, Governos locais, lideranças locais).

- Escolas Técnicas mantidas pela iniciativa privada, com ou sem convênios com empresas da região.

4. As Escolas Técnicas como Centros de Referências Técnica e Tecnologia:

- Oferecerão cursos de Qualificação Profissional inicial:
 - Básico: independentemente da escolaridade inicial do candidato.
 - Auxiliar Técnico: para concluintes do Ensino Fundamental.
 - Técnico de Nível Médio: para alunos ou egressos do Ensino Médio.
 - Tecnólogo: para concluintes do Ensino Médio.
- Oferecerão cursos de Especialização, Aperfeiçoamento e Atualização Profissional a trabalhadores já engajados na força de trabalho ou já qualificados.
- Oferecerão alternativas de certificação profissional para aqueles que se qualificarem na prática do mercado de trabalho, aproveitando-se das alternativas não formais de Qualificação Profissional ou de forma autodidata. Os critérios e os parâmetros para essa certificação profissional serão acordados entre educadores, trabalhadores e empresários, mediados pelo Governo.

5. As Escolas Técnicas do futuro terão pouco a ver com as atuais Escolas Técnicas. Elas se voltarão basicamente para os trabalhadores, em articulação com as Empresas. Os alunos viverão experiências educacionais e profissionais em situações integradas de laboratório, pesquisa e estágios profissionais supervisionados. As Escolas Técnicas se constituirão em ponto de encontro de pesquisadores, empresários e trabalhadores interessados no desenvolvimento técnico e tecnológico.

Panelist 5:

Item #2: How to organize vo-tech education and training: who to provide it; who to fund it; in what format? My views/recommendations on these questions are as follows:

- Who to provide it?

Much of vo-tech education by the year 2025 will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology. There will be need therefore to involve business and industry to a much greater extent for selected occupational areas, with the schools providing general

foundation training and employers providing the more advanced training through cooperative arrangements with the schools. Schools, on the other hand, will need to provide more in-service training for workers through joint ventures with local employers. A system of regional vo-tech schools will be necessary for the basic, more general, training, with authority vested in the regions' respective states for supervision and for ensuring that basic academic and training standards are being met. The federal government will still need to be involved for providing general leadership and funding for selected areas as indicated in Item #1.

- Who to fund it?

The respective state governments will need to provide a portion (possibly 1/2) of the funds required for operation of the vo-tech schools. The remaining operational funds would need to be generated locally, e.g., from local taxes, private sector contributions, income earned from joint training ventures with business and industry, adult training tuition, etc. Federal funds should be provided for support of research, development and dissemination of guidelines, incentives for development/demonstration of exemplary programs, teacher training, leadership and administrative training, and the national advisory council.

- In what format?

A greater part of vo-tech education and training in the years ahead will need to be pushed toward the post-secondary level. This will allow room in the curricula for expanding/increasing the general education content and for providing more generalized, broader-based technical instruction in preparation for the specialized training. In addition, there will be need to build in some formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire program. The setting for vo-tech education and training will be in the schools and participating business and industry enterprises.

Panelist 6:

The organization of vocational-technical education and training (educação profissional) will be completely determined by the companies individually or by partnership systems among them, without no interference or participation of the federal government. VTET (educação profissional) will be offered by the companies. The funding will come from the companies themselves, with some government incentives for programs considered to be strategic peoplepower development. The format will be in the shape of specialized training, short-term and for recycling of skills (updating/retraining), through continuing education. There will not be either a government system (public) which offers VTET or public funding for VTET.

Answer provided in Portuguese:

A organização da educação profissional será inteiramente determinada pelas empresas individualmente ou por sistemas de parceria entre elas, sem nenhuma interferência ou participação governo federal. A educação profissional será ofertada pelas empresas. O financiamento será das próprias empresas, com alguns incentivos governamentais para programas considerados estratégicos de formação de mão-de-obra. O formato será sobre a forma de treinamento especializado, de curto prazo e de reciclagem, através da educação continuada. Não haverá sistema governamental (público) de oferta e/ou financiamento de Educação Profissional.

Panelist 7:

In the educational area, the innovations and tendencies of the period will be highlighted more emphatically in the *design* or format chosen for serving the clientele.

It can be acknowledged, that despite the adoption of new technologies in education is still timid in Brazil, it can be verified some concrete attempts in the private sector and some planned actions for the governmental sector.

Meanwhile, that evolution will not happen, while the mindset of the teaching staff and of the professionals of the educational area is not transformed.

Processes of paradigm change are slow and difficult, more so when the educational system in place is geared to the transference and reproduction of the knowledge and techniques of the past.

It is expected that the use of computers and telecommunications for educational purposes come to develop new mentalities of teaching/learning more suitable for the expectations of society.

Without question it will be a more specialized format, geared to the clientele needs, favoring the development of all human potential, in a more holistic view of the being.

Flexibility, rapidity, low cost, virtuality will be for sure attributes of the education of the future, and more so when it is an adult public who gets interested in vocational-technical education and training [VTET].

Creativity and openness to changes will have to be emphasized so that the new generations can each time more adapt themselves to the new age, contributing to its evolution.

The form of funding and offer of education in Brazil is connected to the problem of inequality of population income.

Partnership of financial resources between the government and the private sector is always beneficial if it contributes to the democratization of education.

In a moment in history, in which there is a constant search for technological innovations that cut costs and increase productivity, for sure the offer of formal jobs will decrease, as well as their nature.

Less specialized and mechanic occupations and tasks will tend to disappear, requiring that the contribution of the human labor be creative and intelligent.

In this way, the access to VTET is crucial for man to insert himself in the productive sector and have a dignified pay for his labor.

If there is not ample and non restricted democratization of education, there will not be a balanced society.

Format, funding and offer of education must be geared so this goal may be achieved. Double partnerships (government/private sector) or triple (government/private sector/society), any format will be valid.

It will be important to guarantee that the future generations have this belief, because the formal solution for these items, for sure will be found and much more creative than our generation can outline now.

Answer provided in Portuguese:

Na área educacional, as inovações e tendências da época serão evidenciadas mais enfaticamente no *design* ou formato escolhido para o atendimento à clientela.

Admite-se, que apesar de ainda ser tímida a introdução das novas tecnologias na educação, no Brasil, já se verificam algumas tentativas concretas no setor privado e algumas ações planejadas para o setor governamental.

Entretanto, essa evolução não se dará, enquanto não acontecerem transformações na mentalidade do corpo docente e dos profissionais da área de educação.

Processos de mudança de paradigmas são lentos e difíceis, mais ainda quando o sistema educacional vigente está voltado para a transferência e reprodução de conhecimento e técnicas do passado.

Espera-se que o uso da informática e das telecomunicações com fins educacionais venha a criar novas mentalidades de ensino/aprendizagem mais condizentes com as expectativas da sociedade.

Sem dúvida será um formato mais personalizado, voltado para as necessidades da clientela, privilegiando o desenvolvimento de todo o potencial humano, numa visão mais holística do ser.

Flexibilidade, rapidez, custo reduzido, virtualidade serão com certeza atributos da educação do futuro, mais ainda quando se trata de um público adulto interessado em educação profissional.

Criatividade e abertura a mudanças deverão ser enfatizadas para que as novas gerações possam cada vez mais adaptarem-se à nova era, contribuindo para sua evolução.

A forma de financiamento e oferta de educação no Brasil está ligada ao problema da desigualdade de renda da população.

Parceria de recursos financeiros entre o governo e setor privado sempre é salutar caso isto contribua para a democratização da educação.

Numa era, em que existe uma busca constante por inovações tecnológicas que cortem custos e aumentem a produtividade, com certeza a oferta de empregos formais diminuirá, como também a natureza deles.

Ocupações e tarefas menos especializadas e mecânicas tenderão a desaparecer, exigindo que a contribuição do trabalho humano seja inteligente e criativo.

Desta forma, o acesso à educação profissionalizante é crucial para que o homem insira-se no setor produtivo e tenha uma remuneração digna pelo seu trabalho.

Não havendo democratização ampla e irrestrita da educação, não haverá uma sociedade equilibrada.

Formato, financiamento e oferta de educação devem estar orientados para que se consiga este objetivo. Parcerias duplas (governo/setor privado) ou triplas (governo/setor privado/ sociedade), qualquer forma será válida.

Será importante garantir que as gerações futuras tenham esta crença, pois, a solução formal para estes quesitos, com certeza será encontrada e muito mais criativa do que a nossa geração pode delinear agora.

Panelist 8:

Technological Education, at 9-11/12 grade and higher education level (Educação Tecnológica, de nível médio e superior). The public offer will happen at all levels of government. The federal government will have to support and operate a “reference network”, of the highest quality, in charge also of developing instructors for technological education. Important part of the offer of slots in technological education will fall to the private entities, which may receive subsidies, depending on the evaluation made by the Federal Government.

Basic Vocational-Technical Education and Training [Training] (Educação Profissional Básica). The public offer will fall to the bigger size Municipalities and the States may support initiative in the smaller or poorer Municipalities. The patronal agencies (the “S’s”) may collaborate with an offer for all, independently of the individuals having a job or not. Other private initiatives, for profit or not, may receive subsidies based on a certain amount of money per slot offered or scholarships for enrollment.

Answer provided in Portuguese:

Educação Tecnológica, de nível médio e superior. A oferta pública se dará em todos os níveis de governo, cabendo ao governo federal a manutenção de uma “rede de referência”, do mais alto nível, encarregada inclusive da formação de professores. Parcela importante da oferta de vagas ficará a cargo de entidades privadas, que poderão receber subsídios, dependendo da avaliação feita pelo Governo Federal.

Educação Profissional Básica. A oferta pública ficará a cargo dos Municípios de maior porte e os Estados poderão apoiar iniciativas nos Municípios menores ou mais pobres. As agências patronais (“S’s”) deverão colaborar com a oferta para todos, independentemente do vínculo empregatício e outras iniciativas privadas, lucrativas ou não, poderão receber subsídios na base de um tanto por vaga ou bolsas para a matrícula.

Panelist 9:

1. Part of the response was already provided in Question 1. The offer should be provided by the Public Government, private initiative and the institutions that operate in the area linked to the Ministry of Labor, through a specific National Secretariat. Funding should consider that when the offer of programs is public, instruction should be entirely free, being admissible complementary and additional forms of fund raising, through co-operatives and services rendering (that should not be confused with “extension”, because that, due to its nature, should also be free). SENAI, SENAC... already have specific funding formats which should be kept. As to private initiatives, mechanisms may be developed to serve the needs of the destitute population, with the purpose of democratization of the educational opportunities:

as we talking about “vocational-technical education and training [VTET] (educação profissional),” the mechanism may be similar to the “student loan (crédito educativo),” therefore counting on the recovery of the investment for the refinancing of the process. There should be also considered the partnership with interested companies in the development or update of human resources for their own needs, as its happens in other countries, particularly in the European Union.

2. As to the format, I want to insist on the need to assure the compatibility between development for professions (special development) with general education, inclusive to assure the continuation of studies at higher levels, always having the perspective of the democratization of the educational opportunities. It is going backwards to propose a distinction among the forms of education, similar to what happened until the 1950s, when there was not the equivalence of studies; the system was anti-democratic and biased. On the other side, due to the technological advance and the continuous need for improvement, updating, recycling and professional reversion, general education becomes more important. In other words: globalization (the mundialization (a mundialização)) is to strengthen a good general education.

Answer provided in Portuguese:

1. Parte da resposta já foi dada na Questão 1. A oferta deve caber ao Poder Público, à iniciativa privada e às instituições que atuam na área com vinculação com o Ministério do Trabalho, por meio da Secretaria Nacional específica. O financiamento deve considerar que quando a oferta for pública o ensino deverá ser inteiramente gratuito, admitindo-se formas complementares e adicionais de levantamento de recursos, por meio de cooperativas e prestação de serviços (que não se deve confundir com a “extensão”, pois essa, pela sua natureza, também deverá ser gratuita). SENAI, SENAC... já possuem formas específicas de financiamento, que devem ser mantidas. No que se refere à iniciativa privada podem ser previstos mecanismos para atender às populações carentes, com a finalidade de democratização das oportunidades educacionais: como estamos falando de “educação profissional”, o mecanismo pode ser similar ao “crédito educativo”, portanto com a previsão de retorno do investimento para o refinanciamento do processo. Também deve ser considerada a parceria com empresas interessadas na formação ou atualização de recursos humanos para as suas necessidades, como ocorre em outros Países, especialmente na União Européia.

2. Quanto ao formato, quero insistir na necessidade de se assegurar a compatibilidade entre a formação profissional (formação especial) com a educação geral, inclusive para assegurar o prosseguimento de estudos em níveis ulteriores, sempre na perspectiva da democratização das oportunidades educacionais. É um retrocesso propor a distinção entre as formas de educação, à semelhança do que ocorria até a década de 50, quando inexistia a equivalência de estudos; o sistema era anti-democrático e preconceituoso. Por outro lado, com o avanço tecnológico e a contínua necessidade de aperfeiçoamento, atualização, reciclagem e reversão

profissional, mais importante se torna a educação geral. Em outras palavras: a globalização (a mundialização) estão a fortalecer uma boa educação geral.

Panelist 10:

Basic development professions (formação básica profissional) - in one of the 5-6 clusters alluded above (Question 1) - will occur mandatorily during 9-11/12 grade instruction (15-17 age group) being part of the curriculum as will be disciplines that provide individuals with a general humanistic and scientific development: Communication, Social Studies, and Sciences.

That development - general and profession geared - will be offered concomitantly or in the same school, public or private, or in Schools Consortiums where certain disciplines may be taken. In order to complete 9-11/12 grade instruction, the students will have to taken all the general and “profession-gearred courses” which will have an equivalent number of hours of instruction.

Contents more “applied” or of major applicability today offered in 9-11/12 grade instruction will become part of the “profession-gearred” curriculum.

Beyond the role of stimulator and guide, the Federal Government will provide some financial support and will promote the support of the State and Municipal Governments as well as of the Companies (specially the local ones) and of the community through contributions.

As to the post secondary programs, they must be mostly offered by private initiatives.

Answer provided in Portuguese:

A formação básica profissional - num dos 5-6 troncos apontados acima (Questão 1) - ocorrerá obrigatoriamente durante o 2º. Grau (faixa etária 15-17 anos) sendo parte do currículo ao lado de disciplinas de formação geral humanísticas e científicas: Comunicação, Estudos Sociais e Ciências.

Essa formação - geral e profissional - será oferecida concomitantemente ou na mesma Unidade de Ensino tanto de escolas públicas como privadas ou em Consórcios de Escolas onde poderão ser cursadas determinadas disciplinas. Para terminar o 2º. Grau deverão ter sido realizadas todas as disciplinas profissionais e gerais que terão uma carga horária equivalente.

Conteúdos mais “aplicados” ou de maior aplicabilidade hoje oferecidos no 2º. grau regular (científico) passarão a ser parte do currículo profissional.

Além do papel de estímulo e orientação, o Governo Federal dará algum apoio financeiro e promoverá o apoio dos Governos Estaduais e Locais, bem como das Empresas (sobretudo locais) e da comunidade através de taxas.

Nos cursos pós-secundários, a participação da iniciativa privada deverá ser majoritária.

Panelist 11:

I do not know a great deal about how Brazil now organizes its education and training, but I presume that in a country as vast in area and as large in population there must be some type of federal structure. In this situation, Brazil might want to consider the way the United States and some other industrialized countries are moving in terms of setting national education and skill standards, measuring students' mastery of such standards, and then allowing flexibility in instruction at the regional and local levels. I also do not know how Brazil funds education and training, but it would seem that any nation to be competitive will have to have earmarked governmental funds for skill development, or have companies willing to pay for on-going training and re-training.

Panelist 12:

The organization of VTET (educação profissional) in Brazil must be based in a few assumptions to face with competence and safety the challenges to come around the 2025 temporal setting.

1. The fundamental principle acknowledges the technic not as autonomous itself and not determinant of the social outcomes.
2. There is necessity to bring closer the relations between the scientific and technological advancements, and the worker, in all levels, so that this not be considered as production object.
3. It is also necessary to bring closer the conception and execution functions, eliminating the distance between the intellectual and manual work.
4. The labor world is in complete revolution. It is indispensable that education establishes links closer and closer to this new dimension;

5. Consequently, education and work express differentiated sectors but, recurring ones of production and of accumulation of theoretical-practical knowledge, because work, create and learn are part of the workers' daily life.

Such assumptions place VTET (educação profissional) in a position that surpasses the learning of single technical applications for the immediate use in the labor market. The involvement of VTET with the sciences and technic advancements become necessary for the establishment of a circle of participation among the generation, transference, and application of technologies. As a matter of fact, the selection, use and absorption of a technology requires a level of technological familiarity, of the same magnitude of the necessity to generate it.

In practical terms, it will fall to the organizations to implement principles and actions of progressive decentralization. It will be the Union (União) duty to establish policies and strategies, defining objectives and supporting actions with specific resources which will benefit the regions. The federal government may be support and operate some VTET institutions which will be reference sites and excellence centers.

The States must be stimulated, in partnership with their Municipalities, to develop expansion and improvement activities of the VTET institutions. The States and the Municipalities must be the promoters of public VTET for all workers of all levels and ages creating, supporting and operating tuition-free centers. The existence of public VTET does not liberate the participation and the collaboration of private initiatives in providing VTET, as the latter is an important segment of society.

The public policies and actions geared to VTET (educação profissional) must not inhibit the initiatives of the productive segments linked to private initiative. Consequently, the task of organizing VTET (educação profissional) in Brazil is too big to be exclusively at the hands of the Public Government. Society as a whole, including the productive segments, must participate actively, inclusive, developing their own development for professions (formação profissional) networks.

The strategy of having the States and Municipalities to take care of the organization of actions regarding to VTET, besides constituting an element that will facilitate the principle of decentralization, it will bring closer such actions to the regional peculiarities and characteristics.

Opportunely, alternative models may be studied and implemented, according to the organizational principles here described in short.

Certainly, in this research, the questions will have to be deepened, specially at to the participation of VTET (educação profissional) in the prospective scenarios of changes and transformations happening in the modern world. Such participation will alter, without question, the VTET profile, causing impact on its profile, attributions and competencies. In

other words, which would be the role to be performed by VTET (educação profissional) in those scenarios of transformation having in sight a better integration to a distinctively technological society ?

Answer provided in Portuguese:

A organização da educação profissional no Brasil deve estar baseada em alguns pressupostos para enfrentar com competência e segurança os desafios da esfera temporal de 2025.

1. O princípio fundamental admite a técnica não como autônoma por si só e não determinante dos resultados sociais.

2. Há necessidade de aproximar as relações entre os avanços científicos e tecnológicos e o trabalhador, em todos os níveis, para que este não seja considerado como objeto de produção.

3. Urge também aproximar as funções de concepção e de execução, eliminando o distanciamento entre o trabalho intelectual e manual.

4. O mundo do trabalho encontra-se em plena revolução, tornando-se imprescindível que a educação estabeleça laços cada vez mais estreitos com esta nova dimensão;

5. Consequentemente, educação e trabalho exprimem setores diferenciados mas, recorrentes de produção e de acumulação do conhecimento teórico-prático, pois trabalhar, criar e aprender fazem parte do cotidiano dos trabalhadores.

Tais pressupostos colocam a educação profissional num patamar que ultrapassa a aprendizagem de simples aplicações técnicas para o exercício imediato do mercado de trabalho. Seu envolvimento com os avanços das ciências e das técnicas torna-se necessário para o estabelecimento de círculo de participação entre a geração, transferência e aplicação de tecnologias. Na verdade, a seleção, utilização e absorção de uma tecnologia exige um nível de familiaridade tecnológica, da mesma ordem de grandeza da necessidade de gerá-la.

Em termos práticos caberá às organizações implementar princípios e ações de descentralização progressiva. Competirá à União estabelecer políticas e estratégias, definindo metas e apoiando ações em benefício das regiões com recursos específicos. Algumas unidades escolares poderão ser mantidas pela União, como núcleos de referência e centros de excelência.

Os Estados deverão ser estimulados, em parceria com seus Municípios, a desenvolver ações de expansão e melhoria das unidades de educação profissional. Os Estados e Municípios deverão ser os promotores da educação profissional pública para os trabalhadores

de todos os níveis e idades criando e mantendo centros gratuitos. A educação profissional pública não se exime da participação e colaboração da iniciativa privada, como segmento importante da sociedade.

As políticas e ações públicas orientadas para a educação profissional não devem cercar as iniciativas dos segmentos produtivos vinculados à iniciativa privada. Conseqüentemente, a tarefa de organizar a educação profissional no Brasil é demasiadamente gigante para permanecer exclusivamente nas mãos do Estado. A sociedade como um todo, incluindo os segmentos produtivos, devem participar ativamente, inclusive, desenvolvendo redes próprias de formação profissional.

A estratégia de deixar com os Estados e Municípios a tarefa de organizar as ações em benefício da educação profissional, além de se constituir em elemento facilitador do princípio da descentralização, aproximará tais ações das peculiaridades e características regionais.

Oportunamente, modelos alternativos poderão ser estudados e implementados, de acordo com os princípios organizacionais aqui sumariamente definidos.

Certamente, nesta pesquisa, as questões deverão ser aprofundadas, sobretudo no que diz respeito à participação da educação profissional nos cenários prospectivos de mudanças e transformações que estão envolvendo o mundo moderno. Esta participação alterará, sem dúvida, o perfil da educação profissional, causando impacto sobre seu perfil, atribuições e competências. Em outros termos, qual seria o papel a ser desempenhado pela educação profissional nesses cenários de transformação com vistas a uma melhor integração à sociedade marcadamente tecnológica?

Panelist 13:

Most vocational-technical specific training should happen at the postsecondary or apprenticeship levels... However, much of the ground work and systems work should happen at the secondary levels. I have developed a 2+2 Tech Prep Associate Degree Program to do that ... It is important to develop a seamless curricular program.

Panelist 14:

Technological education is strategic for the development of a country, and will be even more around 2025, when technology will require qualified individuals with a systemic, multidisciplinary, and cybernetic view, therefore, able to interact and work in teams with other qualified individuals of related areas.

For so, technological education must be offered in specialized institutions, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favoring the professional competency of its employees). In our case, the present CEFETs constitute the reference model which can be improved, the later regarding to specific career and autonomy.

Such institutions must be organized to meet the demands of HR in their various levels of instruction which articulate naturally. The various programs/courses offered, including the undergraduate ones, can be terminated or reactivated according to the labor market.

Therefore, the most plausible is that such institutions should be organized in basic and ample departments for the composition of the programs in its various levels. So, as an example in the case of the Industrial Engineering programs, there should be the Departments of Materials, Energy, Multimedia, Management, and others.

In that way, those institutions must have as characteristics the verticality of instruction (all possible levels in the same institution), and strong interaction with the productive sector. Such restructuring (format) is and will be the most appropriate to the necessary flexibilization for supplying HR to the labor market, because, it is more cost effective, agile and socially fairer. Such environment reproduces more accurately the reality of the profession related activities, because, it allows the conviviality of qualified individuals (future) of various levels and their interaction in the participation of technological development projects, generally demanded by the productive sector.

Technological education, for being strategic and by the restrictions alluded before, must be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

Answer provided in Portuguese:

A educação tecnológica é estratégica ao desenvolvimento de um país, e será ainda mais por volta de 2025, quando a tecnologia demandará profissionais com visão sistêmica, multidisciplinar e cibernética, portanto, em condições de interagir e trabalhar em equipe com outros profissionais de áreas afins.

Para tanto, a educação tecnológica deve ser ofertada em instituições especializadas, com uma estrutura leve e flexível, com plena autonomia (didática, administrativa e financeira), com carreira específica (privilegiando a competência profissional de seus servidores). Em nosso caso, os CEFETs atuais constituem o modelo referência que pode ser melhorado, caso da carreira específica e autonomia.

Devem ser organizadas para atender demandas de RH no seus vários níveis de ensino em uma ou mais grandes áreas afins, que se articulam naturalmente, podendo os vários cursos ofertados, inclusive os de graduação, serem extintos ou reativados em função das necessidades do mercado de trabalho.

Portanto, o mais plausível é que tais instituições deveriam ser organizadas em departamentos básicos e amplos para a composição dos cursos nos vários níveis. Assim, como exemplo no caso das Engenharias Industriais, deveriam haver os Departamentos de Materiais, Energia, Multimídia, Gestão, entre outros.

Desse modo, essas instituições devem ter como características a verticalidade do ensino (todos os níveis em uma mesma instituição), e forte interação com o setor produtivo. Tal estruturação (formato) é e será a mais condizente com a necessária flexibilização para atendimento de RH para o mercado de trabalho, pois, é mais econômica, ágil e socialmente mais justa. Tal ambiente reproduz mais fielmente a realidade das atividades profissionais, pois, permite o convívio de profissionais (futuros) de vários níveis e a interação dos mesmos na participação de projetos de desenvolvimento tecnológico, geralmente demandados pelo setor produtivo.

A educação tecnológica, por ser estratégica e pelas condicionantes expostas, deve ser ofertada preponderantemente em instituições públicas (normalmente federais e estaduais) e, como consequência, financiada pelo correspondente poder público. Tal financiamento poderia ser feito na forma de co-gestão, (contrato ou outra forma similar de prestação de serviços), para atendimento das diretrizes e políticas nacionais de desenvolvimento tecnológico do país. Portanto, a sua continuidade dependerá dos objetivos previstos alcançados.

Panelist 15:

For school-age children, the public should (provide), as an option for both academic and non-academic track young people

For school (leavers) at any age, hopefully 16-18 years, but even 14 years, a vocational option through training should be available.

An (advanced), technology-driven society will require highly-skilled persons in ever traditional work. Cleaning buildings and windows, removing and disposing wastes, for example, will be high-tech jobs, or at least, use high productivity materials and processes.

Funding is always a critical issue. I envision much (private) funding though various incentives - both push and pull. To be honest, the public has no money and never had; it gets its (income) from the people as individuals and as they form (commons) in state ownership.

Loans to individuals under long term (repayment provisions) may be an important means of shifting responsibility for a productive return to the beneficiary.

Formats are not fixed. OJT, apprenticeship, on-line, small schools, one-on-one. I think maximum flexibility under virtual conditions is the ideal and should be aimed for.

Note: The words in parentheses are not perfectly readable - the answer was provided in handwriting.

Panelist 16:

Within the perspective of the conservative hegemony of the group which governs Brazil today, the offer of vocational-technical education [VTE] (educação profissional) will be fundamentally regulated by the immediatist view of the market and by the countless private and public institutions, groups, NGOs which take part in the dispute for the public fund destined to finance such type of development (formação). The dominance of the offer, will come from the business or entrepreneurial world, through institutions such as Eivaldo Lodi, Herbert Levy and other traditional ones, transformed in service rendering companies for providing development for professions (formação profissional) - SENAI, SENAC, SESC, SESI, etc. The funding, in part will be through in part by the public fund with partnerships with the private initiative and, for certain programs/courses, the student himself/herself will pay. What will stay dominantly under the control of the private initiative is the content and the organization. In this sense the “theory” or ideology of the “competencies” or of the basic skills - offered by the empirism of the productive world, will be the parameter of the development (formação). Because of that the organizative format will dominantly be of packages or of modules. The polyvalence and the employability, within this ideology, would result in a packet or in a maximized bank of competencies in the ground of basic abilities of knowledge, values, and attitudes, and of quality management.

It is a perspective that reminds well the idea of the accumulation of indulgences that the Catholic Christians should do in Earth to discount one’s sins in the death moment. The bigger the indulgences bank - a species of market of prayers, privations, sacrifices, paid promises etc. - the bigger would be the probability of a position, not a work one, but in the galleries of Heaven.

This perspective is hegemonic today even in the central countries. There is a crucial difference, however. The majority of them has the universalization of the 9-11/12 grade instruction. We have not even universalized 1-4 grade instruction - four years of schooling. But this perspective engenders a paradox or a contradiction. Theoretically the new scientific-technical base, under the aegis of the microelectronics, genetic engineering, new sources of energy, structured the productive process under unitary basis (synthesis of the diverse) of the

knowledge. VTE (educação profissional) in the format of the classical school, in this sense, would constitute in the best development for professions (formação profissional), even taking as a criteria only the economic dimension. With this would come, however, also, the reality of a citizen able to read critically the reality more and more complex and to organize him/herself to have the right to a worthy life, even that the world of employment be more and more scarce and unnecessary.

The dominant scenario does not help even, in the three thirds society, that group of the included ones (the haves). That means that the world sends signals that it does not want to retroact to the past century, so well characterized by the book of the historian Eric Hobsbawn - as the short 20th Century (1996), marked by two World Wars. The solutions for the crisis of this end of century, as indicate this and another authors, will not be in the return to the market, but in societary forms that regulate the destiny of humanity in a democratic public setting in content, method, and format. It is in this scenario that are placed, not without problems, the thesis of economic-social and educative project of the leftist political forces in the last 50 years at least. As everything that is solid breaks up in the air and nothing is eternal in the face of Earth, the struggle of these forces continues at the local, national, and global level. The format, funding, control and organization and content of VTE (educação profissional), if these forces reach the national government in Brazil, will move, not without tough resistance, in the horizon the we indicate in the attached paper on pages 4 e 6 [*] and in the final considerations [**].

[*] Pages 4 through 6 of the alluded paper: see response of panelist 16 to question 1.

[**] Final considerations of the alluded paper:

(Beginning of page 9.)

“ **3 - Final Comments**

The first conclusion is that deep changes that the [federal] government has been imposing legal, but not legitimately, in the conception and organization of the technical-profession-gearred development, is part of an ampler project of adjusting the different levels and modalities of instruction to the structural reforms of the Brazilian Government (Estado Brasileiro), carrying out, in a subordinate way, the orientations of the international organizations, chiefly, in this case, the World Bank. It is important to highlight that the group holding the power has an long term hegemonic project, as we indicated above, and in name of the stability of the (ir)real [Real is the Brazilian currency], but without the participation of the society and in its name, subjects to policies that makes us more and more distant of the group of countries that the present federal administration has as models to be reached. We do here what we are told to do, but that they themselves do not do.

An example of what we just stated is the size of the State of a group of the 20 most developed countries, measured as percentage of the GDP that forms the public fund. Between the years 1980 and 1995, England and USA, birthplaces of the neoliberalism, did not decrease their public fund. England kept it around 43% of the GDP, USA increased it, in this period from 34% to 36%, France from 46% to 54%, Italy from 42% to 54%, Sweden, from 61% to 70%. In reverse way, Brazil and Argentina, which follow the neoliberal dictates [neoconservative in the USA] of the adjustment and of the thesis of minimum State, had, approximately, in 1980 a proportion of the GDP in the public fund of 35% and in 1995 dropped to approximately 28%.⁸

A second important conclusion is that the [present] administration is structured and has the support of what Gramsci named ‘hegemony instruments (aparelhos de hegemonia),’ particularly the monopolized media, through which it seeks to create a passive consensus around the wide reforms of the State and the specific ones such as the reforms on education and development for professions (formação técnico-profissional). Development for professions is an example, very apparent, where the [federal] administration through an intense and repeated propaganda, sediments in the imagination of the worker classes, particularly those who are unemployed, underemployed, with precarious work or literally surplus manpower, that through the different modalities of this type of development, all will become employable. Employability is became a hollow concept of historical materiality, but for this very reason of strong ideological violence.⁹

This mystification grows versus a situation of structural unemployment and a recessive economic-social project, which substitutes a project of sustainable development, generation of employment and wealth distribution, by the adjustment and production restructuring. Due to the lack of alternatives, in situation of despair, the workers stick to even ideas and promises that do not serve their rights and keep them in the limit of assistance, of the intolerable misery or with the hope for tomorrow.

⁸ - OECD data provided by Professor Atilio Boron - UBA-AR, on October 29, 1997, in lecture presented at UFF-RJ.

⁹ - [This footnote is missing in the text].”

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“Effectively, the [federal] administration substitutes the economic and social policies of development, for campaigns and assistentialist policies.

Within this framework, the forces committed to an alternative project, a reverse one, even in the limit of the representative democracy and, specially those forces that see in the

socialism the utopia of society still on the agenda and more necessary than ever, undoubtedly face immense difficulties. Move upstream, resisting and proposing alternatives, is not an easy task. How to proceed?

First it is necessary to be able to create the ability of perceiving the spaces where the forces committed with the contra hegemonic project, versus to the proposed dominant one nowadays in Brazil, accumulate alternative experience and practices. Having this visibility and taking it as reflection and action element, is a priority task.

A second point to have clear is that, as Marx taught us, “everything that is solid breaks up in the air (tudo que é sólido se desmancha no ar)” and, therefore, neither the capitalist society is eternal, nor the hegemony of a bourgeoisie of the backwardness (burguesia do atraso) in place in Brazil nowadays will be. The legislation that sets the regulations for development for professions (formação técnico-profissional), also is historic, as well as the conceptions that the former is based upon. If that is sustainable, and it historically is, there is a double movement to become effective, at the level of the , affirmation of the democratic and socialist concepts and values and at the level of the demystification of the dominant ideology.

At the level of the theoretical concepts, the challenge is, therefore, to continue the critique to the fragmentary concepts of reality, knowledge and education. At the ethical level, the fight is centered in the values of equality and solidarity and for an expansion of the public sphere controlled by an active citizenship, in contraposition to the privatism and the mercantilization of rights. To the idea of a “total quality (qualidade total)” for few we should contrapose in all levels the power idea of this CONED (congress where the paper was presented), of a “total quality, with social quality (qualidade total, com qualidade social.)”

At the concrete level of the praxis, the task, at the level of our work, to make effective a development for professions (formação técnico-profissional) that, at the same time, develop a competent technician, that has spirit and scientific ability and critic sense to integrate him/herself as citizen and influence on the decision about who and how many people, science technic, and production should serve.¹⁰

At the level of the demystification, insist on the idea that societal and educational project of the current [federal] administration, associating the adjustment to globalization with neoliberal policies [neoconservative in the USA], of exclusion and disaggregatable, therefore, represent, therefore, the conscience of a bourgeoisie of the backwardness (burguesia do atraso). At the specific level of the policies for development for professions (formação técnico-profissional), ideological fermentation area of the employability, requalification, and occupational reconversion ideas (idéias empregabilidade, requalificação e reconversão profissional), it is necessary to insist on the conclusions of a study completed recently. (Frigotto, 1997).

The dominant proposals of development for professions policies and qualification, requalification and reconversion processes centered in the perspectives of the basic skills (of knowledge, attitudes and of quality management), new competencies for employability, and to a large extent the analyses and studies that aim to explicit this new demand versus the production restructuring and the new world order, ignore or disregard the fact underlined by Altvater that *'it is an illusion, and because of this it is dishonest, to feed and (é um ilusão, e por isto uma desonestidade, alimentar e*

¹⁰ - It seems to me that the strategy presented by Marise Ramos (1997) to combat the federal administration reform on development for professions instruction is exemplary [noteworthy].”

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“disseminate the idea that the whole world could reach an industrial level equivalent to Western Europe, North America, and Japan (difundir a idéia de que todo o mundo poderia atingir um nível industrial equivalente ao da Europa Ocidental, da América do Norte e do Japão)’ (Altvater, 1995:28). That as a result, on one side of the profoundly asymmetric power relations and, on the other side, by the limits of the capitalist industrial development of the fordist ou post-fordist nature, versus the destruction of the *material basis of life (bases materiais da vida)* and the production of mass structural unemployment.

As a consequence of what was established above, it may be stated that it is false or an illusion, and equally dishonest, to attribute to basic education, development for professions and to the qualification and requalification processes guided by the World Bank, a unilateral weight of the insertion of our society in the *process of globalization and production restructuring (processo de globalização e reestruturação produtiva)* and, above all, as last resource for those who “the risk of becoming unemployed” or for those unemployed. The role of the educative processes, particularly development for professions, qualification and requalification, in this context, is to produce citizens that do not fight for their rights and for the disalienation of and at work, but “participative” citizens, not more workers, but collaborators and adepts to the *passive consensus (consenso passivo)* and, in Antunes (1996:10) statement, to become *self despots (déspotas de si mesmos)*.

The proposals of development for professions, under the ideas of skills and competencies for employability, requalification and reconversion, as stated currently, disconnected from a democratic and public proposal of development, generation of employment and income and from an alternative of social relations of another type, reduce themselves, dominantly, to an involucre of ideological nature.¹¹

The development for professions (formação técnico-profissional) which interests to the heterogeneous working class can not have in the market and in the capital its philosophical, conceptual and practical horizon. This is only a historical contingency. Work in the limit of the contradictions of the capital and of the representative democracy, continues to be the central goal for those that place themselves as historical task to create conditions *to go beyond the capital form of human-social relations* (Mészáros, 1996), solidary and socialist forms. The development for professions centered in the multiple human needs is fundamental condition for the production and the technology appropriation as extension and enlargement of the human senses and as value of usage (valor de uso). It is about a process which has to articulate organically the production social relations and the cultural and educative relations. That implies, to fight, in the public setting, for a State (Government) (Estado) that governs with the society organizations and for the society. As Tarso Genro indicates from a rich experience of public management with the society: 'It is about to share a new conception of reform of the State (Government) (Estado), starting from a new relation State-Society (Government-Society) (Estado-Sociedade) which opens the State (Government) (Estado) to these social organizations (and the participation of the isolated citizen), particularly those that are self-organized by the excluded persons of all shades, admitting the political tension as decisory method and dissolving the authoritarianism of the traditional State (Government) (Estado) under the pressure from the organized society.' (Genro, 1996).

^{II} - A debate that displays a wide range of views about the theme of employability is found in the book organized by Alípio Casali et al. (1997)."

(End of page 11.)

(End of the text.)

Answer provided in Portuguese:

Dentro da perspectiva da hegemonia conservadora que exerce o poder do estado hoje no Brasil, a oferta de educação profissional estará fundamentalmente regulada pela visão imediatista do mercado e pelas incontáveis instituições privadas e públicas, grupos, ONGs que entram na disputa pelo fundo público destinado a financiar este tipo de formação. A dominanciada oferta, será do mundo dos negócios ou empresarial, através de seus institutos como Euvaldo Lodi, Herbert Levy e as instituições tradicionais, transformadas em empresas de serviços de formação profissional - SENAI, SENAC, SESC, SESI, etc. O financiamento, em parte será pelo fundo público com parcerias com a iniciativa privada e, para certo cursos, pagamento pelo próprio aluno. O que ficará predominantemente sobre o controle da iniciativa privada é o conteúdo e a organização. Neste sentido a "teoria" ou ideologia das "competências" ou das habilidades básicas - oferecidas pela empiria do mundo produtivo, serão o parâmetro da formação. Por isso o formato organizativo será predominantemente de pacotes ou de módulos. A polivalência e a empregabilidade, dentro desta ideologia,

resultariam de um pacote ou de um banco maximizado de competências no plano das habilidades básicas de conhecimento, de valores e atitudes e de gestão da qualidade.

Trata-se de uma perspectiva que lembra bem a idéia do acúmulo de indulgências que os cristãos católicos deveriam fazer na terra para descontar seus pecados na hora da morte. Quanto maior o banco de indulgências - uma espécie de mercado de rezas, privações, sacrifícios, promessas pagas etc - maior seria a probabilidade de um posto, não de trabalho, mas nas galerias do céu.

Esta perspectiva é hegemônica hoje mesmo nos países centrais. Há uma diferença crucial, todavia. A maioria tem a universalização da escola de segundo grau. Nós não universalizamos nem mesmo a primária - quatro anos de escolaridade. Mas esta perspectiva engendra um paradoxo ou uma contradição. Teoricamente a nova base científico técnica, sob a égide da microeletrônica, engenharia genética, novas fontes de energia, estruturam o processo produtivo sob bases unitárias (síntese do diverso) do conhecimento. Uma educação profissional nos moldes da escola clássica, neste sentido, se constituiria na melhor formação profissional, mesmo tomando-se como critério apenas a dimensão econômica. Com esta viria, todavia, também, a realidade de um cidadão capaz de ler criticamente a realidade cada vez mais complexa e de organizar-se para ter direito à vida digna, mesmo que o mundo do emprego seja cada vez mais escasso e desnecessário.

O cenário dominante não ajuda nem mesmo, na sociedade dos três terços, aquele grupo de incluídos. Isto significa dizer que o mundo dá sinais que não quer retroagir ao século passado, tão bem caracterizado pelo livro do historiador Eric Hobsbawn - como o curto Século XX (1996), marcado por duas Guerras Mundiais. As soluções para a crise deste final de século, como indica este e outros autores, não se dará na volta ao mercado, mas em formas societárias que regulem o destino da humanidade numa esfera pública democrática no conteúdo, no método e na forma. É dentro deste cenário que se situam, não sem problemas, as teses de projeto econômico-social e educativo das forças políticas de esquerda nos últimos 50 anos pelo menos. Como tudo o que é sólido se desmancha no ar e nada é eterno sob a face da terra, a luta destas forças continua no plano local, nacional e global. O formato, financiamento, controle e organização e conteúdo da educação profissional, se estas forças alcançarem o poder nacional no Brasil, caminhará, não sem dura resistência, no horizonte do que apontamos no texto em anexo nas páginas 4 e 6 [*] e nas considerações finais [**].

[*] Páginas 4 a 6 do texto mencionado: ver resposta do painalista 16 à questão 1.

[**] Considerações finais do texto mencionado:

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“ **3 - Considerações Finais**

Uma primeira constatação é que as mudanças profundas que o governo vem impondo legal, mas não legitimamente, na concepção e organização da formação técnico-profissional, faz parte de um projeto mais amplo de ajustar os diferentes níveis e modalidades de ensino às reformas estruturais do Estado Brasileiro, cumprindo, de forma subordinada as orientações dos organismos internacionais, mormente, neste caso, o Banco Mundial. Explicita um grupo no poder com um projeto hegemônico de longo prazo, como assinalamos acima, que em nome da estabilidade do (ir)real, sem a participação da sociedade e em seu nome, se submete a políticas que nos distanciam cada vez mais do grupo de países tidos pelo próprio governo como modelos a serem alcançados. Fazemos aqui aquilo que nos mandam, mas que eles próprios não fazem.

Um exemplo do que acabamos de afirmar é o tamanho do Estado de um grupo dos 20 países mais desenvolvidos, medido pela porcentagem do PIB que compõe o seu fundo público. Entre os anos 80 e 95, a Inglaterra e EUA, berços do neoliberalismo, não diminuíram seu fundo público. A Inglaterra manteve-o em torno de 43% do PIB, EUA subiu, neste período de 34% para 36%, França de 46% para 54%, Itália de 42% para 54%, Suécia, de 61% para 70%. Em sentido inverso, Brasil e Argentina, que seguem as cartilhas neoliberais do ajuste e a tese do Estado mínimo, tinham, aproximadamente, em 1980 uma proporção do PIB no fundo público de 35% e em 1995 caíram para aproximadamente 28%.⁸

Uma segunda consideração importante é de que se trata de um governo estruturado com o apoio do que Gramsci denominou “aparelhos de hegemonia”, mormente a mídia monopolizada, mediante a qual busca criar um consenso passivo em torno das reformas amplas do Estado e das reformas específicas como é o caso da educação e da formação técnico-profissional. A formação técnico-profissional é um exemplo, dos mais emblemáticos, onde o governo mediante uma propaganda intensa e reiterada, sedimenta no imaginário das classes trabalhadoras, mormente aqueles grupos desempregados, subempregados, com trabalho precário ou literalmente excedente de mão-de-obra, que mediante as diferentes modalidades deste tipo de formação, todos se tornarão empregáveis. Empregabilidade passou a ser um conceito oculto de materialidade histórica, mas por isso mesmo de grande violência ideológica.⁹

Esta mistificação se potencializa face a uma situação de desemprego estrutural e diante de um projeto econômico-social recessivo, que substitui um projeto de desenvolvimento sustentável, gerador de emprego e distribuição de renda, pelo ajuste e reestruturação produtiva. Perante a falta de perspectivas, em situação de desespero, os trabalhadores se agarram até mesmo a idéias e promessas que falseia seus direitos e os mantém no limite da assistência, da miséria tolerável ou com a esperança no amanhã.

⁸ - Dados da OCDE fornecidos pelo Professor Atílio Boron - UBA-AR, em 29.10.1997, em conferência proferida na UFF-RJ.

⁹ - Falta esta nota de rodapé no texto.”

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“Efetivamente, o governo substitui as políticas econômicas e sociais de desenvolvimento, por campanhas e política assistencialista.

Dentro deste quadro as forças comprometidas com um projeto alternativo, de sentido inverso, até mesmo no limite da democracia representativa e, especialmente aquelas forças que vêm no socialismo a utopia de sociedade ainda em pauta e mais que nunca necessária, sem dúvida encontram imensas dificuldades. Andar na contra corrente, resistindo e propondo alternativas, não é tarefa fácil. Como prosseguir?

Primeiramente é preciso criar capacidade de perceber os espaços onde as forças comprometidas com um projeto contra-hegemônico ao proposto dominante hoje no Brasil, acumulam experiência e práticas alternativas. Ter esta visibilidade e toma-la como elemento de reflexão e de ação, é uma tarefa prioritária.

Um segundo ponto a ter claro é de que, como nos ensinou Marx, ‘tudo o que é sólido se desmancha no ar’ e, portanto, nem a sociedade capitalista é eterna, nem a hegemonia de uma burguesia do atraso vigente hoje no Brasil será. A legislação que regula a formação técnico-profissional, também é histórica, assim como as concepções que a embasam. Se isto é sustentável, e o é historicamente, há um duplo movimento a se efetivar, no plano da afirmação das concepções e valores democráticos e socialistas e no plano da desmistificação da ideologia dominante.

No plano das concepções teóricas o desafio é, pois, o de continuar a crítica às concepções fragmentárias da realidade, de conhecimento e de educação. No plano ético-político a luta centra-se nos valores de igualdade e solidariedade e por uma dilatação da esfera pública controlada por uma cidadania ativa, em contraposição ao privatismo e a mercantilização dos direitos. À idéia de uma “qualidade total” para poucos devemos contrapor em todos os âmbitos a idéia força deste CONED, de uma “qualidade total, com qualidade social.”

No plano concreto da práxis o exercício, a nível de nosso trabalho, de efetivar uma formação técnico-profissional que, ao mesmo tempo, forme um técnico competente, tenha espírito e capacidade científica e senso crítico para integrar-se efetivamente como cidadão e influenciar na decisão sobre a serviço de quem e de quantos está a ciência, a técnica e a produção.¹⁰

No plano da desmistificação, insistir na idéia de que o projeto societário e educacional do governo atual, associando ajuste à globalização com políticas neoliberais, de exclusão e

desagregadoras, portanto, representa a consciência de uma burguesia do atraso. No campo específico das políticas de formação técnico-profissional, campo de fermentação ideológica das idéias empregabilidade, requalificação e reconversão profissional, impõe-se insistir nas conclusões de uma pesquisa concluída recentemente. (Frigotto, 1997).

As propostas dominantes de políticas de formação técnico-profissional e processos de qualificação, requalificação e reconversão centrados nas perspectivas das habilidades básicas, (de conhecimento, atitudes e de gestão da qualidade) novas competências para a empregabilidade, e em grande parte as análises e pesquisas que buscam explicitar esta nova demanda face à reestruturação produtiva e a nova ordem mundial, ignoram ou desprezam o fato sublinhado por Altvater de que “*é uma ilusão, e por isto uma desonestidade, alimentar e*

¹⁰ - Parece-me exemplar a estratégia de combate às reformas do governo no âmbito do ensino técnico profissional apresentada por Marise Ramos (1997).”

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“*difundir a idéia de que todo o mundo poderia atingir um nível industrial equivalente ao da Europa Ocidental, da América do Norte e do Japão*”(Altvater, 1995:28). Isto como decorrência, de um lado das relações de poder profundamente assimétricas e, de outro, pelos limites do desenvolvimento industrial capitalista de natureza fordista ou pós-fordista, face à destruição das *bases materiais da vida* e a produção do desemprego estrutural em massa.

Como conseqüência da constatação acima, pode-se afirmar que é falso ou uma ilusão, e igualmente uma desonestidade, atribuir-se à educação básica, formação técnico-profissional e aos processos de qualificação e requalificação orientados pelo Banco Mundial, um peso unilateral da inserção de nossa sociedade no *processo de globalização e reestruturação produtiva* e, sobretudo, como tábua de salvação para os que “correm risco de desemprego” ou para os desempregados. O papel dos processos educativos, mormente a formação técnico-profissional, qualificação e requalificação, neste contexto, é de produzir cidadãos que não lutem por seus direitos e pela desalienação do e no trabalho, mas cidadãos “participativos”, não mais trabalhadores, mas colaboradores e adeptos ao *consenso passivo* e, na expressão de Antunes (1996:10), a tornarem-se *déspotas de si mesmos*.

As propostas de formação técnico-profissional, sob o ideário das habilidades e competências para a empregabilidade, requalificação e reconversão, tal como postas hoje desvinculadas de uma proposta democrática e pública de desenvolvimento, geração de empregos e renda e de uma alternativa de relações sociais de novo tipo, reduzem-se, predominantemente, a um invólucro de caráter ideológico.¹¹

A formação técnico-profissional que interessa à heterogênea classe trabalhadora não pode ter no mercado e no capital seu horizonte filosófico, conceptual e prático. Esta é apenas uma contingência histórica. Trabalhar no limite das contradições do capital e da democracia representativa, continua sendo o objetivo central para aqueles que se colocam como tarefa histórica criar condições de *ir além da forma capital de relações humano-sociais* (Mészáros, 1996), formas solidárias e socialistas. A formação técnico-profissional centrada nas múltiplas necessidades humanas são condição fundamental de produção e apropriação da tecnologia como extensão e ampliação dos sentidos humanos e como valor de uso. Trata-se de um processo que tem que articular organicamente as relações sociais de produção e as relações culturais e educativas. Isto implica, lutar, no plano político, para um Estado que governe com as organizações da sociedade e para a sociedade. Como nos indica Tarso Genro, a partir de uma rica experiência de gestão pública com a sociedade: ‘Trata-se de compartilhar uma nova concepção de reforma do Estado, a partir de uma nova relação Estado-Sociedade que abra o Estado a estas organizações sociais (e a participação do cidadão isolado), particularmente aquelas que são auto-organizadas pelos excluídos de todas as matizes, admitindo a tensão política como método decisório e dissolvendo o autoritarismo do estado tradicional sob pressão da sociedade organizada.’ (Genro, 1996).

¹¹ - Um debate que explicita um amplo espectro de posições sobre o tema da empregabilidade encontra-se no livro organizado por Alípio Casali et ali (1997).”

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Panelist 17:

The process that is happening is linked to the technological modernization movement. It is involved by the mechanical transformation that man has been going through in this end of century. The forms of work goes through the intense information based change that life in society has been subjected to. The companies recreate routines for productive optimization.

The organization of vocational-technical education and training [VTET] is an ambiguous process of interests between who funds and its finalities. The costs are not reduced because of the permanent need for renewing the taught skills, as the equipment to be used must follow the permanent modernization that happens in the productive sector. That makes happen the private and public systems.

I name public system, that which articulates the professional qualification through instruction institutions and the federations of industry and commerce, or others. These institutions are geared to the offer of activities that do not depend on a big cognitive development of the individual.

The private system is that offered by the companies themselves, in internal training process. Many companies requalify [retrain] the professional [previously trained individual], that is, the common qualification provided to the individual is not enough for the required activity. That is more and more common, not restricting the activities that require this learning to those that are not in the general education system. Even the activities of higher education qualified professions are, presently, susceptible to specific training in the companies, for instance: the journalist. What can be noted is that, little by little, learning at school in general is more and more disqualified by the employers. The cognitive development of work has been pushed aside in the educational system. It was never discussed and, really, improved.

The way the legislation is being conducted [redone] in the national educational system indicates that also the VTET schools will take a secondary place or even a disregarded one. The government idea is to terminate the educational system that is formed by schools that solely provide VTET. Only the schools that include VTET in their regular curriculum are the ones that may, presently, continue their activities. That ignores the funneling process that is happening in the national education and the links that the professional qualified in these institutions found in the labor market.

Professional instruction [training] is presently provided by the companies, when they feel the need for qualified personnel. This is the future that is predicted for professional instruction. Independence of the companies and institutions for professional requalification [retraining], much more than for professional education [VTE]. This is an institution that will survive deprived of a true strategic planning. State and Market do not discuss this development as a commitment to the nation, to the development of the labor force.

The tendency is a dissemination of corporate education, interested in the organization of the production and capital. The citizen-worker, his/her general educational development, is not and does not get, part of the interest of the companies that should be concerned with Education as the instrument itself of the professionalization.

Answer provided in Portuguese:

O processo que está em curso vincula-se ao movimento de modernização tecnológica. Está envolvido pela transformação maquinal porque passa o homem neste final de século. As formas de trabalho passam pela intensa mudança informacional que a vida em sociedade tomou. As empresas recriam rotinas para otimização produtiva.

A organização da educação profissional é um processo ambíguo de interesses entre quem a financia e suas finalidades. Os custos não são reduzidos porque necessitam de permanente renovação das habilidades ensinadas, uma vez que os equipamentos a serem utilizados devem acompanhar a modernização permanente que ocorre no sistema produtivo. Isto faz com que ocorram sistemas privados e públicos.

Chamo de sistema público, aquele que articula a qualificação profissional através das instituições de ensino e as federações da indústria e comércio, ou outras. Estas instituições estão voltadas a manutenção de atividades que não dependem de um grande desenvolvimento cognitivo do indivíduo.

O sistema privado é aquele oferecido pelas próprias empresas, em processo de treinamento interno à firma. Muitas empresas requalificam o profissional, quer dizer, a qualificação comum dada ao indivíduo não é suficiente à atividade requisitada. Isto é cada vez mais comum, não restringindo as atividades que necessitem deste aprendizado a aquelas que não estão no sistema de ensino geral. Mesmo as atividades de profissões qualificadas com o 3º grau são, atualmente, passíveis de treinamento específico nas empresas, por exemplo: o jornalista. O que se nota é que, aos poucos, o aprendizado nas escolas em geral é cada vez mais desqualificado pelos empregadores. Sendo o desenvolvimento cognitivo do trabalho deixado a um plano (2º, 3º...) do sistema educacional nunca discutido e, realmente, aperfeiçoado.

Da maneira com que as leis estão sendo encaminhadas no sistema educacional nacional, também as escolas profissionalizantes tomarão um aspecto secundário ou mesmo desprezado. A idéia governamental é de extinção do sistema educacional das escolas estritamente profissionalizantes. Somente as escolas que apresentam dentro de seus currículos regulares o ensino profissionalizante é que podem, na atualidade, continuar com suas atividades. Isto ignora o processo de afunilamento que vive a educação nacional e as próprias vinculações que o profissional qualificado nestas instituições encontrava no mercado de trabalho.

O ensino profissionalizante fica a cargo atualmente das próprias empresas, quando estas sentem a carência profissional. É o que se prevê para o futuro do ensino profissionalizante. Independência das firmas e instituições para requalificação profissional, muito mais do que educação profissionalizante. Esta é uma instituição que sobreviverá carente de um verdadeiro planejamento estratégico. Estado e Mercado não discutem esta formação como um compromisso com a nação, com a formação da força de trabalho.

A tendência é de uma disseminação da educação corporativa, interessada na organização da produção e do capital. O cidadão-trabalhador, a sua formação educacional geral, não é, e nem recebe, parte do interesse das empresas que deveriam estar preocupadas com a Educação como o próprio instrumento da profissionalização.

Panelist 18:

- Oversight for VET at the highest level of government through a joint council.

- Formal links between all ministries, businesses, industry, and community groups to insure VET is truly a comprehensive effort aimed at improving the nation both economically and socially.
- Funding should be a shared responsibility of the government, businesses, and industry.
- VET responsibilities should be detailed and those who are given certain responsibilities must be held accountable for results.
- Public VET should not try to do everything. The forms of VET should be on teaching what cannot or is not [efficiently or effectively] taught in business and industry.
- Curriculum links need to be forged between public VET and others to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises.

Note: The words in parentheses are not perfectly readable - the answer was provided in handwriting.

Panelist 19:

- *Basic* development for professions (Educação profissional *básica*) (inclusive in areas of innovation):
 - *offer*: public
 - *funding*: public
 - *format*: partnership with the private sector and direct offer by public institutions
- *Specific* development for professions (Educação profissional *específica*):
 - *offer*: private
 - *funding*: private with public incentives
 - *format*: non formal

Answer provided in Portuguese:

- Educação profissional *básica* (inclusive em áreas de inovação):
 - *oferta*: pública
 - *financiamento*: público
 - *formato*: parceria com o setor privado e oferta direta por instituições públicas

- Educação profissional *específica*:
- *oferta*: privada
- *financiamento*: privado com incentivo público
- *formato*: livre

Panelist 20:

The offer of future vocational-technical education and training [VTET] (educação profissional) will be diversified: the entrepreneurs will invest in highly specialized development for professions and, fundamentally, necessary for the productive processes; the unions will have programs of retraining for a profession (reprofissionalização), through the utilization of agreements (accord = convênios) with specialized institutions; human resources development agencies directed to the entrepreneurs' interests, such as Senai, Senac, Senar, and others, will continue to exist; but the development of the individual (youngsters and adults) for the exercise of a profession without the immediate interest of the entrepreneurs, corresponding only to the person's will to learn a profession connected to a certain technology or work process, only will be offered by the governments, because such characteristic of development does not pass concretely in front of the critical view of the companies.

As in countries of similar social and economic conditions as Brazil, the policies of unemployment reduction will assume vital importance to the survival of the public institutions, there will be evident political interest in the reduction of the social exclusion (the great danger of the near future). So it is this way that the theories of the moment that demand removal of the public government from the responsibility of support and operation of the public institutions that promote this special type of education, will become exhausted face the need of large and flexible programs for redeeming of the citizenship, because it is VTET (educação profissional) the most efficient way for the development of individuals which may dynamize the economies of the nations. The imperious need for the generation of economic growth with the increase of jobs (employment for almost all), will mandate the alteration of the understanding of the educational goals, which will set themselves in man and his/her social circumstances; thus, education will need to stop developing people to live from the work of the others, dedicating itself to the individuals' developments that have the purpose to construct the possibilities of the development of entrepreneurs.

The funding will be diversified too, according to the immediate interests set off. While companies will be concerned with their production, sales and service rendering needs, the various levels of government will be responsible for the development of the citizen who need to have a profession, even that is may not be required in that moment, specifically, by a

company; but that may be the means of somebody's personal fulfillment, be in the future exercise of the profession or in the creation of a company related to the doing of his/her profession, besides other motives.

The format or formats of VTET (educação profissional), however, will have very much to do with the technological and social means development, but it shines through that the company of the future will have its activities more and more connected to automatization of the latter. In a few areas of services and, logically, in certain types of products sales (leisure, health, education, direct sales, hosting, secretariat, etc...), there will be an increase of the relations among people. But, exactly, the *formats*, that each pattern of VTET (educação profissional) will assume, it is difficult to catch a glimpse.

Answer provided in Portuguese:

A oferta futura da educação profissional será diversificada: os empresários investirão em formações altamente especializadas e, fundamentalmente, necessárias aos processos produtivos; os sindicatos terão programas de reprofissionalização, utilizando-se de acordos (convênios) com instituições especializadas; continuarão a existir agências de formação de recursos humanos dirigidas aos interesses dos empresários, tais como o Senai, Senac, Senar e outras; mas a formação de pessoa (jovens e adultos) para o exercício da profissão sem o interesse imediato do empresariado, correspondendo apenas a vontade dela em ser uma profissional de certa tecnologia ou processo de trabalho, somente poderá ser realizado pelos governos, pois esta característica de formação não passa concretamente diante da visão crítica das empresas.

Como em países de condições sociais e econômicas semelhantes ao Brasil, as políticas de redução do desemprego irão assumir importância vital à própria sobrevivência das instituições públicas, haverá manifesto interesse político na redução da exclusão social (o grande perigo do futuro próximo). Assim é que as teorias do momento que pedem o afastamento do estado na responsabilidade de manutenção de instituições públicas que promovem esta especial forma de educação, se esgotará diante da necessidade de grandes e flexíveis programas de resgate da cidadania, porque é a educação profissional a via mais eficiente para a formação de pessoas que poderão dinamizar as economias das nações. A imperiosa necessidade de geração de crescimento econômico com a ampliação de postos de trabalho (emprego para quase todos), obrigará a alteração do entendimento dos objetivos educacionais, que se fixarão no homem e nas suas circunstâncias sociais; por isso, a educação precisará deixar de formar pessoas para viverem do trabalho de outras pessoas, dedicando-se a formações que tenham como finalidade construir as possibilidades de formação de empreendedores.

O financiamento será também diversificado, de acordo com os interesses imediatos em realce. Enquanto a empresa preocupar-se-á com suas necessidades de produção, de comercialização ou prestação de serviços, as várias instâncias de governo deverão

responsabilizar-se pela formação do cidadão que deseja possuir uma profissão, mesmo que não esteja sendo requerida naquele momento, especificamente, por uma empresa; mas que poderá ser o meio de realização pessoal de alguém, seja no exercício futuro da profissão ou na criação de empresa relacionada com o fazer de sua habilitação, entre outros motivos.

O formato ou formatos de educação profissional, no entanto, terão muito a ver com o desenvolvimento tecnológico e dos meios sociais, mas transparece que a empresa do futuro terá cada vez mais suas atividades vinculadas a automatização delas; sendo que apenas em algumas áreas de serviço e, logicamente, em certos tipos de comercialização de produtos (lazer, saúde, educação, venda direta, recepção, secretariado, etc...), haverá incremento das relações pessoais. Mas, exatamente, os *formatos*, que cada padrão de educação profissional assumirá, fazem-se difíceis de vislumbrar.

Panelist 21:

The offer will come from the entrepreneurs' society. The private sector will have the hegemony for initiatives. Funding will be done by diversified mechanisms. The standard guideline will be the one of the consoriated interests, so that the idea of a universalized offer will be substituted by a particularized one, focusing specific interests of each company or small groups of companies.

Answer provided in portuguese:

A oferta deverá ser iniciativa da sociedade empresarial. O setor privado terá a hegemonia por iniciativas. O financiamento será feito por mecanismos diversificados. A linha padrão será a dos interesses consorciados, de tal sorte que a idéia de uma oferta universalizada será substituída pela de uma oferta particularizada, focando interesses específicos de cada empresa ou pequenos grupos de empresas.

Panelist 22:

The technical vs vocational distinction will fade, as well as the fixed structures presently observed. Duration will be variable and going back to school (whatever that may mean then) will be increasingly common.

There will be a wide range of private suppliers, particularly for short courses or those which combine modest costs and a vibrant labor market (such as computer science today). Foreign proprietary courses will compete successfully in some areas, often in joint ventures with local providers.

Firms will invest in offering short and highly specialized training to its own workers (eventually opening these offerings to outsiders).

The public sectors will concentrate on funding of expensive and long training, particularly in complex technologies. But delivery will be in the hands of private and semi-private providers (successors of the System S).

There will be a revolution in delivery methods. Distance education will become widespread. But even more pervasive will be combination packages, with computer/TV solutions mixed with human presence in endless forms and permutations.

Simple courses will be franchised to smaller operators, such as MacDonalD's or Yazigi (probably one of the first in the world to franchise training - did you know?).

Longer and more expensive technical education will operate under a complex mix of cost recovery and public subsidies. Public education will charge a variable fee from students and private education will get subsidies. Students may also get vouchers to attend chosen schools. Ability to pay and individual potential will generate complex algorithms to determine pay/subsidies.

Panelist 23:

The providers of VET might basically be states and localities, and also in collaboration with enterprises. The role of the state may be to monitor and provide resources for implementing the policy goals of VET. The VET institutions might be owned by a municipal or unions of municipals or a state or a private agency.

VET might be delivered in schools, VET centers and enterprises depending on needs of trainees and business life. The types of providers are related to age groups and their needs.

The formats of delivering VET may be:

- school-based model including externship and internship in business avoiding disadvantages of the Scandinavian VET systems;
- work-based model avoiding the disadvantages of German dual system;
- mixed the two above-mentioned models (see the recent Austrian reforms);
- different flexible systems for adults to update, re-train, extend and deepen their skills; and

- qualification-based examination for adults and experienced persons to recognize their competencies.

APPENDIX I

ROUND II UPDATE LETTER

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

February 3, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Thank you for answering the Round I Instrument of my survey about the future of Brazilian federal technological education system. By February 10, I will be posting the Round II Instrument.

Curriculum Studies/
 Supervision
 Educational
 Leadership
 Elementary,
 Secondary and K-12
 Education
 Occupational
 Education Studies
 Reading Education
 Special Education

The Instrument to be sent contains no open-ended essay questions. It consists of two sections, each dealing with one of the questions that you answered for Round I. All you have to do is mark an "X" on the Likert scale of each answer generated from the responses that have been provided by the participants, and rank the answers if requested to.

As I have said before, during the course of this study, your name will not be revealed to the other participants in this study. Even after the conclusion of the research, it will not be possible to associate the participants' names directly with their responses. In my final report, I will include a list of the participants and my reasons for selecting them for this study.

If you have any questions, please write, call, fax, or email me.

Thank you for your attention.

Sincerely,

Paulo de Tarso Costa Henriques

Oklahoma State University
 38 South University Place Apt. 7
 Stillwater, Oklahoma 74075
 Phone: (405) 744-2841
 Fax: (405) 377-7169
 Email: ptchenriqu@aol.com

APPENDIX J

ROUND II COVER LETTER

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

March 2, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Thank you again for answering the Round I Instrument of my survey about the future of Brazilian federal technological education system.

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

In addition to this cover letter, I am sending the Round II Instrument, a description of the present state of Brazilian Education (Schooling Education in general, Vocational-Technical Education and Training specifically, and other issues such as Technological Education and Polytechnical Education [Politecnia]), answer sheets, and a communication form.

The description may be used if you think it will help you to respond the Round II Instrument questions, that is, its use is optional. Please keep it. It will be helpful again in Round III.

The answer sheets may be used if you choose to send your response by fax (or even by mail) or wish to keep the questionnaire, that is, the use of the former is optional.

The communication form will help me to confirm your present address, telephone, fax and email. If you wish, please, send it back to me, that is, its use is optional too.

The Round II Instrument contains no open-ended essay questions. It consists of two sections, each dealing with one of the questions that you answered for Round I. All you have to do is mark an "X" on the Likert scale of each answer generated from the responses that have been provided by the participants. The estimated time of completion is around one hour. Excuse me for sending a lengthy questionnaire but not only the answers provided by



The Campaign for OSU

the participants were very rich but also the matter discussed is extremely important for the future of the federal technological education system in Brazil.

In each section, I have consolidated, paraphrased and even moved some answers around. If you don't think all of your answers are included, look closer - they may be included in a carefully worded summary. I found a great deal of consensus on some of the issues. Your complete responses will be included in my final report.

I would like your response by Monday, March 23. Feel free to respond either by using the enclosed envelope or by fax (especially if you miss the deadline). My fax number is listed below. If you prefer to send your answer by email, please let me know your email so that I can send you the answer sheets through electronic means. My email address is listed below.

I have assigned you a number on the answer sheets so I can keep an organized record of the returned questionnaires. In Round III (the last one), taking into consideration the ranking, to be sent to you, originated from Round II answers, I will ask you to answer again the same questionnaire sent in Round II. In addition to that, I will also collect some biographical information (education, professional experience, etc.) for an appendix.

As I have said before, during the course of this study, your name will not be revealed to the other participants in this study. Even after the conclusion of the research, it will not be possible to associate the participants' names directly with their responses. In my final report, I will include a list of the participants and my reasons for selecting them for this study.

If you have any questions, please write, call, fax, or email me.

Thank you for your cooperation.

Sincerely,

Paulo de Tarso Costa Henriques

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Stillwater, Oklahoma 74075
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APPENDIX K

ROUND II SURVEY INSTRUMENT

Expert Number: _____

Paulo de Tarso Costa Henriques
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ROUND II SURVEY INSTRUMENT

Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in Brazil

SECTION 1: ROLE(S) OF THE BRAZILIAN FEDERAL GOVERNMENT IN VTET

What follows is a consolidated list based on the opinions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to the role(s) of the Brazilian federal government in vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) by the year 2025. If you don't consider a particular listing a role or totally disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Please indicate by an "X" the answer chosen for each item below:

S C A L E

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

1. By 2025, the Brazilian Federal Government should be a conceiver of policies for VTET.

SD	D	NO	A	SA

2. By 2025, the Brazilian Federal Government should be a monitor of public policies for VTET.

SD	D	NO	A	SA

3. By 2025, the Brazilian Federal Government should articulate a national policy for VTET integrated with the public system of work and income generation.

SD	D	NO	A	SA

4. By 2025, the Brazilian Federal Government should have formulated quality standards for VTET which must be frequently updated.

SD	D	NO	A	SA

Expert Number: _____

5. By 2025, the Brazilian Federal Government should **define directives and strategic directions for the organization of VTET.**

SD	D	NO	A	SA

6. By 2025, the Brazilian Federal Government should **play more of a leadership/guidance (vs operational) role in vo-tech education/training**, serving as a catalyst for bringing about high quality program design and implementation at the state and local levels.

SD	D	NO	A	SA

7. By 2025, the Brazilian Federal Government should **provide leadership to the VTET systems not only by developing an education action plan taking into consideration the national priorities, but also by supporting, and monitoring its implementation.**

SD	D	NO	A	SA

8. By 2025, the Brazilian Federal Government should **establish policies and directives in VTET**. The policies and strategies at the federal level must count on partnerships with the states and municipalities, in consortium with the various segments of society. The federal policies must stimulate and respect the regional peculiarities.

SD	D	NO	A	SA

9. By 2025, the Brazilian Federal Government should **develop a national vo-tech education policy that differentiates the roles of the various providers and employers.**

SD	D	NO	A	SA

10. By 2025, the Brazilian Federal Government should **be responsible for establishing the national policies and directives for technological education (and not VTET), having input from the productive sector.**

SD	D	NO	A	SA

11. By 2025, if a socialist group governs Brazil, the Federal Government should **be developing policies for development for professions in conjunction with society.**

SD	D	NO	A	SA

12. By 2025, the Brazilian Federal Government should be **defining and setting the framework of educational policy goals for vo-tech education/training in collaboration with ministries of labour and education/culture.**

SD	D	NO	A	SA

13. By 2025, **technical education** (higher education level) should be offered by federally owned, supported and operated educational facilities.

SD	D	NO	A	SA

14. By 2025, **vo-tech education** (secondary level) should be offered by federally owned supported and operated institutions.

SD	D	NO	A	SA

15. By 2025, **training** (non formal VTET) should be offered by federally owned, supported and operated educational institutions.

SD	D	NO	A	SA

Expert Number: _____

16. By 2025, the Brazilian Federal Government should have **expanded its present network of technological education facilities.**

SD	D	NO	A	SA

17. By 2025, the Brazilian Federal Government should **own, support and operate a reference network of VTET educational facilities.**

SD	D	NO	A	SA

18. By 2025, if a socialist group governs Brazil, the Federal Government should **be providing development for professions along with other providers.**

SD	D	NO	A	SA

19. By 2025, the Brazilian Federal Government should **offer vo-tech education and training in occupational areas not spontaneously covered by other non totally public systems (S Systems and others).**

SD	D	NO	A	SA

20. By 2025, the Ministry of Education and Sports should **be progressively disengaging or have disengaged of offering vo-tech education which should be transferred to states and/or municipalities.** MEC will neither fund or operate.

SD	D	NO	A	SA

21. By 2025, the Brazilian Federal Government should **fund the whole VTET system, including teachers salaries, buildings, equipments and study materials.**

SD	D	NO	A	SA

22. By 2025, the Brazilian Federal Government should **provide funds for staff development for vo-tech education.**

SD	D	NO	A	SA

23. By 2025, the Brazilian Federal Government should **provide funds for purchase equipment for vo-tech educational facilities.**

SD	D	NO	A	SA

24. By 2025, the Brazilian Federal Government should **provide funds for programs development and dissemination in vo-tech education.**

SD	D	NO	A	SA

25. By 2025, if a neoliberal group continues to govern Brazil, the Federal Government **will be a development for professions public fund (such as the FAT presently) distributor for which public and private institutions, NGOs , and others will compete for.**

SD	D	NO	A	SA

26. By 2025, the Brazilian Federal Government should be **planning, suggesting and evaluating different options of funding vo-tech education/training.** (To tell one functional experience from the other side of the world: The Nordic countries are funding the huge and organized VET systems by tax money that has created equal and democratic choices and opportunities to all people.)

SD	D	NO	A	SA

27. By 2025, the Brazilian Federal Government should **be a provider of funds to activities in technical education (higher education level).**

SD	D	NO	A	SA

Expert Number: _____

28. By 2025, the Brazilian Federal Government should be a provider of funds to activities in vo-tech education (secondary level).

SD	D	NO	A	SA

29. By 2025, the Brazilian Federal Government should be a provider of funds to activities in training (non formal VTET).

SD	D	NO	A	SA

30. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in federally owned and operated schools/educational facilities.

SD	D	NO	A	SA

31. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in state owned and operated schools/educational facilities.

SD	D	NO	A	SA

32. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in municipally owned and operated schools/educational facilities.

SD	D	NO	A	SA

33. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the business and industry federations (such as the S System).

SD	D	NO	A	SA

34. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the workers unions.

SD	D	NO	A	SA

35. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in private schools/educational facilities.

SD	D	NO	A	SA

36. By 2025, the Brazilian Federal Government may fund selectively in some strategic areas, particularly the R&D of training.

SD	D	NO	A	SA

37. By 2025, federal funds should be provided for support of research about vo-tech education and training.

SD	D	NO	A	SA

38. By 2025, federal funds should be provided for support of teacher training for vo-tech education/training programs.

SD	D	NO	A	SA

39. By 2025, federal funds should be provided for support of leadership and administrative training for running vo-tech education and training programs.

SD	D	NO	A	SA

Expert Number: _____

40. By 2025, federal funds should be provided for support of the national advisory council for vo-tech education and training.

SD	D	NO	A	SA

41. By 2025, the Brazilian Federal Government should have no role in VTET.

SD	D	NO	A	SA

42. By 2025, the Brazilian Federal Government should not be setting standards in VTET themselves; however, they should help to manage a process by which high standards are set with the concurrence of all interested and affected parties.

SD	D	NO	A	SA

43. By 2025, the Brazilian Federal Government should provide technical assistance and information on best practices and leading innovation to providers and practitioners of VTET.

SD	D	NO	A	SA

44. By 2025, the Brazilian Federal Government should ensure that disadvantaged and disabled individuals have access to services in VTET. The federal government must ensure access to high quality programs for all individuals, which means they must provide supplemental services in some cases where needed.

SD	D	NO	A	SA

45. By 2025, the Brazilian Federal Government should lead VTET through positive encouragement or incentive, not through overmanagement, overly prescribed regulation or negative consequences for certain behaviors.

SD	D	NO	A	SA

46. By 2025, the Brazilian Federal Government agencies and officials should model the kinds of behavior they expect from regional or local institutions and individuals in VTET.

SD	D	NO	A	SA

47. By 2025, the Brazilian Federal Government should have set up an infrastructure for curriculum development for VTET.

SD	D	NO	A	SA

48. By 2025, the Brazilian Federal Government should have set up a system for VTET teacher training.

SD	D	NO	A	SA

49. By 2025, the Brazilian Federal Government should be using a balanced system of school-based and national testing in VTET.

SD	D	NO	A	SA

50. By 2025, the Brazilian Federal Government should have a system for school-into-work transition.

SD	D	NO	A	SA

51. By 2025, the Brazilian Federal Government should provide incentives for the creation and maintainance of VTET schools that operate as Vocational-Technical/Technical Reference Centers for the regions where they are located and for the occupational areas for which they have programs.

SD	D	NO	A	SA

Expert Number: _____

52. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for maintaining more effective program operations and management.**

SD	D	NO	A	SA

53. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for establishing stronger partnerships between vo-tech/training programs and the private sector.**

SD	D	NO	A	SA

54. By 2025, the Brazilian Federal Government should **provide leadership to states** for assisting **local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for assessing more frequently, and in different ways, regional manpower needs and job skill requirements.**

SD	D	NO	A	SA

55. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for developing broader-based program curricula, materials, and instructional methodology.**

SD	D	NO	A	SA

56. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for forming, and using more effectively, local program advisory committees.**

SD	D	NO	A	SA

57. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for refining and expanding business/industry cooperative and other joint training ventures.**

SD	D	NO	A	SA

58. By 2025, the Brazilian Federal Government should **support research in the development of curricula, materials, and new approaches to teaching/learning in vo-tech education/training, as well as new modes of worker utilization, e.g., worker teaming, etc., and ways to respond more quickly to employer demands for new worker skills.**

SD	D	NO	A	SA

59. By 2025, the Brazilian Federal Government should **provide guidelines for state and local development/adaptation of curricula and materials for vo-tech education and training.**

SD	D	NO	A	SA

Expert Number: _____

60. By 2025, the Brazilian Federal Government should **provide incentives for state and local development/demonstration of exemplary programs in vo-tech education and training.**

SD	D	NO	A	SA

61. By 2025, the Brazilian Federal Government should **provide leadership and financial support to universities** (selected competitively), possibly through states, **for developing high quality and relevant teacher education/training, as well as special programs for developing vocational-technical/training leadership and administrative personnel to serve at the federal, state, and local levels.**

SD	D	NO	A	SA

62. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing computer-based job information programs for vocational/career counseling of secondary students.**

SD	D	NO	A	SA

63. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing effective student/graduate placement programs.**

SD	D	NO	A	SA

64. By 2025, the Brazilian Federal Government should **provide leadership to states for establishing rapid response adult education/training programs** to assist workers in job advancement, keeping abreast of new technology, career changes, etc.

SD	D	NO	A	SA

65. By 2025, the Brazilian Federal Government should **establish a national advisory council** to keep in touch with the nation's workforce needs and recommend federal policy on development, funding, and evaluation of the country's vo-tech/training system.

SD	D	NO	A	SA

66. By 2025, the Brazilian Federal Government should **stimulate the private sector to be a provider of services in VTET.**

SD	D	NO	A	SA

67. By 2025, the Brazilian Federal Government should **have implemented the Technological Education National System**, which has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector (as it is said in the Act 8948/94).

SD	D	NO	A	SA

68. By 2025, the Brazilian Federal Government should **be coordinating the Technological Education National System.**

SD	D	NO	A	SA

Expert Number: _____

69. By 2025, the Brazilian Federal Government should be **promoting and making accessible secondary level basic development in 5-6 big occupational clusters**, such as: Computer Science and Telecommunications; Mechanics and Electronics; Communications, Language and Arts; Business Administration and Accounting; Urban and Regional Planning and Environment; Health Occupations and Biotechnology.

SD	D	NO	A	SA

70. By 2025, at the post secondary level, the Brazilian Federal Government should be **primarily supporting, in partnership with the states, programs that are profession-related lasting 2-3 years targeting specific professions.**

SD	D	NO	A	SA

71. By 2025, at the post secondary level, the Brazilian Federal Government should be **primarily supporting, in partnership with the municipalities, programs that are profession-related lasting 2-3 years targeting specific professions.**

SD	D	NO	A	SA

72. By 2025, the Brazilian Federal Government should **provide the political leadership needed to move vocational-technical education to the top of the national agenda.**

SD	D	NO	A	SA

73. By 2025, the Brazilian Federal Government **serve a national "clearing house" function in VTET.**

SD	D	NO	A	SA

74. By 2025, the Brazilian Federal Government role should be **largely framework-setting with greater control at provincial levels. Federalized systems probably will not be responsive to area needs.** There is a positive, forceful role for government - but not as provider!

SD	D	NO	A	SA

75. By 2025, the Brazilian Federal Government should **promote all forms of vocational preparation and re-training through a mix of institutional approaches and should use a mix of incentives to insure that workforce entrants and participants - as well as employers at all levels - are induced to fully participate.**

SD	D	NO	A	SA

76. By 2025, if a neoliberal group continues to govern Brazil, the development for professions will be **under the Ministry of Labor and not anymore under the Ministry of Education and Sports.**

SD	D	NO	A	SA

77. By 2025, if a socialist group governs Brazil, the Federal Government should be **implementing a public, tuition-free, lay, universal, unitary and technological or polytechnic school system.**

SD	D	NO	A	SA

78. By 2025, if a socialist group governs Brazil, the Federal Government should be **democratizing the control of development for professions providers that use public funds.**

SD	D	NO	A	SA

79. By 2025, if a socialist group governs Brazil, the Federal Government should **implementing legislation that favors the participation of youngsters and workers in development for professions.**

SD	D	NO	A	SA

Expert Number: _____

80. By 2025, the Brazilian Federal Government should **have the role of organizer for the development of world-class VTET**. Organize through strategic planning for the future, focusing on world-class VTET as a top priority for 2025.

SD	D	NO	A	SA

81. By 2025, the Brazilian Federal Government should **have the role of facilitator for the development of world-class VTET**. Facilitate the collaboration of the various ministries, organizations, businesses, industries and municipalities to achieve world-class VTET.

SD	D	NO	A	SA

82. By 2025, the Brazilian Federal Government should **have the role of "cheerleader" for the development of world-class VTET**. Actively support (cheerleader) and publicize the movement toward world-class VTET, educating people in the need for world-class VTET and the contributions it can make to economic and social development.

SD	D	NO	A	SA

83. By 2025, the Brazilian Federal Government should **be the coordinator of the development of human resources for the various occupational areas and skills levels required by the productive sectors**.

SD	D	NO	A	SA

84. By 2025, the Brazilian Federal Government should **retain its normative role in VTET**.

SD	D	NO	A	SA

85. By 2025, the Brazilian Federal Government should **retain its evaluation role in VTET**.

SD	D	NO	A	SA

86. By 2025, the Brazilian Federal Government should **be creating many optional models of vo-tech education and training including modern technology for people**. Brazil is a large country with heterogeneous population. Different people with varied social backgrounds will need many choices.

SD	D	NO	A	SA

87. By 2025, the Brazilian Federal Government should be **ensuring that vo-tech education and training is an essential and integrated part of the Brazilian educational system at all levels** (kindergarten, primary, secondary, tertiary and adult education).

SD	D	NO	A	SA

88. By 2025, the Brazilian Federal Government should be **to planning and suggesting optional educational pathways to advance in vo-tech education and training** (e.g., school-based route, work-based or apprenticeship route, mixed routes, vo-tech education and training examination for adults recognizing prior learning etc.)

SD	D	NO	A	SA

Expert Number: _____

SECTION 2: ORGANIZATION OF VTET IN BRAZIL

What follows is a consolidated list based on the predictions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to aspects of the organization of vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) in Brazil by the year 2025 - who should provide it, who should fund it, in which format, etc. If you don't consider a particular listing an aspect of the organization or strongly disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Please indicate by an "X" the answer chosen for each item below:

 S C A L E

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

• Who to provide it?

89. By 2025, there should exist a system of VTET that relies on many different providers.

SD	D	NO	A	SA

90. By 2025, there should be VTET schools organized, operated, and supported by workers organized in unions and Union Centrals, with compulsory contributions such as union tax and Assistance to the Unions contribution.

SD	D	NO	A	SA

91. By 2025, VTET might be delivered in "public VTET centers" of triparty management (government, entrepreneurs and workers).

SD	D	NO	A	SA

92. By 2025, VTET will be offered only by the companies. There will not be a government system (public) which offers VTET.

SD	D	NO	A	SA

93. By 2025, there will be need therefore to involve business and industry to a much greater extent for selected occupational areas, with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

Expert Number: _____

94. By 2025, **vo-tech schools** will need to provide more in-service training for workers through joint ventures with local employers. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

95. By 2025, a **system of regional vo-tech schools** will be necessary for the basic, more general, training, with authority vested in the regions' perspective states for supervision and for ensuring that basic academic and training standards are being met. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

96. By 2025, **VTET should be offered by double partnerships (government/private sector) or triple ones (government/private sector/ society), or others**, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

SD	D	NO	A	SA

97. By 2025, **technical education (higher education level) should be offered by state owned, supported and operated educational facilities.**

SD	D	NO	A	SA

98. By 2025, **vocational-technical education (secondary level) should be offered by state owned, supported and operated educational facilities.**

SD	D	NO	A	SA

99. By 2025, **training (non formal VTET) should be offered by state owned, supported and operated educational facilities.**

SD	D	NO	A	SA

100. By 2025, **technical education (higher education level) should be offered by municipally owned, supported and operated educational facilities.**

SD	D	NO	A	SA

101. By 2025, **vo-tech education (secondary level) should be offered by municipally owned, supported and operated educational facilities.**

SD	D	NO	A	SA

102. By 2025, **training (non formal VTET) should be offered by municipally owned, supported and operated educational facilities.**

SD	D	NO	A	SA

103. By 2025, **technical education (higher education level) should be offered by privately owned, supported and operated educational facilities (owned by companies or not).**

SD	D	NO	A	SA

104. By 2025, **vo-tech education (secondary level) should be offered by privately owned, supported and operated educational facilities (owned by companies or not).**

SD	D	NO	A	SA

Expert Number: _____

105. By 2025, **training** (non formal VTET) should be offered by **privately owned, supported and operated educational facilities** (owned by companies or not).

SD	D	NO	A	SA

106. By 2025, **technical education** (higher education level) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

107. By 2025, **vo-tech education** (secondary level) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

108. By 2025, **training** (non formal VTET) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

109. By 2025, **technological education** should be offered in **specialized institutions**, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favouring the professional competency of its employees). In our case, **the present CEFETs constitute the reference model which can be improved**, the later regarding to specific career and autonomy.

SD	D	NO	A	SA

110. By 2025, **technological education** should be offered **preponderantly in public institutions** (normally federal and state ones).

SD	D	NO	A	SA

111. By 2025, if a neoliberal group continues to govern Brazil - as it is presently -, **education for professions** should be mostly offered by the **business or entrepreneurial world**, through institutions such as Euvaldo Lodi, Herbert Levy and other tradicional ones, transformed in service rendering companies for providing education for professions - SENAI, SENAC, SESC, SESI, etc.

SD	D	NO	A	SA

112. By 2025, if a socialist group governs Brazil, **education for specific professions** should be offered only by **public institutions**.

SD	D	NO	A	SA

113. By 2025, **initial development for professions** should be provided by a **mixed system**, that is, through public vocational and training facilities, and semi public and private ones which operate in an articulated way.

SD	D	NO	A	SA

114. By 2025, any **development for a profession after the initial one** should be provided by the **companies** themselves.

SD	D	NO	A	SA

115. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **public institutions** in occupational areas not spontaneously covered by **non totally public ones**.

SD	D	NO	A	SA

116. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **private institutions**.

SD	D	NO	A	SA

Expert Number: _____

117. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by semi-public institutions.**

SD	D	NO	A	SA

118. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by public institutions.**

SD	D	NO	A	SA

119. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by public institutions in partnerships with private organizations.**

SD	D	NO	A	SA

120. By 2025, **development for specific professions** **should be offered by private institutions/organizations.**

SD	D	NO	A	SA

121. By 2025, the **entrepreneurs** will invest in highly specialized development for professions and, fundamentally, necessary to the productive processes.

SD	D	NO	A	SA

122. By 2025, the **unions** will have programs of retraining for professions by the means of the utilization of agreements with specialized institutions.

SD	D	NO	A	SA

123. By 2025, the human resources development agencies directed to the entrepreneurs' interests, such as Senai, Senac, Senar, and others, should continue to exist.

SD	D	NO	A	SA

124. By 2025, the development of the individual (youngsters and adults) for the exercise of a profession, independent of it being demanded by any company at that moment in time, corresponding solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create of company related to the doing of his/her profession, besides other motives, **only will be offered by the governments**, because such characteristic of development does not pass concretely in front of the critical view of the companies.

SD	D	NO	A	SA

125. By 2025, there will be a wide range of private suppliers, particularly for short courses or those which combine modest costs and a vibrant labor market (such as computer science today).

SD	D	NO	A	SA

126. By 2025, foreign proprietary courses will compete successfully in some areas, often in joint ventures with local providers.

SD	D	NO	A	SA

127. By 2025, firms will invest in offering short and highly specialized training to its own workers (eventually opening these offerings to outsiders).

SD	D	NO	A	SA

Expert Number: _____

128. By 2025, vo-tech education/training (VET) might be delivered in VET centers depending on needs of trainees and business life.

SD	D	NO	A	SA

• Who to fund it?

129. By 2025, the funding of VTET will be public and private, combined and maximizing the various different existing funds (the FAT, compulsory tributes such as those that fund the S System, external sources and productive sector investments).

SD	D	NO	A	SA

130. By 2025, all different existing funds for VTET (the FAT, compulsory tributes such as those that fund the S System, external sources and productive sector investments) should be articulated, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favour of the generation of work and income, as well as in the modernization of the productive sector.

SD	D	NO	A	SA

131. By 2025, funding for VTET would come from the government but would be provided directly to individuals, as opposed to institutions or programs. Once an individual received funding support, based on need or some other criteria, he or she could use that support to pay for services from a wide range of providers, including the private sector.

SD	D	NO	A	SA

132. By 2025, the respective state governments will need to provide a portion (possibly 1/2) of the funds required for operation of the vo-tech schools. The remaining operational funds would need to be generated locally, e.g., from local taxes, private sector contributions, income earned from joint training ventures with business and industry, adult training tuition, etc.

SD	D	NO	A	SA

133. By 2025, funding for VTET will come from the companies themselves, with some government incentives for programs considered to be strategic manpower development. That is, there will be no public funding for VTET - apart from what was specified above.

SD	D	NO	A	SA

134. By 2025, funding for VTET may come from double partnerships (government/private sector) or triple ones (government/private sector/ society), or others, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

SD	D	NO	A	SA

135. By 2025, state governments should be providers of funds to activities in technical education (higher education level).

SD	D	NO	A	SA

136. By 2025, state governments should be providers of funds to activities in vocational-technical education (secondary level).

SD	D	NO	A	SA

Expert Number: _____

137. By 2025, **state governments** should be providers of funds to activities in **training** (non formal VTET).

SD	D	NO	A	SA

138. By 2025, **municipal governments** should be providers of funds to activities in **technical education** (higher education level).

SD	D	NO	A	SA

139. By 2025, **municipal governments** should be providers of funds to activities in **vocational-technical education** (secondary level).

SD	D	NO	A	SA

140. By 2025, **municipal governments** should be providers of funds of activities in **training** (non formal VTET).

SD	D	NO	A	SA

141. By 2025, **semi public organizations** should be providers of funds to activities in **technical education** (higher education level).

SD	D	NO	A	SA

142. By 2025, **semi public organizations** should be providers of funds to activities in **vocational-technical education** (secondary level).

SD	D	NO	A	SA

143. By 2025, **semi public organizations** should be providers of funds to activities in **training** (non formal VTET).

SD	D	NO	A	SA

144. By 2025, **private organizations** should be providers of funds to activities in **technical education** (higher education level).

SD	D	NO	A	SA

145. By 2025, **private organizations** should be providers of funds to activities in **vocational-technical education** (secondary level).

SD	D	NO	A	SA

146. By 2025, **private organizations** should be providers of funds to activities in **training** (non formal VTET).

SD	D	NO	A	SA

147. By 2025, **private institutions**, for profit or not, may receive subsidies for offering **training** (non formal VTET) based on a certain amount of money per slot offered or scholarships for enrollment.

SD	D	NO	A	SA

148. By 2025, students enrolled in **technical programs** (higher education level) in **public schools/educational facilities** should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

149. By 2025, students enrolled in **vocational-technical programs** (secondary level) in **public schools/educational facilities** should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

Expert Number: _____

150. By 2025, students enrolled in training programs (non formal VTET) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

151. By 2025, the S System institutions should have kept its present funding form.

SD	D	NO	A	SA

152. By 2025, student loans should be provided to individuals for getting VTET in private organizations.

SD	D	NO	A	SA

153. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses.

SD	D	NO	A	SA

154. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses being admissible complementary and additional forms of fund raising, through co-operative societies and service rendering (extension services must not be charged).

SD	D	NO	A	SA

155. By 2025, if any nation want to be competitive itt should have earmarked governmental funds for skill development.

SD	D	NO	A	SA

156. By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

SD	D	NO	A	SA

157. By 2025, funding for vo-tech education/training will continue to be a critical issue. **Much of the funding for vo-tech education/training should be private through various incentives - both push and pull. Loans to individuals under long term (repairment provisions) may be an important means of shifting responsibility for a productive return to the beneficiary.**

SD	D	NO	A	SA

158. By 2025, if a neoliberal group continues to govern Brazil, **funding for VTET should, in part, come from the public fund in partnerships with the private sector.**

SD	D	NO	A	SA

159. By 2025, if a neoliberal group continues to govern Brazil, **funding for VTET should, in part, come from students which would pay for certain programs/courses.**

SD	D	NO	A	SA

160. By 2025, if a socialist group governs Brazil, **development for specific professions should be funded only by public resources.**

SD	D	NO	A	SA

Expert Number: _____

161. By 2025, **basic development for professions** (inclusive in areas of innovation) should be supported by **public funding**.

SD	D	NO	A	SA

162. By 2025, **development for specific professions** should be supported by **private funding with public incentives**.

SD	D	NO	A	SA

163. By 2025, **funding for VTET** will come from private interests when it meets their specific needs.

SD	D	NO	A	SA

164. By 2025, **funding for VTET** will come from public resources in order to meet the persons' needs independent of companies ones.

SD	D	NO	A	SA

165. By 2025, the public sectors (not MEC) will concentrate on funding of expensive and long training, particularly in complex technologies.

SD	D	NO	A	SA

166. By 2025, expensive and long training, particularly in complex technologies will be delivered by private and semi public providers (the successors of the S System).

SD	D	NO	A	SA

167. By 2025, longer and more expensive VTET programs will operate under a complex mix of cost recovery and public subsidies.

SD	D	NO	A	SA

168. By 2025, public VTET will charge a variable fee from students.

SD	D	NO	A	SA

169. By 2025, private VTET will get subsidies.

SD	D	NO	A	SA

170. By 2025, students may get vouchers to attend chosen schools.

SD	D	NO	A	SA

171. By 2025, ability to pay and individual potential will generate complex algorithms to determine pay/subsidies for VTET programs/courses.

SD	D	NO	A	SA

• In what format?

172. By 2025, VTET courses and programs will be offered based on the marketplace and workers demand (instead of depending on the offer of the VTET providers, as it happens today, which rarely takes into consideration the profile of the clientele and the needs of the labor market).

SD	D	NO	A	SA

Expert Number: _____

173. By 2025, some amount of VTET would be provided through distance learning.

This opens up a whole range of opportunities for individual learners, especially those who are in remote locations.

SD	D	NO	A	SA

174. By 2025, VTET programs, for adults already in the workforce, will be shorter and more often related directly to work needs and often provided on the job.

SD	D	NO	A	SA

175. By 2025, classroom teaching in VTET will have to be linked to real work applications and experiences.

SD	D	NO	A	SA

176. By 2025, further training beyond the first general qualification should be provided by the employers.

SD	D	NO	A	SA

177. By 2025, training of unemployed should be the responsibility of the State (Public Government).

SD	D	NO	A	SA

178. By 2025, there should be a VTET system funded by the State (Public Government), tuition-free, open to unskilled individuals.

SD	D	NO	A	SA

179. By 2025, there should be a VTET funded by the State (Public Government), tuition-free, open to those that want to upgrade their current skills or to acquire new ones - it does not matter if the individual is employed or not.

SD	D	NO	A	SA

180. By 2025, the present vocational-technical schools should have become **Technology and Technical Reference Centers** (Technical and Vocational-Technical Education Reference Centers) for the regions where they are located and for the occupational clusters in which they offer programs.

SD	D	NO	A	SA

181. By 2025, the present vo-tech schools as **Technology and Technical Reference Centers** should offer training programs/courses (non formal VTET) - independent of the number of school years the candidate has completed before beginning a program.

SD	D	NO	A	SA

182. By 2025, the present vo-tech schools as **Technology and Technical Reference Centers** should offer secondary level assistant technicians programs: for those who completed K-8 grade education.

SD	D	NO	A	SA

183. By 2025, the present vo-tech schools as **Technology and Technical Reference Centers** should offer secondary level technician programs: for students that are in 9-11/12 grade school or who have completed this level of instruction.

SD	D	NO	A	SA

184. By 2025, the present vo-tech schools as **Technology and Technical Reference Centers** should offer associate of science programs: for those who completed 9-11/12 grade school.

SD	D	NO	A	SA

Expert Number: _____

185. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer work-targeted specialization, improvement and updating programs to individuals who have already joined the workforce or that have already been trained before.

SD	D	NO	A	SA

186. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer alternatives of vocational-technical certification for those who acquire their skills through work-based training, taking advantage of the non formal alternatives of development for work, or through self-learning. The criteria and parameters of this occupational certification will be agreed upon among the educators, workers and entrepreneurs, mediated by the Government.

SD	D	NO	A	SA

187. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. This will allow room in the curricula for expanding/increasing the general education content and for providing more generalized, broader-based technical instruction in preparation for the specialized training.

SD	D	NO	A	SA

188. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. There will be need to build in some formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire program

SD	D	NO	A	SA

189. By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without no interference or participation of the federal government.

SD	D	NO	A	SA

190. By 2025, VTET will be offered through the format of specialized, short-term and for updating/recycling skills training, through continuing education.

SD	D	NO	A	SA

191. By 2025, flexibility, rapidity, low cost, virtuality will be for sure attributes of the VTET, and more so when there is an adult public interested in it.

SD	D	NO	A	SA

192. By 2025, creativity and openness to changes will have to be emphasized in VTET so that the new generations can each time more adapt themselves to the new age, contributing to its evolution.

SD	D	NO	A	SA

193. By 2025, it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education for the globalization requires a sound general education.

SD	D	NO	A	SA

Expert Number: _____

194. By 2025, the basic development for professions - in one of the 5-6 clusters profession clusters - should occur mandatorily during 9-11/12 grade instruction, being part of the curriculum along with disciplines of general humanistic and scientific development: Communication, Social Studies, and Sciences. Contents more "applied" or of major applicability taught presently in 9-11/12 grade instruction will become part of the "profession-gearred" curriculum.

SD	D	NO	A	SA

195. By 2025, mandatory 9-11/12 grade and profession geared instruction should be offered concomitantly or in the same school, public or private, or in Schools Consortiums where certain disciplines may be taken. In order to complete 9-11/12 grade instruction, the students will have to taken all the general and "profession-gearred" courses which will have an equivalent number of hours of instruction.

SD	D	NO	A	SA

196. By 2025, there should be allowed flexibility in VTET instruction at the regional and local levels.

SD	D	NO	A	SA

197. By 2025, most technical specific training should happen at the post secondary or apprenticeship levels. Much of the ground work and systems work for VTET should happen at the secondary levels. The 2+2 Tech Prep Associate Degree Program is an example of that. It is important to develop a seamless curricular program.

SD	D	NO	A	SA

198. By 2025, CEFETs or equivalent institutions should be in place to meet the demands of HR in their various levels of instruction of technological education which articulate naturally among themselves. In that way, those institutions must have as characteristics the verticality of instruction (all possible levels of instruction in the same institution), and strong interation with the productive sector.

SD	D	NO	A	SA

199. By 2025, for school leavers at any age, hopefully 16-18 years, but even 14 years, a vocational option through training should be available.

SD	D	NO	A	SA

200. By 2025, adult vocational education (training) for those who have discontinued academic studies is a vital objective, whether for 14, 24, 34, or 44-year old person. Prosperity for all will not occur without societal intent to achieve full employment in a dynamic, technologically-advanced economy. A constantly churning vocational education system is a necessity.

SD	D	NO	A	SA

201. By 2025, if a neoliberal group continues to govern Brazil, the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector. In this sense the "theory" or ideology of the "competencies" or of the basic skills - basic skills - offered by the empirism of the productive world - will be the parameter of the development of a individual for a profession.

SD	D	NO	A	SA

Expert Number: _____

202. By 2025, **development for professions should offered in the format of the classical school.** Theoretically the new scientific-technical base, under the aegis of the microelectronics, genetic engineering, new sources of energy, structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, such format would constitute in the best development for a profession, even taking as a criteria only the economic dimension. With this would come, however, also, the reality of a citizen able to read critically the reality more and more complex and to organize him/herself to have the right to a worthy life, even that the world of employment be more and more scarce and unnecessary.

SD	D	NO	A	SA

203. By 2025, if a socialist group governs Brazil, **development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction.** K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnic school.

SD	D	NO	A	SA

204. By 2025, if a socialist group governs Brazil, **development for specific professions should be done after the completion of 9-11/12 grade polytechnic instruction or in parallel to the latter - this last option should be offered in a specific school system which provided both 9-11/12 grade polytechnic instruction and education for a specific profession in the same school with an increased school workload.** In both situations, education should be public, tuition-free, lay, universal, unitary and technological or polytechnical.

SD	D	NO	A	SA

205. By 2025, **the S System should be being run by a triparty administration (entrepreneurs, workers, and government) which would control all its aspects.**

SD	D	NO	A	SA

206. By 2025, **public centers of development for professions should be in operation.** Such organizations would have flexible schedules and a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific type of development.

SD	D	NO	A	SA

207. By 2025, **Public Government will not get involved in the development of individuals for specific professions** (the tendency would be the dissemination of the corporative education, interested in the organization of the production and capital).

SD	D	NO	A	SA

208. By 2025, **there should be oversight for vo-tech education and training at the highest level of government through a joint council.**

SD	D	NO	A	SA

209. By 2025, **vo-tech education and training responsibilities should be detailed and those who are given certain responsibilities must be held accountable for results.**

SD	D	NO	A	SA

210. By 2025, **curriculum links should have been forged between public vo-tech education and training and others** to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises.

SD	D	NO	A	SA

Expert Number: _____

211. By 2025, the vocational-technical vs vocational (training) distinction will fade.

SD	D	NO	A	SA

212. By 2025, the fixed structures presently observed in vocational (training) and vocational-technical education will fade.

SD	D	NO	A	SA

213. By 2025, training in general will be offered through a number of delivery methods (combination of various instructional technologies packages will be pervasive).

SD	D	NO	A	SA

214. By 2025, simple courses will be franchised to smaller operators, such as MacDonald's or Yazigi's.

SD	D	NO	A	SA

215. By 2025, the states governments should monitor the efforts of meeting the policy goals of vo-tech education and training (VET).

SD	D	NO	A	SA

216. By 2025, the municipalities governments should monitor the efforts of meeting the policy goals of VET.

SD	D	NO	A	SA

217. By 2025, the types of providers of VET should be related to age groups and their needs.

SD	D	NO	A	SA

218. By 2025, one of the formats of delivering VET should be the school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems.

SD	D	NO	A	SA

219. By 2025, one of the formats of delivering VET should be the work-based model avoiding the disadvantages of the German dual system.

SD	D	NO	A	SA

220. By 2025, one of the formats of delivering VET should be the mix of school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems and the work-based model avoiding the disadvantages of the German dual system (see the recent Austrian reforms).

SD	D	NO	A	SA

221. By 2025, one of the formats of delivering VET should be qualification-based examination for adults and experienced persons to recognize their competencies.

SD	D	NO	A	SA

• Other aspects

222. By 2025, the tripartism (government, workers, and entrepreneurs) or multipartism in the management of public VTET schools/educational facilities must be implemented.

SD	D	NO	A	SA

Expert Number: _____

223. By 2025, **VTET should have eliminated the distance between intellectual and manual work.** It is necessary to have brought closer the conception and execution functions.

SD	D	NO	A	SA

224. By 2025, **VTET should go beyond the learning of simple technical applications for immediate entrance in the labor market.** VTET involvement with the advancements of sciences and techniques become necessary for the establishment of the circle of participation among the generation, transfer and application of technologies. As a matter of fact, the selection, use and absorption of a technology requires a level o technological familiarity, of the same magnitude of the necessity to generate it.

SD	D	NO	A	SA

225. By 2025, **it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss in their revenues (wages/salaries).**

SD	D	NO	A	SA

226. By 2025, **development for professions** should develop individuals that, at the same time, are technically competent and that also have a scientific spirit and ability, and critic sense to integrate themselves effectively as citizens and influence on the decision about who and how many people science, technic, and production should serve.

SD	D	NO	A	SA

227. By 2025, **the public policies and activities should not inhibit the VTET initiatives of the productive segments that belong to the private sector.**

SD	D	NO	A	SA

THANK YOU

APPENDIX L
DESCRIPTION OF BRAZILIAN
EDUCATION

Information for Consultation
(Attachment to Rounds II and III Survey Instruments)

Changing of Paradigm: Developing a Contemporary Strategy
for Technological Education in Brazil

Organized in Portuguese and translated to English by Paulo de Tarso Costa Henriques (OAED doctoral candidate, College of Education, Oklahoma State University, March 2, 1998).

Federative Republic of Brazil (República Federativa do Brasil):

http://www.brazil.gov.br	(Brazilian Government)
http://www.radiobras.gov.br	(Brazilian Government Public Relations Agency)
http://www.ibge.gov.br	(Brazilian Census Bureau)

Schooling Education in Brazil (Educação Escolar no Brasil):

(According to the Constitution of the Federative Republic of Brazil promulgated on October 5, 1988, constitutional amendments, complementary laws, ordinary laws, decrees, executive orders, and experts' reports known to be in effect up to Jan. 30, 1998.)

Origin of the text below: <http://www.mec.gov.br> [Ministry of Education and Sports (Ministério da Educação e do Desporto - MEC), Brazil] (Jan. 30, 1998).

“The **Brazilian Schooling Education** (Educação Escolar Brasileira) is divided in two **Levels** (Níveis): **K-11/12 Education** (Educação Básica) and **Higher Education** (Educação Superior). Besides the levels, **Modalities** (Modalidades) of Education complement the conventional instruction.

The **Organization of Education** (Organização da Educação) presents basic information regarding to the administration of the educational system and the composition of the Union, Municipalities, States, and Federal District (where Brasília, the capital of Brazil, is located) instructional systems.

The **General Characteristics** (Características Gerais) presents information shared by the levels and modalities of Education and Instruction.

“The national **Schooling Education** (Educação Escolar) is constituted by **two Levels** (Níveis): **K-11/12 Education** (Educação Básica) and **Higher Education** (Educação Superior).

K-11/12 Education (Educação Básica) is organized in the following way: **Children’s Education (Educação Infantil)**, **1-8 Grade Instruction (Ensino Fundamental)** and **9-11/12 Grade Instruction (Ensino Médio)**.”

“**Children’s Education (Educação Infantil)** corresponds to the first phase of K-11/12 Education (**Educação Básica**). It is not mandatory and is designed for children younger than 7 years of age. Among the Children’s Education (**Educação Infantil**) schools, the child care centers (creches) host children up to three years old and the pre-schools (pré-escolas) host children from four to six years old.”

“**1-8 Grade Instruction (Ensino Fundamental)** is mandatory for all children from 7 to 14 years of age. It consists of eight grades, requiring annually, and at least, 800 contact hours of activities”. “1-8 Grade Instruction (**Ensino Fundamental**) is tuition-free in public schools, even for those who are already older than 14 years. The **overall curriculum (currículo pleno)** is prepared from **subjects (matérias)** set at the national level, by a common base, and at the regional level, by a diversified part, according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students.” (This level was previously called “**Ensino de 1º Grau**”).

9-11/12 Grade Instruction (Ensino Médio) is not mandatory yet as 1-8 Grade Instruction (**Ensino Fundamental**) is. For a while, the Constitution determines that it is a duty of the State [o **Estado** = the Public Government] to progressively extend its compulsiveness.” “The access to 9-11/12 Grade Instruction (**Ensino Médio**), tuition-free in public schools, is independent of admission exam and is open to the student that has completed, satisfactorily, the eight grades of 1-8 Grade Instruction (**Ensino Fundamental**). It consists of 2,200 contact hours, distributed in at least 3 annual grades.” “The **overall curriculum (currículo pleno)** is prepared from **subjects (matérias)** set at the national level, by a common base, and at regional level, by a diversified part, according to the need of meeting the local peculiarities, the schools plans, and the individual differences among the students.” “The Vocational Instruction (**Ensino Técnico**) corresponds to one of the levels of Vocational-Technical Education and Training (**Educação Profissional**) and operates in a parallel or sequential mode to 9-11/12 Grade Instruction (**Ensino Médio**).” (The latter was previously called “**Ensino de 2º Grau**”).

“**Higher Education (Educação Superior)** is organized in the following programs (**cursos e programas**): undergraduate programs (**cursos de graduação**); masters and doctoral programs (**programas de mestrado e doutorado**) and specialization (**curso de especialização**), improvement (**curso de aperfeiçoamento**), and updating (**curso de atualização**) programs at graduate level; sequential programs/courses of different fields and levels (**cursos seqüenciais de diferentes campos e níveis**) and extension courses and programs (**cursos e programas de extensão**).” “Higher Education (**Educação Superior**), besides preparing individuals at the higher education level (**formar profissionais de nível universitário**), has the goal of developing

research (pesquisa), the cultural, scientific and technical knowledge (conhecimentos culturais, científicos e técnicos). Due to that, it is organized in various programs (cursos e programas):

- **Undergraduate programs** (cursos de graduação), open to candidates that have completed 9-11/12 Grade Instruction (Ensino Médio) or equivalent and have been selected thorough an entrance exams process (classificados por processo seletivo);
- **Masters and doctoral programs** (programas de mestrado e doutorado) **and specialization, improvement and updating programs** (Cursos de especialização, aperfeiçoamento e atualização), all at graduate level (pós-graduação), open to those who have completed undergraduate programs [minimum 4-year programs] (cursos de graduação) and that meet the exigencies of the instructional institutions (instituições de ensino) they apply for;
- **Sequential programs/courses of different fields and levels** (cursos seqüenciais de diferentes campos e níveis), open to those who meet the exigencies of the instructional institutions (instituições de ensino) they apply for.
- **Extension courses and programs** (cursos e programas de extensão), open to those who meet the exigencies of the instructional institutions (instituições de ensino) they apply for.”

Higher Education (Educação Superior) or Higher Instruction (Ensino Superior) was previously called “Ensino de 3º. Grau”.

“**Undergraduate programs** (cursos de graduação) last from four to six years. At the graduate level (pós-graduação), **masters programs** (programas de mestrado) last from two to four years, and **doctoral programs** (programas de doutorado) last from four to six years. The regular school year (ano letivo regular), independent of the civil year, has, at least, 200 school days of actual academic work (trabalho acadêmico), excluded are the periods of time reserved for final exams (exames finais), whenever they are required.

Public higher instruction (ensino superior público) is tuition-free, operated on government funds and taught, predominantly, in day-time programs (cursos diurnos). **Private higher instruction** (ensino superior privado) is paid and predominantly taught in evening-time programs (cursos noturnos).”

“In order to meet the different educational needs, in the different levels of instruction (níveis de ensino), the national schooling education (educação escolar nacional) has **modalities** (modalidades) of education: **Youth and Adult Education** (Educação de Jovens e Adultos), **Vocational-Technical Education and Training** (Educação Profissional), **Special Education** (Educação Especial), and **Distance Education** (Educação a Distância).”

“For the youngster or adult who has not followed or completed regular schooling, in the proper age, there is the possibility of continuing their schooling through tuition-free courses and **General Educational Development [GED] tests** (cursos e exames supletivos gratuitos). These educational opportunities, destined to the **Youth and Adult Education** (Educação de Jovens e Adultos), follow the characteristics, the needs and the interests of the students, guaranteeing to those that are workers the necessary means of access and permanence at school.

According to the new **Directives and Bases of Education Act** (Lei de Diretrizes e Bases da Educação - LDB, Lei nº 9.394, Dec. 20, 1996), also called **Darcy Ribeiro Act** (Lei Darcy Ribeiro), the minimum age for a person to take the GED tests (exames supletivos) equivalent to 1-8 Instruction (Ensino Fundamental) is 15 years and for the GED tests (exames supletivos) equivalent to 9-11/12 Grade Instruction (Ensino Médio) is 18 years.”

“The new Directives and Bases of Education Act (Lei de Diretrizes e Bases da Educação - LDB) establishes that students that have completed 1-8 grade instruction (ensino fundamental), 9-11/12 grade instruction (ensino médio) and higher instruction (ensino superior), as well as the worker in general, young or adult, has the possibility of access to **Vocational-Technical Education and Training** (Educação Profissional), as a way of qualification to the exercise of activities in the productive life.

Vocational-Technical Education and Training (Educação Profissional) can be developed in articulation with the regular instruction [schooling education] (ensino regular) or in modalities (modalidades) which meet continuing education (educação continuada) strategies. VTET can be offered in regular instruction schools (escolas do ensino regular), in specialized institutions (instituições especializadas) or in the workplace (ambientes de trabalho).

According to the Decree nº 2208 (Decreto nº 2208), published in the Official Diary (Diário Oficial) on April 18, 1997, which regulates some of the clauses (disposições) stated in the new LDB, **Vocational-Technical Education and Training** (Educação Profissional) includes the following levels:

- **Training** (Básico): destined to train a non-skilled person (qualificação), update one’s skills (requalificação), and train a worker for a different occupation of his/her (reprofissionalização)
- training is to be done independent of the worker’s previous schooling;
- **Vocational-technical** (Técnico): destined to prepare secondary level technicians (técnicos de nível médio) [a minimum of 1560 contact hours including 360-hour internship in business and industry per program] among those enrolled in 9-11/12 grade instruction (ensino médio) or those who have already completed 9-11/12 grade instruction (ensino médio);

- **Technical (Tecnológico)**: corresponds to higher education programs in the technological area, destined to those who have completed 9-11/12 grade instruction (ensino médio) and vocational instruction (ensino técnico) [an educational level/modality/grade completer = egresso].

The Decree nº 2208/97 still institutes the **certification by competence** (certificação por competência), which allows a worker (profissional do mercado) to get a diploma correspondent to secondary level technician (técnico de nível médio), through exams taken at the federal and state instruction Systems (Sistemas federal e estaduais de ensino).

The **federal technological education network** (rede federal de educação tecnológica) will have a four-year period, extendible to one additional year, to absorb such definitions, according to what is established in the MEC Ministerial Order (Portaria) nº 646, published in the Official Diary (Diário Oficial) on May 15, 1997.

Training (Educação Profissional de Nível Básico). It is a new modality (modalidade) of non formal education, of variable duration and without curricular regulation (regulamentação curricular). The institutions that offer VTET (Educação Profissional), funded by the Public Government (Poder Público), will have to, compulsorily, offer training courses/programs (cursos profissionais de nível básico) in their programming. For this, **federal technological education network** (rede federal de educação tecnológica) will have a transition period of four years, extendible for one additional year. Those who complete those courses/programs will get a certificate of occupational training (certificado de qualificação profissional).

Vocational-technical Education (Educação Profissional de Nível Técnico). It has its own curricular organization (organização curricular própria) and independent of the 9-11/12 Grade Instruction (Ensino Médio), and is offered either in parallel to 9-11/12 Grade Instruction or sequentially to it. To get a secondary level technician Diploma (diploma de Técnico de nível médio), the interested person must have the certificate of completion of the 9-11/12 Grade Instruction (certificado de conclusão do Ensino Médio). A vocational-technical program (curso de nível técnico) lasts from three to four annual grades, according to the vocational-technical program (habilitação profissional)."

"**Curriculum (Currículo)**: the **national curricular directives** (diretrizes curriculares nacionais) for the **vocational-technical programs** (cursos técnicos) are still being established by MEC [Ministry of Education and Sports], in consonance with the **National Council for Education** (Conselho Nacional de Educação). After this definition at a national level, the normative organs [órgãos normativos] of the respective instruction systems (sistemas de ensino) may establish the **mandatory minimum programs workload** (cargas horárias mínimas obrigatórias), the **basic contents** (conteúdos básicos), the **skills** (habilidades) and the **competencies** (competências) of the **vocational-technical programs** (cursos técnicos), per **career cluster** (área profissional). According to the Decree nº 2208/97, the **courses** (disciplinas) of the **vocational-technical curriculum** (currículo técnico) may also be grouped in **modules** (módulos), which may be taken intermittently and in different **institutions**

(instituições) that have been **accredited** (credenciadas) by **the state and federal systems** (sistemas estaduais e federal). The only exigency is that the period of time between the beginning of the first module and the conclusion of the last one does not exceed five years.”

“The **instructional facility** (estabelecimento de ensino) that grants the last **certificate of occupational training** (certificado de qualificação profissional) (regarding that last module taken) will issue (expedirá) the **diploma of secondary (9-11/12 Grade) level technician** (diploma de técnico de nível médio). Such granting (concessão) is dependent to the presentation, by the interested person, of the **certificate of completion of 9-11/12 Grade Instruction** (certificado de conclusão do Ensino Médio).”

“**Supervised Internship (Estágio Supervisionado)**: In the **vocational-technical** (técnico) and **teachership** (magistério) programs, besides the subjects (matérias) and courses (disciplinas), it is mandatory to take a supervised curricular internship (estágio curricular supervisionado), whose workload can not be less than a school semester (semestre letivo). Social, occupational, and cultural learning activities are part of the internship, which are made available to the student by the participation in real situations of life and work, under the responsibility of the school.

Instructors (Professores): The courses (disciplinas) of the curriculum of the vocational instruction (ensino técnico) will be taught by teachers (professores), trainers (instrutores) and instructor’s aides (monitores) selected, mainly, based on their work experience (experiência profissional). The preparation for vocational-technical teachership (magistério técnico) will be done through teaching licentiateship regular programs (cursos regulares de licenciatura) or special programs of pedagogical development (programas especiais de formação pedagógica), previously or in-service.”

“**Technical Education (Educação Profissional de Nível Tecnológico)**. **The higher level programs** (cursos de nível superior), that correspond to VTET (Educação Profissional) of **technological level** (nível tecnológico), will have to be structured to meet the needs of the various sectors of the economy, including specialized areas, and granting **the diploma of Associate of Science** (diploma de Tecnólogo).”

The **vocational-technical education and training schools** (escolas de educação profissional) keep a relation with the companies, so that it may be possible for the students to develop practical-occupational activities in the workplace, as part of their development (formação). On the other hand, VTET schools offer to the companies updating and refresher programs (cursos de atualização e reciclagem) for workers.”

“**Educação Especial (Special Education)**. The students that have special needs must be served (atendidos) by, preferentially, the regular instruction network (rede regular de ensino), with specific complementary supports (apoios complementares específicos). When

that might not be possible, the students should attend (freqüentar) specialized institutions (instituições especializadas).

In any case, the special serving (atendimento especial)” “happens starting from children’s education (educação infantil) up to the highest levels of instruction.”

Distance Education (Educação a Distância) “is based on the development and in the propagation (veiculação) of distance learning programs (programas de ensino a distância) for all levels (níveis) and modalities (modalidades) of instruction and of continuing education (de ensino e de educação continuada). The institutions of Distance Education (instituições de Educação a Distância) have flexibility in terms of organization (abertura de organização) and special administration (regimes especiais), but must be accredited (credenciadas) by the Union (União = Federal Government).

The Union (União) is also in charge of enacting regulations (regulamentação) of the requisites (requisitos) for the holding of exams (realização de exames) and diploma registration (registro de diploma) concerning distance education programs (cursos de educação a distância).”

“**The Organization of the National Education (Organização da Educação Nacional)** in instruction systems is defined in the new LDB, which also establishes the competencies (competências) of the different levels of the Public Government (Poder Público). The Union (União = Federal Government), the States (Estados), the Federal District (Distrito Federal), and the Municipalities (Municípios), besides organizing, in collaboration format, the school units (unidades escolares) which are part of their instruction systems (sistemas de ensino), have their own duties in their administration.

The Union (União), for instance, is responsible for the coordination of the national policy for education (política nacional de educação) and for the preparation of **the National Plan for Education (Plano Nacional de Educação)**, articulating the different levels and systems. The States (Estados) and the Federal District (Distrito Federal) have, besides others, the duty of assuring the offering of 1-8 Grade Instruction (Ensino Fundamental) and offer, as a priority, the 9-11/12 Grade Instruction (Ensino Médio). The Municipalities (Municípios) are responsible for offering Children’s Education (Educação Infantil) in child care centers (creches) and pre-schools (pré-escolas), but prioritizing 1-8 Grade Instruction (Ensino Fundamental).

The **National Council for Education (Conselho Nacional de Educação)**, agency that is part of the direct administration of the Ministry of Education and Sports (Ministério da Educação e do Desporto), acts permanently on the educational structure, performing normative and supervisory functions.

The **Federal Instruction System** (Sistema Federal de Ensino) consists of:

- the instruction institutions (instituições de ensino) supported by the Union (União);
- the Higher Education institutions (instituições de Educação Superior) and
- the federal agencies of education (órgãos federais de educação).

The **States and Federal District Instruction Systems** (Sistemas de Ensino dos Estados e do Distrito Federal) consist of:

- the instruction institutions (instituições de ensino) maintained, respectively, by the state Government (Poder Público estadual) and by the Federal District (Distrito Federal);
- the Higher Education institutions (instituições de Educação Superior) maintained by municipal Government (Poder Público municipal);
- the 1-8 Grade Instruction and 9-11/12 Grade Instruction institutions (instituições de Ensino Fundamental e Médio) created and maintained by private organizations (iniciativa privada) and
- the state and Federal District agencies of education (órgãos de educação estaduais e do Distrito Federal), respectively.

In the Federal District (Distrito Federal), the Children's Education institutions (instituições de Educação Infantil), created and maintained by private organizations (iniciativa privada), are also part of its Instruction System (Sistema de Ensino).

The **Municipal Instruction Systems** (Sistemas Municipais de Ensino) consist of:

- the 1-8 Grade Instruction (Ensino Fundamental), 9-11/12 Grade Instruction (Ensino Médio) and Children's Education (Educação Infantil) institutions maintained by the municipal Government (Poder Público municipal);
- the 1-8 Grade Instruction (Ensino Fundamental), 9-11/12 Grade Instruction (Ensino Médio) and Children's Education (Educação Infantil) institutions maintained by private organizations (iniciativa privada), and
- the municipal agencies of education (órgãos municipais de educação).

No municipal system may offer other levels of instruction without having offered, first, Children's Education in child care centers and pre-schools and, mainly, 1-8 Grade Instruction.

The **Instruction Systems** (Sistemas de Ensino) define the regulations for the administration of public instruction in K-11/12 Education (Educação Básica), but the units that are part of each system have a progressive pedagogical, administrative, and financial management autonomy (progressiva autonomia pedagógica, administrativa e de gestão financeira).

General Characteristics (Características Gerais). Each level of education and instruction present specific definitions, but there are some general characteristics in the process of schooling education: **School Year (Ano Letivo)**, **Funding (Financiamento)** and **Instructors (Profissionais da Educação)**.

School Year (Ano Letivo). Due to the new LDB, the regular school year (ano letivo regular), for all levels of instruction, comprises a minimum of 200 days of effective school or academic work (trabalho escolar ou acadêmico), excluded are the periods of time for the exams (tempo dedicado aos exames). For K-11/12 Education (Educação Básica), that means a minimum annual workload of eight hundred hours. However, the new Education Act [new LDB] (published in the Official Diary on Dec. 23, 1996) established a period of one year for the instruction systems to adapt themselves to the exigencies.

Funding (Financiamento). Brazilian Education, in its different levels and modalities, is funded through resources originated from the public sector. This is done through direct and indirect administration agencies at the federal, state, and municipal levels, by the private sector, which supports private schools and charge monthly tuitions to families, by associations (SENAI, SENAC, churches, clubs etc.), and by other private organizations.

The main public sources of funding for the maintenance and development of instruction [**mdi**] (manutenção e desenvolvimento do ensino) come from the following levels of government:

- **Union**, which must spend, at least, 18% of the total federal tax collection on **mdi**;
- **States**, which must spend, at least, 25% of the total state tax collection and 25% of the resources originated from the States Participation Fund (Fundo de Participação dos Estados (FPE)), resulting from the transference of federal resources on **mdi**, and
- **Municipalities**, which must spend, at least, 25% of the total municipal tax collection and 25% of the resources originated from the Municipalities Participation Fund (Fundo de Participação dos Municípios (FPM)), resulting from the transference of federal resources on **mdi**.

Taking into consideration the levels of government, the **States** contribute the major part of the public funding for Education (financiamento público para Educação), which corresponds to a little over 48%.

Next are the **Municipalities**, with a contribution of 30%, and last, the **Union**, which is responsible for 22% of the total.

Instructors (Profissionais da Educação). According to the new Education Act [new LDB], the instructors' development (formação de profissionais da educação) for working at the basic teachership (magistério básico) (Children's Education, 1-8 Grade Instruction, and 9-11/12 Grade Instruction) must happen, preferentially, at the higher education level, through full licentiateship programs (cursos de licenciatura com graduação plena), held at universities

or higher institutes of education (universidades or institutos superiores de educação). It is also admissible the preparation at secondary level (formação em nível médio), in the Normal modality (modalidade Normal), for instructors that teach at Children's Education and at 1-4 grades of 1-8 Grade Instruction.

The development of instructors (formação de docentes), except for higher education, also includes the teaching practice (prática de ensino) of, at least, three hundred hours. The preparation for higher education professorship (preparação para o exercício do magistério superior) is done at graduate level (nível de pós-graduação), prioritarily in masters and doctoral programs (programas de mestrado e doutorado).

Vocational-Technical Education and Training (Educação Profissional):

Origin of the text below: "Decree n° 2208, April 17, 1997".

"Art. 1 - Vocational-Technical Education and Training has as goals:

I - promote the transition between the school and the world of work, capacitating youngsters and adults with knowledge and general and specific skills for performing productive activities;

II - enable the development of professionals, ready to perform work specific activities, with schooling correspondent to secondary, undergraduate and graduate levels;

III - specialize, improve, and update the worker in his/her technological knowledge;

IV - qualificar (train a non-skilled person), reprofissionalizar (train a person for a different occupation of his/hers), and requalificar (update a person's skills) youngsters and adults, with any schooling level, targeting its insertion and better performance in the workplace.

Art. 2 - Vocational-Technical Education and Training will be developed in articulation with the regular instruction or in modalities which meet continuing education (educação continuada) strategies. VTET can be offered in regular instruction schools, in specialized institutions or in the workplace."

Origin of the text below: "Vocational-Technical Education and Training: a project for the sustainable development (Educação profissional: um projeto para o desenvolvimento sustentado). Brasília: SEFOR, 1995", p. 7-10.

A REFERENTIAL FRAMEWORK: MULTIPLE CHALLENGES

- **A new profile: from “knowing” to “learning”**

Brazil, as other Latin American countries, had its process of development oriented by a paradigm relatively little exigent with the schooling and work skills (qualificação profissional). This framework started to change in the 80s, as the pressures for greater flexibility, quality, and productivity, generated internally and externally, start to demand competencies and learning ability from the company as a whole, including the workers.

It is delineated in this context, new profile and new concept of “qualification (qualificação)”, which goes beyond the simple dominion of motor skills and the disposition to perform commands, including also an ample general development (formação geral) and a solid technological base. *It is not enough anymore that the worker knows how “to do” (fazer); it is necessary “to know” (conhecer), and above all, “to know to learn” (saber aprender).*

The new profile values traits such as participation, initiative, logical reasoning and discernment. From the company perspective, it is not enough anymore to count on the typical “standard-worker”, ready to “dress the company uniform” and sweat for it. It is necessary, first of all, to guarantee the “competent” professional which is able to “think for the company” and, inclusively, “*change the mindset of the company*” (fazer a cabeça da empresa).

- **Competitive company, competent citizen**

Significative part of the companies begins to invest in “qualification (qualificação)” and “requalification (requalificação)” of workers, opening, in parallel, new space for obtaining concrete improvements on the work conditions.

That investment responds, on one hand, to requisites of technological and organizational innovation, such as integration, accountability, quality. On the other hand, it shapes a strategy of deficiencies compensation of basic schooling (1-11/12 grade instruction), which jeopardize even the worker’s minimum performance.

In this way, even companies that are not included among the leading and innovative ones, including the micro and small ones, start to promote and/or encourage schooling programs, “qualification (qualificação)” and “requalification for a profession (requalificação profissional)” of its employees, seeking to build a new profile which tends to generalize in the market.

The redemption of the “qualification (qualificação)”, understood as recovering and valorization of the worker’s professional competence, is not, however, only a matter of technical performance.

It also comprehends a dimension of citizenship, which extrapolates the walls of the company: read, interpret reality, express verbally and in writing, deal with scientific and

mathematics abstract concepts, work in teams to solve problems - everything that is defined as the workers' profile in cutting edge sectors tend to become a requisite for life in the modern society. If the market requires competitive companies, society also requires competent citizens.

• The rethinking of education

Company necessity, worker's interest and of society itself, "Qualification (qualificação)" for work requires an integrated strategy, constructed through articulation and partnership among the various social agents - *government, companies, workers, educators* - so that it can benefit not only the modern sectors of the economy, but also all society.

Such construction passes by, since early, the rethinking of education, general and occupational [for a profession] (profissional), in the conceptual, pedagogical and managerial grounds. Taking into consideration a growing diffusion of a new competencies profile in the work market, it begins to be purposeless the dichotomy "education-occupational development" (educação-formação profissional) and the correspondent separation of fields of activity among educational institutions and "development for professions" ones. Work and citizenship, competence and awareness, can not be seen as separate dimensions, but they request integral development of the individual which, at the same time, is worker and citizen, competent and conscious.

The refusal to a dichotomic view between basic education (educação básica) and vocational-technical education and training (educação profissional), does not imply, however, the superposition or substitution of one for the other, specially the first for the second. While the *basic education - understood as 1-11/12 Grade schooling* - insert itself among the universal rights of the citizen, vocational-technical education and training (educação profissional), in a complementary mode and integrated to the former, must be understood as process - with a beginning, middle and end at every moment. For so, it is necessary to reestablish its focus on *employability, understood not only as the ability to get a job, but above all of keeping oneself employed in a labor market in constant mutation*.

Differently from basic education, universal and inalienable right of the citizen, *vocational-technical education and training (educação profissional) requires focus on the market*. Because of that, it does not make sense to offer vocational-technical education and training (educação profissional), for instance, in order to "to help the poor or to remove kids from the streets".

In short, vocational-technical education and training (educação profissional) is meaningless or has no effectiveness as restraintialist or assistantialist strategy, inclusive because it can lead to bigger tensions and frustrations. More agonizing than being unemployed, is being unemployed-skilled (desempregado-qualificado)...

It remains, however, a wide field to be covered by “qualification (qualificação)” and “requalification for a profession (requalificação profissional)”, specially for workers with precarious schooling.

We are not talking about substituting basic education (educação básica) for vocational-technical education and training (formação profissional). But to open alternatives to almost two thirds of the workforce of the Country, the majority in the plenitude of their active life (25-40 years old), which does not have more than four years of schooling - they will neither have chance or conditions to return to school. For those, it is necessary to find a formula of systematic conciliation among the tacit “qualifications (qualificações)”, grasped from practical experience, with the apprenticeship of conceptual and abstract concepts, each time more demanded for work.

Besides that, it is imposed the development of *methodologies of development (formação) adequate for adult and, in special, to “requalification (requalificação)” or “reconversion (reconversão) (reprofissionalização)” of unemployed workers or of those displaced by technological changes. Besides presenting learning characteristics different from children and youngsters, the adult which seeks “qualification (qualificação)” or “requalification (requalificação)” has urgency; he/she does not want to spend long months in school seats.*

• **Employment, work and vocational-technical education and training**

At last, but however the most important, it is appropriate to *articulate all strategy of education/development (educação/formação) in a policy of work and income*. The redemption of “qualification (qualificação)”, express in the growing interest and investment of the companies in the development of their employees, give rise, immediately, to doubt as to the excluded (excluídos) ones: those who survive in the informality, those who “are left out” of modernization or not even got to join the market.

The markets globalization and the productive restructuring do not authorize an expectative of great expansion of formal employment, notably in manufacturing (indústria), which has been the locomotive of the work market up to the beginning of the 80s. There may be some growth. But, anyway, the jobs that may be created hardly will absorb personnel without skills.

Besides that, the international experience, and even the closest examples (such as the car assemblers agreement), register the importance, for the workers, of the technical knowledge about the work process and a global view of the company as base for negotiation and contracting of work conditions and relations.

From that perspective, vocational-technical education and training (educação profissional) defines itself as an essential component of a new standard of capital-labor relations, grounded on negotiation. It is placed, so, in the core of the society democratization process, as an essential element for the rescue of citizenship.

Additional sources about VTET (Educação Profissional):

<http://www.mtb.gov.br> [Ministry of Labor (Ministério do Trabalho), Brazil] (Jan 30, 1998).
<http://redelet.etfgo.br> [Latin American Data Communication Network of Technological Education] (Jan, 30, 1998).

“Critical Questions of Brazilian Education (Questões Críticas da Educação Brasileira). Brasília, DF: PACTI/PBQP, 1995.”

Origin of the text below: Segment of a participant’s answer.

Different Existing Funds for VTET (Educação Profissional) [not counting on MEC, states, and municipalities direct expenditures in VTET]

“The FAT(Worker Support Fund [(Fundo de Amparo ao Trabalhador)] is a public fund, managed by a triparty council, which guarantees, among other actions, the funding of the Public System of Employment in Brazil.

The so called S System - Senai/Sesi, Senac/Sesc, Senar, Senat/Sest, Sebrae - is funded by compulsory contributions over the pay-roll of the companies connected to each entity (in the case of Senar, the contribution over the revenue).

There are also direct investments of the companies and foreign loans, from the InterAmerican Development Bank (IADB) and the International Bank for Reconstruction and Development - The World Bank (IBRD), among others, in vocational-technical education and training (educação profissional).

All the mentioned sources constitute today, in Brazil, a considerable mass of resources applied in vocational-technical education and training (something like R\$4 billion per year - around US\$3.6 billion).

Its use, however, is done in a non articulated way, rarely submitted to some kind of evaluation/supervision.”

Origin of the text below: “PLANFOR: National Plan for Vocational-Technical Education and Training: conceptual advance: proposals: terms of reference (PLANFOR: Plano Nacional de Educação Profissional: avanço conceitual: termos de referência. Brasília: MTb, CGIT, 1997”, p. 9, 10 and part of 11.

“Brazil has not only one system of VTET (Educação Profissional - EP), but a variety of “systems”, public and private, which operate at local, regional or national levels. The term “system”, in truth, is used in this document only for illustrative purpose, because the agencies of VTET (EP)in the Country are far from operating in a systemic way, articulated among themselves or to national policies.

As a matter of fact the “systems” or “models” of VTET (EP) found in the Country reflect basically three conditions:

- federative organization of the country, with three levels of Government - federal, state and municipal - combining a high degree of political and bureaucratic centralization of the Federal Government, with a wide margin of economic and executive decentralization in the state and municipal governments;
- ample diversity of institutions and organisms, public and private, involved in or responsible for VTET (EP) in the Country, without an effective national coordination;
- an historical experience with Institutions of Development for Professions (Instituições de Formação Profissional - IFPs), funded by compulsory contributions, under the private management of entrepreneurs, as it is the case of Senai, Senac, Senar and Senat.

So VTET (EP) in Brazil is offered by institutions of several kinds, combining ample diversity of organizational, managerial, pedagogical and funding models, as well as players involved. For analytical purposes, we can group those institutions and players in seven sets or "systems":

- **the federal, state, and municipal vo-tech system** (sistema de ensino técnico federal, estadual e municipal), which it is estimated to be constituted of 12,5 mil school units around all the country. In this group, the best structured subgroup is the federal system of vocational-technical education (sistema de ensino técnico federal), including industrial schools (escolas industriais), agriculture schools (agrotécnicas) and higher level technological education centers (centros de educação tecnológica de nível superior), with around 120 schools and 100 mil enrollments per year, under the responsibility of the Secondary and Technological Education Secretariat (Secretaria de Educação Média e Tecnológica) which is part of the Ministry of Education and Sports (Ministério da Educação e do Desporto);”

On the Ministry of Education and Sports (MEC) home page, we find:

*“Vocational-technical Instruction Institutions (Estabelecimentos de Ensino Técnico).
“MEC supports and operates a network of VTET schools (rede de escolas de Educação Profissional), which serves around 110 thousand students:*

- *The Federal Technological Education Centers (Centros Federais de Educação Tecnológica (CEFETs)) offer vocational-technical Programs (Cursos técnicos de nível técnico) and technological Programs (Cursos/Programas de nível tecnológico (undergraduate, graduate and extension));*
- *The Federal Agri-vo-technical Schools (Escolas Agrotécnicas Federais (EAFs)) offer vocational-technical Programs (Cursos técnicos) geared to agriculture, animal raising, and services;*
- *The Federal Vo-technical Schools (Escolas Técnicas Federais (ETFs)) offer vocational-technical Programs (Cursos técnicos) geared to the manufacturing and service sectors.*

- *The Decentralized Instruction Units (Unidades de Ensino Descentralizado (UNEDs)): vocational-technical Programs (Cursos técnicos) geared to the manufacturing and services sectors;*
- *The Vo-technical Schools Linked to the Federal Universities (Escolas Técnicas Vinculadas às Universidades Federais).*

The federal network of technological education (rede federal de educação tecnológica) will have a time period of four years to absorb the changes of the vocational-technical instruction (ensino técnico). But starting from 1998, according to the MEC Executive Order nº 646/97, the institutions already may offer up to 50% the 1996 secondary level slots to 9-11/12 grade instruction (ensino médio), with enrollment independent of VT Instruction and T (ensino profissional).”

- “the so-called **S System (Sistema S)**, which includes the National Services of Apprenticeship and of Social Service (Serviços Nacionais de Aprendizagem e de Serviço Social) funded by compulsory contributions on the top of the pay-roll, to know: **SENAI/SESI** (manufacturing), **SENAC/SESC** (commerce and services, except for banks); **SENAR** (agriculture); **SENAT/SEST** (transportation on tires); **SEBRAE** (all sectors, for serving micro and small companies). Altogether, these institutions have more than 7 thousand schools and training centers (centros de treinamento), covering, only in the part of education and development for professions (educação e formação profissional), around 3 million of enrollments (not including medical and social appointments (atendimentos));

Organizer’s note: The great majority of the programs offered by S System institutions are classified as training (educação profissional básica). The number of students enrolled in vocational-technical and technical programs offered by S System institutions are less than 1% of their total enrollments.

- public and private universities, which offer extension services to the community. There are around 900 universities and colleges in the country and it is not known how many of them offer these services;
- schools and centers funded and operated by workers’ unions (sindicatos de trabalhadores);
- schools and foundations directly funded and operated by entrepreneurial groups (besides the contributions they make to the S System, or making use exemption of part of the contribution due to the S System);
- religious, communitary, and educational non governmental organizations, which provide services to poor communities; it is estimated that there are 2 thousand of former that provide services in VTET (educação profissional);

- non regulated VT Instruction and T (ensino profissional livre), which is provided mainly in the urban centers and/or by mail; it is estimated that there are more than 10 thousand units in all the country.

Part of those institutions - specially the vocational-technical schools (escolas técnicas) - operates in formal bases, offering programs and diplomas regulated by the Education Directives and Bases Act (Lei de Diretrizes e Bases da Educação). The others operate mainly in non formal bases, although they may offer long term programs and diplomas and certificates accepted in the labor market - albeit without a formal certification (certificação formal).

All that institutional framework has been going the more or less sharp changes, in the core of the political and social transformations that have intensified since the 80s. At the same time, two big institutional blocs - the vocational-technical instruction system (sistema de ensino técnico) and the S System (Sistema S), both seen as paradigms of development for professions (formação profissional) in the country - have been facing various types of questionings, regarding to management and funding models and didactic-pedagogical model.”

Note: The art. 1 of Act N° 8948, December 8, 1994 states:

“Art. 1 - It is instituted the National System of Technological Education (Sistema Nacional de Educação Tecnológica), integrated by the technological education institutions (instituições de educação tecnológica), linked or subordinated to the Ministry of Education and Sports and congener systems of the States, Municipalities, and the Federal District.

§ 1 - The participation of the private network in National System of Technological Education may happen, after consultation with the deliberative higher organs (órgãos superiores deliberativos).

§ “2 - The act of instituting the National System of Technological Education has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education (Política Nacional de Educação), aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector.

§ 3 - The coordination of the National System of Technological Education will be done by the Ministry of Education and Sports, which will establish the procedures for its implementation, operationalization and functioning, respected the characteristics of formal and non formal education and the autonomy of the instruction systems.”

Note: The art. 1, caput and § 1 of the MEC Executive Order N° 646, May 14, 1997, states:

“Art. 1 - The implementation of what is stated on Art. 39 through 42 of Act N° 9394/96 and of Decree n° 2208/97, will be done in the federal network of technological education (rede federal de educação tecnológica), in the time period of at most four years.

§ 1 - The technological education federal institutions (instituições federais de educação tecnológica) - Federal Vo-technical Schools (Escolas Técnicas Federais), Agri-vo-technical Federal Schools (Escolas Agrotécnicas Federais), Vo-technical Schools of Universities (Escolas Técnicas das Universidades) and Technological Education Federal Centers (Centros Federais de Educação Tecnológica) - in order to fulfill what is stated in the caput of this article, will prepare an Implementation Plan, taking into consideration their material, financial and human resources conditions.”

Technological Education (Educação Tecnológica):

Origin of the text below: “Secondary and Technological Education: foundations, directives, and action lines (Educação Média e Tecnológica: fundamentos, diretrizes e linhas de ação). Brasília, DF: Ministério da Educação e do Desporto (MEC), Secretaria de Educação Média e Tecnológica, 1994.”, p. 25-27 and part of 28.

“FOUNDATIONS AND CHARACTERISTICS:

• Foundations

Technological Education (Educação Tecnológica) is the branch of education that is characterized by preparing professionals (formar profissionais) in all levels of instruction and for all sectors of the economy, ready to immediately join the work market.

It presents as a foundation a constant and close interaction with the agriculture, industry, and services sectors in all its aspects, in terms of individuals’ development (formação), extension, and technological research, with the goal of constituting one of the main factors of technological development of the Country, specially at regional level.

In that sense, it keeps a base of theoretical-practical instruction, which seeks to constantly to get involved with the advancement of sciences and techniques, establishing a complete and dynamic circle of effective participation among the generation, transfer, and application of knowledge, linking it, in this way, to the world of work and production.

Technological education, therefore, takes over the traditional role of development for professions (formação técnico-profissional), in what it has of history, of accumulation of knowledge and of renovation of instruction methods, seeking however, to insert it in a broader context of technological transformations which are happening in the world and society.

As a matter of fact, the advancement of the theoretical-scientific knowledge and the growing addition of new methods, face the deep changes which are happening in the work and production processes, as well in the distribution of goods and services, bring direct effects on the development and capacitation (formação e capacitação) of human resources which perform in the various sectors of the economy.

As an educative process, [capacitation and development for professions] demands a series of changes in methodological behaviors, technical and conceptual approaches, as well as attitudes, cultural use and habits which will constitute the environment of technological education, aiming at the enrichment of the individual's preparation (formação do indivíduo) and its integration to society.

Faced by the demands of the productive sectors and by the updating needs of the professional practice, provoked by technological advancements and transformations, technological education acquires differentiated contours which encompass, also, non formal modalities of instruction.

So, multiple experiences of improvement occur, with the intention of preparing and perfecting the worker to execute aggregated tasks of occupations.

In that context, it is appropriate to clarify that the selection, use, and absorption of technology in a country demands level of technological familiarity, of the same level of magnitude, of the need to generate it.

• Characteristics

Taking into consideration its foundational concepts, technological education presents the following characteristics:

- theoretical-practical development (formação teórica-prática), trying to aggregate the knowledge to the limits and directions of applications, to form a conception total linked to the execution;
- orientation to the world of work, in what it has of essential *to the knowing (ao saber)*, *to the doing (ao fazer)* and *to the how to do (ao como fazer)*, but also to what occurs of transformer, at the organizational levels of processes and products;
- integration to the needs of society, in its cultural and regional aspects and not only to the floating conditions of a labor market;
- articulation with the productive sectors, in what they demonstrate of social integration, of techniques application, of renovation of work and production processes, and not simply of attachment to isolated tasks and functions which tend to the immediatism of the gain and of the profit;
- special observation regarding to the transformations that are happening in the fields of science and technology, which will require constant approximation of the nucleus and centers of research and development, particularly in the technological field;

- permanent capacitation of the worker, owner of a knowing, aggregated at school and applied in the practices of work experiences and, therefore, a renovating element of the technological knowledge;
- development of professionals (formação de profissionais), at different levels, for immediate entrance in the work market;
- development of specialized instructors (formação de docentes especializados), with a pedagogical base, to teach occupational courses (disciplinas profissionalizantes);
- continuing education (educação continuada), once that the development does not end at school, but it unfolds in professional practices (práticas profissionais) which are altered in function of the changes that happen in the technological applications, in the work and production processes;
- flexibility of institutional organization and of technical-pedagogical models, exploring alternative solutions and innovative experiences.

So, technological education includes “qualification for professions (qualificação profissional)” at the basic level, when necessary; technical “qualification for profession (qualificação profissional)” at secondary level, and the development (formação) of the higher education technician or associate of science (tecnólogo) and of the industrial engineer (engenheiro industrial), and graduate studies at the technological area. It is also part of this picture, the development (formação) of instructors for the courses of special development (disciplinas de formação especial) of the curriculum of technological education institutions. It encompasses, so, not only the formal and non formal activities of instruction (in which are included the work practices) but also applied research and extension, being present in the latter the technical assistance and the offer of services to the community, in collaboration with the companies and according to the economy and governmental sectors.

In short, technological education is based in a broad and universal concept of education, which transcends the fragmentary concepts of instruction, learning and training integrating them so that *the knowing (o saber)*, *the doing (o fazer)* and *the knowing how to do (o saber fazer)* are permanent objects of action and critical reflection that over the action.”

Origin of the text below: “Secondary and Technological Education: foundations, directives, and action lines (Educação Média e Tecnológica: fundamentos, diretrizes e linhas de ação). Brasília, DF: Ministério da Educação e do Desporto (MEC), Secretaria de Educação Média e Tecnológica, 1994.” Parts of pages 39 and 40.

ASSUMPTIONS FOR THE POLICY OF TECHNOLOGICAL EDUCATION

“The formulation and implementation of a policy at a national level for technological education need the systematization of actions, through the organization and implementation of a system able to undertake and dynamize the efforts originated from this policy.

It is fundamental, however, to consider the following assumptions:

- Technological Education, by its characteristics, peculiarities and interaction can not be confounded and treated only as vocational-technical education (ensino profissionalizante de 2º Grau), and not as traditional secondary and higher education (educação tradicional de 2º e 3º Graus).
- It can be considered as dichotomic and dual instruction, for, it brings in its foundations basic education (educação básica) and the technological focus, stimulating, without differences of levels, creative, alternative, and non formal models of continuing education.
- Technological instruction (ensino tecnológico) must be considered as an alternative and innovator system, for which special attention must be given to, through a proper public policy, adequate to the directives of technological education, in consonance with the wishes of society and with the exigencies of the scientific and technologic development of the Country.
- The interaction with the productive sector and the support of the public policies of development for economic sectors are fundamentals conditions for the sustentation of a technological instruction able to offer the indispensable support to the national development, not only by the preparation of specialized and skilled human resources but also for the process itself of search for technological autonomy.
- In this sense, a policy of support to the technological instruction development must not only start a joint effort of partnerships - companies, instructional institutions and government - but also to consider all the factors able to assure the flexibility and seriousness necessary to this modality of instruction, indispensable conditions for full development.”

Additional sources:

“Technological Education: Basic Legislation (Educação Tecnológica: Legislação Básica). Brasília, DF: Ministério da Educação e do Desporto (MEC), Secretaria de Educação Média e Tecnológica, dez. 1994.”

“Education and Technology (Educação & Tecnologia (Tema: Educação e Tecnologia)). Revista Técnico-Científica dos Programas de Pós-Graduação em Tecnologia dos CEFETs-PR/MG/RJ. N° 1. Ano 1. Julho 1997. Curitiba, PR: Centro Federal de Educação Tecnológica do Paraná - semestral.”

“Critical Questions of Brazilian Education (Questões Críticas da Educação Brasileira). Brasília, DF: PACTI/PBQP, 1995.”

Origin of the text below: Segment of a participants’ answer to question 1.

Technological Education definition

Technological Education must be understood as the education variant that has the purpose of preparing and capacitating professionals able to immediately join the labor market, in all areas of knowledge. It differentiates from academic education because of the instructional methodology it uses. That is, besides making use of optimized curricular structures, for instance: without repetition of the same topic/subject in various courses, it must favor the practical activities of the profession, inclusive of interactive form with the

productive sectors for the attainment of professional practices during, at least, one school semester, exclusively in the correspondent professional sector. Besides that, the student must produce a graduation final work, regarding to a real situation in his/her area of actuation/development.

Complementing, the instructors of the technological education institutions, mainly of the technical courses, must have not only solid workplace practice in their field, but also capacitation (masters and doctoral degrees) in qualified institutions of graduate studies in technological education.

So, technological education seeks to meet quickly the demand for the labor market, which must be each time more diversified and specialized.”

Origin of the text below: A participants' answer to question 2.

Technological Education Federal Center (CEFET)

“Technological education is strategic to the development of a country, and will be even more around 2025, when technology will require qualified individuals with a systemic, multidisciplinary, and cybernetic view, therefore, able to interact and work in teams with other qualified individuals of related areas.

For so, technological education must be offered in specialized institutions, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favoring the professional competency of its employees). In our case, the present CEFETs constitute the reference model which can be improved, the later regarding to specific [employees] career and [institutional] autonomy.

Such institutions must be organized to meet the demands of HR in their various levels of instruction which articulate naturally. The various programs/courses offered, including the undergraduate ones, can be terminated or reactivated according to the labor market.

Therefore, the most plausible is that such institutions should be organized in basic and ample departments for the composition of the programs in its various levels. So, as an example in the case of the Industrial Engineerings, there should be the Departments of Materials, Energy, Multimedia, Management, and others.

In that way, those institutions must have as characteristics the verticality of instruction (all possible levels in the same institution), and strong interaction with the productive sector. Such restructuring (format) is and will be the most appropriate to [have] the necessary flexibility to supply HR to the labor market, because, it is more cost effective, agile and socially fairer. Such environment reproduces more accurately the reality of the professions-related activities, because, it allows the conviviality of qualified individuals (future ones) of

various levels and their interaction in the participation of technological development projects, generally demanded by the productive sector.

Technological education, for being strategic and by the restrictions alluded before, must be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.”

Polytechnical Education (Politecnia):

Text below: “The word is... POLITECNIA (A palavra é... POLITECNIA). Written by Luci Ayala. Reports by: Elvira de Oliveira, Rosângela Guerra, Vera Gomes. Revista Sala de Aula. Ano 2 - N°. 13 - AGO/89 - Fundação Victor Civita. São Paulo, SP: Editora Abril, p. 26-30.”

[The comments in brackets were made by Paulo de Tarso Costa Henriques on February 7, 1998.]

“The word is... ‘POLITECNIA’

A synthesis of science, technique, and humanism.

With it a group of educators want to revolutionize the instruction in the country.

A polemical concept hangs around the educational debates in the country. It is the so-called Polytechnical Education (**Politecnia**). Last year,^[1] now and then it would steal the scene in

[1] 1988.

meetings about Education and Constituent (Educação e Constituinte)^[2]. Now,^[3] that the elaboration of the [Education] Bases and Directives Act^[4] requires that educators present their proposals, the idea gains more space. And, besides it, another word - *omnilateral*. A refined latinism that many specialists already integrated to their vocabulary.

Despite this recourse to the language of the Ceasars, the adepts of politecnia do not intend to recover, via LDB, the bookish and academic instruction of the old times, inspired in the humanist classicism. They do not want either that old polytechnical conception that guided the creation of the Engineering colleges and, in the beginning of the century, consolidated at the arts and trades

lyceums. On the contrary to what the name says, the new *politecnia* would not be the teaching of a profusion of techniques, but of the scientific principles present in all of them.

The new polytechnicians (politécnicos) intend to finish with the old duality present in the school network, which separates development for professions (formação profissional) to a far away corner from the academic education (educação geral). They propose to combine in the same educative process the theoretical development (formação teórica), the physical and technological education (educação física e tecnológica). They consider that an indispensable condition for the youngsters to be able to face the challenges of society with its overwhelming technical progress that, each day, introduces new productive processes, alter the production relations, destroy and invents new jobs (work positions = postos de trabalho).

Despite of this concern with the contemporaneousness, the concept of ‘*politecnia*’ is very old. It is more than 120 years old. It was developed by Karl Marx, one of the philosophers of major impact on the western thought. In Brazil, the concept has been studied by researchers scattered in various universities and educational centers. “And, when a group of intellectuals begins to get interested in a subject, it is because there objective needs for that”, says Lucília de Souza Machado, who this year published the book ‘*Politecnia, unitary school and work (Politecnia, escola unitária e trabalho)*’ [by Cortez Publishing House].

Those “objective needs” that, according to Lucília, originate the ‘*politecnia*’ are born from a common phenomena to all developed countries: the technical-scientific revolution which has been subverting constantly the productive processes and, through the automation, substituting men by machines in the heavier and mechanical tasks. That phenomena would be sharpening the contradictions in the interior of the capitalist production regime, requesting changes in the social structure and new nexus between Education and Work.

[2] The new Brazilian Federal Constitution was promulgated on October 10, 1988. It started to be discussed in the beginning of the 86-89 Legislature.

[3] 1989.

[4] The LDB version approved by the National Congress, Act N° 9394, December 20, 1996, does not please those who propose *politecnia* as Gaudêncio Frigotto comments in “Changes in the Policy of Technical-Professional Preparation: Return to the Dualism, fragmentation and Productivism (Mudanças na Política de Formação Técnico-Profissional: Regressão ao Dualismo, Fragmentação e Productivismo)”, text which is in the version written to be presented and debated at the II CONED, Belo Horizonte, 08.11.1997. For further details, please refer to the appendix on page 29.

• **In the Universities (Nas Universidades)**

Lucília is professor in the graduate programs in Education at Federal University of Minas Gerais (Universidade Federal de Minas Gerais) and shares those ideas with other intellectuals, such as Gaudêncio Frigotto, from the Fluminense Federal University (Universidade Federal Fluminense) and from Getúlio Vargas Foundation (Fundação Getúlio Vargas), in Rio de

Janeiro, and Acácia Kuenzer, vice president for Planning (*pró-reitora de Planejamento*) of the Federal University of Paraná (Universidade Federal do Paraná). The three are doctors in Education by the Pontifical Catholic University of São Paulo (Pontifícia Universidade Católica de São Paulo), where they studied with Demerval Saviani, one of the first to talk about *politecnia* in the country.

Saviani states that education today can be anymore just academic or occupational (*profissionalizante*). Those two branches would prepare a partial man, limited and even anachronic. The technical-scientific revolution overcomes rapidly the traditional specializations and demands persons with a solid general and technological culture, able to tame complex production processes. Schools must be of only one type and propitiate the necessary knowledge for the comprehension of the man in all its dimensions, from the material to the spiritual production. Education must show that the world which is known is a product of human work throughout history and, at 9-11/12 grade instruction (*2º grau*), the former must unveil the secrets of science applied to production too.

But, as Acácia Kuenzer says, that it can not be done through only speech. Schools need to articulate theory and practice so that the youngster can have a direct contact with the productive work. With that, the new polytechnicians imagine, it is given an essential stride for finishing the division between the man who thinks and the one who makes, between humanism and technique.

Polytechnical instruction would also show the fundamentals of all professions, the functioning of the productive process, its historical and social conditionants. The polytechnical man would not know everything, but he would have the knowledge of the whole. He would be philosopher, artist and technician - an *omnilateral* being. A utopia, it is quite clear, Gaudêncio Frigotto recognizes. But a utopia in the positive sense, of those which need to be planted today to bear fruits later.

'Politecnia', for Saviani, is a proposal of educational policy for the national system of education as a whole. Its guidance axis would be work, the exclusively human capacity of transforming nature, of producing its own life conditions and also of modifying them. "It is on the base of the work that has appeared the need to know the reality and, therefore, the instruction and the education." When the production mode transforms itself, new exigencies appear and education ends up adapting. So nowadays, 'politecnia' would be so necessary as it was, in the past, elementary school.

The concept of *politecnia* developed by Marx has as its base a new economic and social reality created by capitalism, which integrated the most far away regions of the planet in a world market and promoted the appearance of the modern States. His goal, however, was not to contributed to the progress of the capital owners, the bourgeoisie, but exterminate it. He wrote for a laborer movement in accelerated process of organization, which already fought for power and thought about the world socialist revolution.

'Politecnia' was taken as program issue at the Workers' International Association (Associação Internacional dos Trabalhadores) - the 1st International (1^a Internacional) - in 1866. It proposed the "the union of paid productive work, intellectual instruction, physical exercises and polytechnical training (união entre trabalho produtivo remunerado, instrução intelectual, exercícios físicos e treinamento politécnico)". It was a proposal of a single type of education (educação única) for all society, although Marx had developed it having in sight the army of children and youngsters who had been incorporated to production process.

In the Marxist view, instruction should not be guided to a specific profession but to a set of sciences and productive activities. So, if factory machinery reduced man to a simple bolt tightener - shown, later, by Charles Chaplin in *Modernos Times* -, Marx intended to reverse the direction of the ruling order and use the technical progress for the overall development (formação total) (*omnilateral*) of man.

• Unitary School (Escola Unitária)

That is one of the theoretical bases of the present concept of 'politecnia', which also embodied reflections from Antonio Gramsci, one of the founders of the Italian Communist party, in 1922. He was arrested in 1926 and wrote most part of his works in the Fascist prisons, from where he left shortly before dying, in 1936. Gramsci criticized the reform of instruction promoted by Mussolini's government, which had created two parallel networks of instruction, a classic (clássica) and another occupational (profissionalizante). Gramsci said that the secondary occupational schools (escolas profissionais médias) did not interest the workers, because they simply reproduced their subordinate positions in society. He proposed too the unitary school and 'politecnia', which, for Gramsci, represented the syntheses of the nature and history sciences, base for the development (formação) of the new man.

The Brazilian polytechnicians think the same way. They do not oppose to the good vocational-technical schools⁵ (escolas técnicas) and to the instruction systems such as Senai and Senac - which differentiate them among those who criticize the instruction system in existence in the country. They consider those schools with better conditions to implement 'politecnia' than the academic ones (propedêuticas = 9-11/12 grade schools), because they have an infrastructure and professionals that know the productive system and the technological innovations. But they would need to change their orientation, turn their control to popular and public organizations, and lose the immediatist linkage to labor market.

The new polytechnicians also recognize the specific feature of 9-11/12 grade instruction (2^o grau) - up till today a non untied knot in the proposals of educational policy. The origin of that knot, according to Gaudêncio Frigotto, is out of the school, in the social structure that conditions Education. "This is the moment, within the instruction system, in which the division of society in classes becomes more evident. The 9-11/12 grade instruction (2^o grau) works as big filter which

[5] In Brazil, until 1997, if a secondary level student enrolled in a vocational program, he/she would get the 9-11/12 grade academics (the same curriculum as in regular secondary schools) at 'escola

técnica' too. From 1998 on, students can get the academic curriculum [mandatory for all] in any school and still get vocational-technical training at 'escolas técnicas' which will be gradually doing away with their academic disciplines.

separates those which will integrate the labor market in subordinate positions and those who will continue to study for, later, exercise planning and commanding positions.”

Acácia Kuenzer observes that in the schools attended by the most privileged segments of the population predominates the old humanist instruction, but it is also found an instruction centered on science and technology. She includes at this level the federal vocational-technical schools (escolas técnicas federais), which she considers extremely selective, where are developed (formam) professionals with the command of complex productive processes and not only simple task executors. In the rest of the public schools, she says that the quality of instruction is, in the minimum, doubtful (shaky). The certificates have little value face the exigencies of the contemporary technological society and their students are potential candidates to program like the ones taught at Senai, trainers of manpower (adestradores de mão-de-obra).

• **K-11/12 Grade Education (Educação Básica)**

To implement 'politecnia' as pedagogic principle, it would be necessary, before everything, to universalize the 1-8 grade instruction (1º grau) and the offer the [need] slots in the public 9-11/12 grade instruction (2º grau público), considered by the polytechnicians as basic school (educação básica). Presently^[6], only 13% of the youngsters between 15 and 19 years old have access to 9-11/12 grade school (escola média) and, from those, 33% of the enrollments are in private schools^[7]. Schools would have to be equipped with laboratories, production workshops, and libraries. They would need new curricula and instructors developed in this new conception of instruction. For Acácia, “the Brazilian society already has the objective conditions to take this step, it is only a matter of lack of political will.”

Lucília Machado also thinks so and says that “‘politecnia’ will only happen when it be felt as social necessity and reclaimed by organized instructors and students”.

The clarification of the proposal contents and the accumulation of forces around it are fundamental to Saviani. He thinks that “even if is approved as pedagogical principle by the LDB, it can be torched later and the idea be treated as synonymous of something unrealistic and mistaken”. ...

By the way, this is more or less what many educators have been thinking. Maria Nilde Mascellani, vocational 5-8 grade school coordinator (coordenadora de ginásios vocacionais) for the São Paulo state schools network during the 60s - schools on which it was searched for to combine the scientific knowledge to the workshops -, thinks that 'politecnia' is a nebulous proposal and their proponents show difficulty in reconcile the theoretical reflections with practical suggestions. Maria Nilde fears the funneling of the curricula around the capitalist production processes.

[6] 1989.

[7] In 1997, Brazil had 159,2 million inhabitants, of which 17,5 millions were between 15 and 19 years old. Out of that age group, 28% of the youngsters were enrolled in 9-11/12 grade school, being 20% of the enrollments in private schools (Data from: Brasil em Exame, September/97 - primary source: MEC/INEP/SEEC -, p. 10, 70-73.)

The responsible for vocational-technical instruction at MEC, Maurício de Pinho Gama^{[6], [8]}, says that he simply did not understand the proposal, for him one among the various fads (modismos) which now and then circulate in Universities: “If the federal vocational-technical schools (escolas técnicas federais) offer the best instruction in the country today, it is because they evolved with their feet on the ground, in close communion with the needs of the labor market”.

João Azevedo^{[6], [8]}, [under]secretary of 9-11/12 Grade Instruction (2º Grau) at the Ministry [MEC], has a similar opinion. He thinks that the school must combine a good general development (formação geral) with the capacitation for work (capacitação para o trabalho). But he criticizes the idea of single type of school, “what would impede the youngsters freedom of choice. A mistake already made in the country, when the Act N^o 5692/71^[9] imposed the mandatory vocational education (ensino profissionalizante obrigatório)”.

Even among those who defend the unitary school and work as educative principle, such as Sônia Penin, president of the Education National Association (Associação Nacional de Educação (Ande)), the concept of ‘politecnia’ is also criticized. Sônia thinks that that idea is difficult to be translated and those who defend ‘politecnia’ are ideologizing the debate too much.

Those different reactions and criticisms to ‘politecnia’ indicate that it is not only the material obstacles make it difficult its acceptance. There are political divergencies and a certain misunderstanding about the meaning of the proposal. In the moment to pass from the theoretical model to the design of the school profile, many times even the polytechnicians themselves skid. When they advance to the examples, they seem to have little familiarity with the actual productive process, basis of their proposal, and a certain voluntarism face the social relations where the school exists.

By stating, for instance, the importance of the relation between theory and practice and that students need to see in the productive process what they learned in the theoretical ground, Saviani

[8] From 1979 to 1989, “Vocational-technical Instruction (Ensino Técnico)” was subordinated to the Undersecretariat for 9-11/12 Grade Instruction (Subsecretaria de 2º Grau) which was under the Secretariat for 1-11/12 Grade Instruction of MEC (Secretaria de Ensino de 1º e 2º Graus do MEC) (two different administrations). From 1990 to 1992, the “Technological Education (Educação

Tecnológica)” was the responsibility of the National Secretariat for Technological Education of MEC (Secretaria Nacional de Educação Tecnológica do MEC [SENETE-MEC]) (two different administrations). From 1993 to 1994, “Technological Education (Educação Tecnológica)” was the responsibility of the Secretariat for Secondary and Technological Education of MEC (Secretaria de Educação Média e Tecnológica do MEC [SEMTEC-MEC]) (the last administration of SENETE-MEC remained). Presently “Technological Education (Educação Tecnológica)” - for some - or “Vocational Technical Education and Training (Educação Profissional)” - for others - is linked to the Secretariat for Secondary and Technological Education of MEC (Secretaria de Educação Média e Tecnológica do MEC [SEMTEC-MEC]) (new administration). The latter works in interaction with the Secretariat for Development for Professions of the Ministry of Labor (Secretaria de Formação e Desenvolvimento Profissional do Ministério do Trabalho (SEFOR-MTb)).

The latter is also in charge of “Vocational-Technical Education and Training (Educação Profissional)”. Until 1994, the MTb was not so present in overall VTET as today.

[9] Altered by Act n° 7044/82. Not only Act Lei n° 5692, August 11, 1971, but also Act n° 7044, October 18, 1982, were substituted by the new LDB, Act n° 9394, December 20, 1996.

highlights the pedagogical value of work with wood and metal - linked to modern industry - saying that the same would not happen with leather, linked to craftsmanship work. With that, he removes wood and metal from craftsmanship and leaves out a good part of industry, inclusive high technology sectors (textiles, clothing, furniture, some components and areas of food processing and agri-industry), which use leather and skin as raw materials.

That same feeling that there is something missing also shows up in the examples provided by Acácia Kuenzer, when she talks about schools curricula. “Physics, for instance, will be taught based on electronics, showing that its principles become concrete in practice. And, at the same time, it is necessary to study the role of electronics in the transformations [happening] in contemporary society.” Taken literally, that idea fatally would provoke the funneling of the curricula, as it is feared by Nilde Mascellani.

• **Abolish Barriers (Abolir Barreiras)**

For an articulation of the contents in terms of a common axis, the new polytechnicians would need the support of their colleagues that are specialists in teaching practice, which have already accumulated a long work experience in terms of abolishing barriers among disciplines (disciplinas) and reconstructing knowledge as totality, from the specificity of each science. A collaboration of that sort probably would help Gaudêncio Frigotto to solve his doubts as to the possibility of including Philosophy and Sociology^[10] in the modern polytechnical school. A doubt that must have its origins in Marx himself, to whom only nature sciences or grammar should be taught at school. He did not admit that disciplines (disciplinas) that could have “interpretations of party or class” were introduced in the curriculum: “The grammar rules do not change, it does not matter if they are taught by a Tory believer [Protestant], or by a free thinker... Subjects (matérias) that admit different conclusions must not be taught. An introduction to Political Economy, the youngsters must get it from adults, in the daily struggle for life...”

But Frigotto has an explanation for that difficulty in rendering concrete ‘politecnicia’ through the examples. For a while, the polytechnicians are concerned in delimiting the terrain and in defining the 9-11/12 grade (2^o grau) school model to be achieved. “Knowing where to head to, it is easier to define the steps to be taken.” And who advances more in the design of that school model is Lucília Machado. For her, the 9-11/12 grade polytechnical school (escola 2^o grau politécnica) will have to have four years, divided in two cycles. The first cycle would be common to all students. Technology would be the central axis among the natural sciences. The instruction should work in three lines: “the objects of human work, the instrument and mechanisms in the work process, and the relations between social organization and productive process”.

The 2nd cycle of the 9-11/12 grade polytechnical school (escola média politécnica) would be divided according to the great areas of knowledge and of production. For the so-called non productive sector (services) Lucília imagines three elements: health, teaching and administration, where she includes commerce and accounting. In the productive sector, the areas would be four: manufacturing (industry), agriculture/animal raising, communications and construction. In this phase, the pedagogue from Minas Gerais state finds indispensable the students engagement with

[10] Presently, they are mandatory disciplines in 9-11/12 Grade Instruction (Ensino Médio).

socially useful activities, through internships in companies, which should also last two years.

Lucília recognizes that the accomplishment of those internships would be difficult, because, “the production and services units, which meet mainly the private interests, are not open to the educational system”. But she solves that problem through changes in the labor legislation and in the labor policy “which favor the student-worker to study and the student that is not worker yet to exercise his right to get to know the world of work”.

The idea of internships in companies would have, therefore, the same role that “the paid productive work (o trabalho produtivo remunerado)” present in Marx’s original concept: it would be the connecting link between the theoretical and practical knowledge, the moment on which the students would see “science to happen as material potency (ciência se realizar como potência material)”.

A direct transposition from Marx without an adequate metabolization can, however, bring some problems. The German philosopher worked in a reality on which the occupation of the infant labor force (ocupação da força de trabalho infantil) was a new datum and socially accepted. He considered it as integrating part of what he called the “pedagogy of capital (pedagogia do capital)”. The factory, for Marx, pulled away violently (arrancava) people from the traditional ties of production and transformed the ignorant countryman (camponês ignorante) into an organized and disciplined worker (operário).

- **New Fetish (Novo Fetiche)**

Today^[11] that framework has changed. The universalization of 1-8 grade instruction^[12] (ensino fundamental) and the progressive extension of 9-11/12 grade instruction (2º grau) [to all students] in various countries of the world are popular conquests taken as objective to be reached also in Brazil. If the Brazilian society has not got to universalize the alphabetization^[13] yet and since early the children are pushed to earn a living, that does not mean that presently the capital has the same “civilizatory role (papel civilizador)” that it had during time that Karl Marx was alive. Technology can not be used as a fetish which hide the fact the extended reproduction of the capital [reprodução ampliada do capital] can also reproduce and incorporate misery and arcaic forms of production from different countries and regions.

The new polytechnicians have that analysis, but they incorporate just part of its consequences in their proposals. They want that the development for the labor market (profissionalização) only

[11] 1989.

[12] “From 1991 to 1997, the enrollment rate within the mandatory age group (taxa de escolarização na faixa etária obrigatória), from 7 to 14 years old, jumped from 86% to 91%”, however, “more than 65% of the children enrolled in 1st grade do not complete 1-8 grade level (ciclo fundamental). From those who complete it only 3% do it in the regular eight years.” (Source: Brasil em Exame, September/97 - primary source: MEC/INEP/SEEC -, p. 10.)

[13] In 1997, there were “16 million illiterate adults in the country. Around 17% of the Brazilian workers do not know how either to read or to write.” (Source: Brasil em Exame, September/97, p. 10.)

happens after 9-11/12 grade instruction (2º grau) and say that it is necessary to criticize the forms that technology takes under the capitalism. Despite that, a formulation of their conception of work as educative principle requires the integration of the school to the productive system. With that, they face the risk of submitting Education to the logic of the capital in a much more direct form than the education projects which they criticize. That, independent of their will or of their recommendations to that the instruction be critical and geared to the social transformations.

However, the proposal gets to touch the sore spot of the 9-11/12 grade instruction (2º grau) by showing that the traditional options between general and occupational development (formação geral ou profissional) express real contradictions of society. It alerts to the importance of the technological development (formação tecnológica) and desacralizes the humanist classical instruction (ensino humanista clássico), which for many educators still is the ideal model of school to be reached. The concept of work as educative principle has the merit of guiding the school activity to the perception that the present world is not the gods’

work but of men themselves throughout history, and of positioning the students as agents of that same history.

The realization of that principle and the omnilateral preparation (formação omnilateral) may not follow the path preconized by Marx, of combination of the paid productive work (trabalho produtivo remunerado) with the intellectual development (formação intelectual), or Lucília Machado's suggestion for that students get in touch with the socially useful work (trabalho socialmente útil) through the internships in companies. But certainly those will be some of the political questions to be faced in the LDB and in its application.

By the way, it is good to remember that it is not only in the factory that it is done socially useful work (trabalho socialmente útil), and that the school activity itself - study, research and experiment - may have that feature. At least it is what can be understood from Marx's words, the first formulator of the concept of 'politecnia': "Even when I perform individual scientific work, I fulfill a social act because it is human... What I produce, I do it for society and with a conscience of acting as a social being".

Appendix (Continuation of footnote [4] located on page 22 referring to an excerpt from pages 6-7 of Frigotto's alluded paper):

"The new LDB completes in December a year of existence. Various books and essays analyze, comparatively, what was approved (the Senate (Senado) bill) and what was refused (The House of Representatives (Câmara dos Deputados) bill). I distinguish and recommend the reading of the text by Saviani (1997) - **The new education act: LDB - trajectory, limits and perspectives** (A nova lei da educação: LDB - trajetória, limites e perspectivas). The crucial point that I would like to raise attention to is related to the idea that the minimalist feature, non regulatory of the approved LDB is what serves philosophically and politically to impose, by autocratic measures - decrees, regulations, executive orders and experts' opinions - the educative project formulated according to the interests of the neoconservative hegemony in power today in Brazil in consonance with the impositions to the structural adjustment to the excludent globalization process.

The option for a "minimalist LDB", matched with the thesis of the minimum State" and with the triad of the structural adjustment: deregulation, decentralization and privatization and, as Saviani observes, that lets "the path free to the presentation of punctual reforms, topical, localized, translated in measures as the so-called "Teachership Valorization Fund (Fundo de Valorização do Magistério)", the National Curricular Parameters (Parâmetros Curriculares Nacionais)", the development for professions reform act (lei de reforma do ensino profissional e técnico). (...). (Saviani, 1997:200).

The perspective of the function of the LDB minimalist feature, in relation to development for professions instruction (ensino técnico-profissional), explicitly emblematically, the idea that the conservative group on power, has a global educative project that has to be imposed at any price. Project itself the precedes the approval of the LDB. In relation to development for professions instruction (ensino técnico-profissional), since the moment this administration was inaugurated, it was started a large quantity of propositions produced by Brazilian technicians, Ministry of Education and Sports advisers and linked to the World Bank - the grand mentor and guide of the educational reforms in Brazil today and the regulation proposals. The Bill n° 1603/96 meets that arsenal of propositions

which are in agreement with the government project for development for professions instruction (ensino técnico-profissional).

The bill was sent to Congress, collided with the dispute of the educators, specially those connected to the Federal System of Industrial Technical Instruction (Sistema Federal do Ensino Técnico Industrial), which claimed for alterations in the direction of the conception of a unitary technical (*academics and vocational-technical contents taught in the same facilities for the same students [translator's remark]*), technological, or polytechnical instruction and tuition-free (ensino técnico unitário, tecnológico ou politécnico e de caráter público). The approval of the minimalist LDB relieved the Executive of this pressure and, immediately it withdrew the bill from Congress and transformed it, autocratically, in the Decree n° 2208, April 17, 1997. Legally, but not legitimately, the government is imposing the reform that since the very beginning it wanted to do, meeting the associated conservative interests associated to the orientation of the World Bank.

In relation to the secondary level technical industrial instruction (ensino técnico industrial) the new legislation condensed in the Decree n° . 2208/97, represents a regression and exacerbation of the dualism, fragmentation and, under the false excuse of high costs and that it presently meets the needs of an elite, a clear privatization process of this level of instruction.”

(End of the text.)

Origin of the text below: “Changes in the Policy of Technical-Professional Preparation: Return to the Dualism, fragmentation and Productivism (Mudanças na Política de Formação Técnico-Profissional: Regressão ao Dualismo, Fragmentação e Productivismo)”, text developed by Gaudêncio Frigotto which is in the version written to be presented and debated at the II CONED, Belo Horizonte, 08.11.1997, pages 4, 5 and part of pages 6 and 11.

“ 2- The conception and organization of the Development for Professions Instruction (Ensino Técnico-profissional) within the clashes of the construction of antagonistic societal projects.

The dispute around the conceptions and control of the development for professions (formação técnico-profissional) is present, clearly, since the 20s e, more specifically starting from the 30s, with the specter of forces, which we alluded above, which postulate, on one hand, a democratic societal project, in a perspective of self-sustained economical-social development, articulated in sovereign form in the international scenario, and a project associated and subordinated to the international capitalism.

The literature which addresses critically the dispute of the conceptions and policies of development for professions instruction (ensino técnico-profissional) throughout the last half century, is abundant. In recent analysis Cunha (1997) analyzes the management policies that relate 9-11/12 grade instruction (ensino médio) and development for professions instruction (ensino profissionalizante), in this long period, and call them “zig-zag”, to characterize the discontinuities, advancements, and retrocessions.

2.1 - The Unitary and Public Development for Professions (Formação Técnico-Profissional): Assumption to a Real Democracy in the Political and Economic-Social Setting (Democracia Efetiva no Plano Político e Econômico-Social).

In the long process of reconstruction of democracy in Brazil, particularly in the 80s in the context of the constituent assembly and, later in the formulation of the bill that originated National Education Directives and Bases Act (Lei de Diretrizes e Bases da Educação Nacional), one of the chapters, in the education field, which becomes a kind of *Gordian knot*, with intense dispute, was the one addressing the development for professions (formação técnico-profissional). Such dispute occurs clearly in two levels: the one of the conception of the development for professions (formação-técnico-profissional), and the one of the its political and organizative control.

Which are the basic ideas which define the conceptual and organizative axis of the development for professions (formação técnico-profissional) by educators and by the other social forces compromised with a democratic, self-sustainable societal project, which postulates the inclusion of all in the access to material and cultural goods and which articulates in a autonomous format to the globalization and universalization processes?

The guiding axis of the conception of the development for professions (formação-técnico-profissional), in the constituents and the making of the LDB debates, fed by the critical analysis of the conceptions and educational policies originated during the dictatorship³ cycle, rotated around the defense of the public, tuition-free, lay, universal, unitary and technological or polytechnic school.⁴

The proposal of development for professions instruction (ensino técnico-profissional) in the conception of the unitary, technological or polytechnical school (escola unitária, tecnológica ou politécnica) has as assumption and purpose the overcoming of the dualism and of the fragmentation, of the dichotomy between the general and specific, technical, humanist and

³ - About the educational reforms during the military cycle see Saviani (1998).

⁴ - Around the use of the concept "technological and polytechnical", there is a controversy in the progressive field of education. In reality, in both cases, I think, what matters is the signification or ressignification that both take in the concrete historical setting. Because that and within this perspective, I use in the text both as synonyms. Technology as creation and extension of the human senses which "*transforms the nature having in sight human collective goals (...). Natural material transformed in organs of the human will which exerts itself over nature or from the participation of the human nature over the nature*". (Bottmore, org., 1988). 'Politecnia' as a conception of human unitary and omnilateral development (formação humana unitária e omnilateral) that is, which develops the multiple dimensions of the human being while a being of material, cultural, aesthetic, affective and ludic needs.

political preparation (formação geral e específica, técnica, humanista e política). It delimits, too, the rupture with the productivist and marketing conception (concepção produtivista e

mercadológica) of the human development (de formação humana). It is a development (formação), syntheses of the universe, which encompasses all the dimensions of human life. A democratic development (formação democrática) in the method, shape and content. This perspective on its turn, for authors like Saviani (1988), Machado (1989), Frigotto (1987 e 1991), and Rodrigues (1993), places as exigency a concomitant struggle for the overcoming of the capitalist social relations (relações sociais capitalistas). It is about a fight that, as Saviani observed, need to be put in practice from now on, even in adverse conditions.

“However, it matters to make stand out that, if the implementation of such proposal presupposes transformations, even radical ones, in the present Brazilian society setting, it is possible to work from now on that direction, even because such effort already constitutes, itself, in an integrant moment of the same process of radical transformation of the present conditions” (Saviani, 1988:88).

The text of the first proposal for the LDB introduced by representative (deputado) Otávio Elísio in December, 1988 and the Jorge Hage substitutive, as makes evident Saviani's analysis (1997), incorporated in a very broad manner the conception set off above, reflecting, in good measure a certain equilibrium of the forces in the dispute, not only in the educational field, but also in the social broader one. In the same direction, it was defended the chapter about the social rights in the constituent assembly. In relation to the 9-11/12 grade and development for professions instruction (ensino médio e técnico-profissional), the article 53.1, of the Jorge Hage substitutive indicated that the 9-11/12 grade instruction (ensino médio) curriculum “will highlight the basic technological education (educação tecnológica básica), the comprehension of the science, of the letters and of the arts, the historical process of transformation of the society and the culture. (...) The access to knowledge and the exercise of the citizenship”.

The conception of unitary and technological or polytechnical development (formação unitária e tecnológica ou politécnica), in the context of the 80s debates, had as horizon, also, the overcoming of the duality existent today in the 9-11/12 grade level (nível médio) which maintains the secondary level technical industrial instruction (ensino técnico industrial de nível médio) in a separate system. The unity of 9-11/12 instruction (ensino médio), with the perspective of technological or polytechnical development (formação tecnológica ou politécnica), would mean the rupture, as we indicated above, of the dualisms - general-specific (geral-específico), humanistic-technical (humanístico-técnico), technical-political (técnico-político), unsustainable not only from the epistemological point of view but also and, mainly, from the ethical-political point of view. What becomes prominent is that, particularly in the historical context in which we live, the unitary development (formação unitária), which includes the graduation from 9-11/12 grade level (nível médio), is fundamental condition to the real citizenship and for the comprehension of the new technological bases of the world of production.

In relation to the development for a specific profession (formação profissional e qualificação específica) the directive, present in the article 53 of that substitutive, is that such development be done after the unitary, technological or polytechnical development (formação unitária, tecnológica ou politécnica) which encompasses 1-11/12 grade instruction (ensino

fundamental e médio), or face the reality in the present moment it can be concomitant but with an increase of the school workload and in a specific system. It is in this understanding that all the debates of the chapter of education in the constituent assembly and later in the preparation of the LDB that the educators and social forces compromised with the overcoming of the formal democracy and citizenship for a few, worked and defended, in relation to the development for a specific profession (formação profissional específica), chiefly for youngsters and adults, three complementary positions to be guaranteed at the legislation level:

a) - Break the unacceptable sole and private control of National Confederations of Manufacturing (Industry) and Commerce (Confederações Nacionais de Indústria e Comércio) over the public fund granted to them for the management of SENAI, SENAC, SESI, and SESC as well the exclusivity of the conception and practice of the development for professions (formação técnico-profissional) delivered at these institutions. In the possible limit of a representative democracy, it has been defended and is defended the triparty management of such public fund and of the conception of development for professions (formação profissional).

b) - Another thesis widely developed was the creation of public centers for development for professions (centros públicos de formação profissional). It is about organizations with flexible schedules and with a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific development (formação específica).

c) - Set, in the legislation, the reduction of the number of work hours (redução da jornada de trabalho) of the youngsters and adults that are going through development for professions (formação profissional), without loss for their revenues (wages/salaries).

Around these conceptions, here selectively centered the forces of the educators' organizations (more than 34 constituted the FORUM) and other institutions and organizations which sought to articulate the interests of the excluded persons and of the working class.”

(End of the item 2.1.)

“The development for professions (formação técnico-profissional) which interests to the heterogeneous working class can not have in the market and in the capital its philosophical, conceptual and practical horizon. This is only a historical contingency. Work in the limit of the contradictions of the capital and of the representative democracy, continues to be the central goal for those that place themselves as historical task to create conditions *to go beyond the capital form of human-social relations* (Mészáros, 1996), solidary and socialist forms. The development for professions preparation (formação técnico-profissional) centered in the multiple human needs is fundamental condition for the production and the technology appropriation as extension and enlargement of the human senses and as value of usage (valor de uso). It is about a process which has to articulate organically the production social relations and the cultural and educative relations. That implies, to fight, in the public setting,

for a State (Government) (Estado) that governs with the society organizations and for the society. As Tarso Genro indicates from a rich experience of public management with the society: "It is about to share a new conception of reform of the State (Government) (Estado), starting from a new relation State-Society (Government-Society) (Estado-Sociedade) which opens the State (Government) (Estado) to these social organizations (and the participation of the isolated citizen), particularly those that are self-organized by the excluded persons of all shades, admitting the political tension as decisory method and dissolving the autoritarism of the traditional State (Government) (Estado) under the pressure from the organized society." (Genro, 1996)." (p. 11).

(End of the text.)

Additional sources about politecnia:

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Questões Críticas da Educação Brasileira (Critical Questions of the Brazilian Education). Brasília, DF: PACTI/PBQP, 1995.

References about educational terminology:

Dicionário Brasileiro de Educação (Brazilian Dictionary of Education). By Sérgio G. Duarte. Rio de Janeiro, RJ: Antares/Nobel, 1986.

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The Dictionary of Educational Terms. By David Blake & Vincent Hanley. Bodmin, Cornwall, Great Britain: Arena, 1995.

APPENDIX M

ROUND II ANSWER SHEETS

<p>ROUND II SURVEY INSTRUMENT Answer Sheet</p> <p>Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in Brazil</p> <p>Expert Number:</p>	<p>Paulo de Tarso Costa Henriques 38 South University Place Apt. 7 Stillwater, Oklahoma 74075 - USA Phone: (405) 744-2841 Fax: (405) 377-7169 Email: ptchenriqu@aol.com</p>
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Please indicate by an "X" the answer chosen for each item below:

SD Strongly Disagree	D Disagree	NO No Opinion	A Agree	SA Strongly Agree
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001	SD	D	NO	A	SA	031	SD	D	NO	A	SA	061	SD	D	NO	A	SA	091	SD	D	NO	A	SA
002						032						062						092					
003						033						063							093				
004						034						064							094				
005						035						065							095				
006						036						066							096				
007						037						067							097				
008						038						068							098				
009						039						069							099				
010	SD	D	NO	A	SA	040	SD	D	NO	A	SA	070	SD	D	NO	A	SA	100	SD	D	NO	A	SA
011						041						071							101				
012						042						072							102				
013						043						073							103				
014						044						074							104				
015						045						075							105				
016						046						076							106				
017						047						077							107				
018						048						078							108				
019						049						079							109				
020	SD	D	NO	A	SA	050	SD	D	NO	A	SA	080	SD	D	NO	A	SA	110	SD	D	NO	A	SA
021						051						081							111				
022						052						082							112				
023						053						083							113				
024						054						084							114				
025						055						085							115				
026						056						086							116				
027						057						087							117				
028						058						088							118				
029						059						089							119				
030	SD	D	NO	A	SA	060	SD	D	NO	A	SA	090	SD	D	NO	A	SA	120	SD	D	NO	A	SA

TO BE CONTINUED

Expert Number:

Please indicate by an "X" the answer chosen for each item below:

SD Strongly Disagree	D Disagree	NO No Opinion	A Agree	SA Strongly Agree
-------------------------	---------------	------------------	------------	----------------------

121	SD	D	NO	A	SA	151	SD	D	NO	A	SA	181	SD	D	NO	A	SA	211	SD	D	NO	A	SA
122						152						182						212					
123						153						183						213					
124						154						184						214					
125						155						185						215					
126						156						186						216					
127						157						187						217					
128						158						188						218					
129						159						189						219					
130	SD	D	NO	A	SA	160	SD	D	NO	A	SA	190	SD	D	NO	A	SA	220	SD	D	NO	A	SA
131						161						191						221					
132						162						192						222					
133						163						193						223					
134						164						194						224					
135						165						195						225					
136						166						196						226					
137						167						197						227	SD	D	NO	A	SA
138						168						198						228					
139						169						199						229					
140	SD	D	NO	A	SA	170	SD	D	NO	A	SA	200	SD	D	NO	A	SA	230					
141						171						201						231					
142						172						202						232					
143						173						203						233					
144						174						204						234					
145						175						205						235					
146						176						206						236					
147						177						207						237					
148						178						208						238					
149						179						209						239					
150	SD	D	NO	A	SA	180	SD	D	NO	A	SA	210	SD	D	NO	A	SA	240					

THANK YOU

APPENDIX N

COMMUNICATION FORM

COMMUNICATION FORM

In Order to Make it Easier for me to Reach you, I Hope You do not Mind in Checking the Accuracy of the Data Below and Sending this Form Back to me before You Answer the "Round II Survey Instrument".

Paulo de Tarso Costa Henriques
 38 South University Place - Apt. 7
 Stillwater, OK 74075 - USA
Phone: (405) 744-2841
Fax: (405) 377-7169
Email: ptchenriqu@aol.com

Title: Dr.
Position: Professor
Mailing Address:
Work: (x) **Home:** ()

Name: John Labor

School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Phone: (703) 225-4597 **Work:** (x) **Home:** ()

Fax: (703) 225-7645 **Work:** (x) **Home:** ()

Email: jlabor@edway.webster.edu **Work:** () **Home:** ()

CHANGES

Title: _____

Name: _____

Position: _____

Mailing Address: _____ **Work:** () **Home:** ()

Tel.: _____ **Work:** () **Home:** ()

Fax: _____ **Work:** () **Home:** ()

Email: _____ **Work:** () **Home:** ()

APPENDIX O

ROUND II FOLLOW-UP LETTERS

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

March 24, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

As of today, I have not yet received your responses to the Round II questionnaire of my study of the future of Brazilian federal technological education system. If you have already mailed your questionnaire back, please disregard this letter. I need your reply to continue with Round III.

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

In case you have misplaced the questionnaire, please let me know so that I can send you another copy of the Round II Survey Instrument. I would appreciate your responses as soon as possible.

You can **mail** your responses to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** your responses to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** your responses to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please feel free to contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841



The Campaign for OSU

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

April 1, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

In order to be able to continue with Round III of my study of the future of Brazilian federal technological education system, I need to know if you are still interested in participating in such research, and if yes, when you intend to send back the questionnaire.

As of today, I have not yet received your responses to the Round II questionnaire of my study. If you have already mailed your questionnaire back, please let me know by phone, fax or email. I will be glad to pay for the calls.

In case you have misplaced the questionnaire, please let me know so that I can send you another copy of the Round II Survey Instrument. I would appreciate your responses as soon as possible.

You can **mail** your responses to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** your responses to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** your responses to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please feel free to contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841

The Campaign for OSU



Curriculum Studies/
 Supervision
 Educational
 Leadership
 Elementary,
 Secondary and K-12
 Education
 Occupational
 Education Studies
 Reading Education
 Special Education

APPENDIX P

ROUND II REQUESTED CHANGES

IN STATEMENTS

ROUND II REQUESTED CHANGES IN STATEMENTS

A few statements in Round II Instrument were requested to change for Round III Instrument. The requested changes related to either correction of typographical errors or clarifications in the text of a few statements. Some of the statements could not be made clearer as some panelists would like, however, they were the input of the panel of experts, and were made as clear as possible at that point of the survey.

SECTION 1: ROLE(S) OF THE BRAZILIAN FEDERAL GOVERNMENT IN VTET

Based on your perception of how the future may be by the year 2025, what should be the role(s) of the Brazilian federal government in vocational-technical education and training by the year 2025? If you envision different roles for different futures be free to express your opinions. Do not attempt to rank the roles; this issue will be dealt with in future rounds, if necessary.

Note: A = Agreement, D = Disagreement, and I = Indecisive

- **Policy**

None

- **Provider of programs/courses**

16. By 2025, the Brazilian Federal Government should have **expanded its present network of technological education facilities.** (I-57%)

In Round III, statement 16 read:

By 2025, the Brazilian Federal Government should have **expanded the present federally maintained and operated network of technological education facilities which will remain federal by then.**

- **Funding**

25. By 2025, if a neoliberal group continues to govern Brazil, the Federal Government **will be a development for professions public fund (such as the FAT presently) distributor for which public and private institutions, NGOs, and others will compete for.**
(I-38%)

In Round III, statement 25 read:

By 2025, if a neoliberal group continues to govern Brazil, the Federal Government **will be a development for professions public fund distributor (as it happens with the FAT presently) for which public and private institutions, NGOs, and others will compete for.**

36. By 2025, the Brazilian Federal Government **may fund selectively in some strategic areas, particularly the R&D of training.**

(A-90%)

In Round III, statement 36 read:

By 2025, the Brazilian Federal Government may fund selectively in some strategic areas, particularly the R&D of training.

- **Others**

None

SECTION 2: ORGANIZATION OF VTET IN BRAZIL

Based on your perception of how the future may be by the year 2025, how should vocational-technical education and training in Brazil be organized by the year 2025 - who should provide it, who should fund it, in which format, etc. ? If you envision different forms of organization for different futures be free to express your opinions. Do not attempt to rank your predicted forms of organization; this issue will be dealt with in future rounds, if necessary.

Note: A = Agreement, D = Disagreement, and I = Indecisive

- **Who to provide it?**

90. By 2025, there should be **VTET schools organized, operated, and supported by workers organized in unions and Union Centrals**, with compulsory contributions such as union tax and Assistance to the Unions contribution.

(I-48%)

In Round III, statement 90 read:

By 2025, there should be **VTET schools organized and maintained by workers organized in unions and Union Centrals**. Such schools would be funded by compulsory contributions of the kind as the union tax and the Assistance to the Unions contribution.

91. By 2025, **VTET might be delivered in “public VTET centers” of triparty management** (government, entrepreneurs and workers).

(A-76%)

In Round III, statement 91 read:

By 2025, **VTET may be delivered in “public VTET centers” of triparty management** (government, entrepreneurs and workers).

93. By 2025, there will be need therefore to involve business and industry to a much greater extent for selected occupational areas, **with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools**. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

(A-76%)

In Round III, statement 93 read:

By 2025, there will be need to involve business and industry to a much greater extent for selected occupational areas, **with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools**. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

124. By 2025, **the development of the individual** (youngsters and adults) **for the exercise of a profession**, independent of it being demanded by any company at that moment in time, corresponding solely to the person’s will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create of company related to the doing of his/her profession, besides other motives, **only will be offered by the governments**, because such characteristic of development does not pass concretely in front of the critical view of the companies.

(I-38%)

In Round III, statement 124 read:

By 2025, the development of the individual (youngsters and adults) for the exercise of a profession only will be offered by governments. The offer of development for a specific profession will be independent of the demand of the latter by any company at that moment in time. Such offer will correspond solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create a company related to this profession, besides other motives. Such characteristic of development does not pass concretely in front of the critical view of the companies.

- **Who to fund it?**

155. By 2025, if any nation want to be competitive itt should have earmarked governmental funds for skill development.

(A-90%)

In Round III, statement 155 read:

By 2025, if any nation wants to be competitive it should have earmarked governmental funds for skill development.

156. By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

(I-52%)

In Round III, statement 156 read:

By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

- **In what format?**

189. By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without no interference or participation of the federal government.

(D-90%)

In Round III, statement 189 read:

By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without any interference or participation of the federal government.

191. By 2025, **flexibility, rapidity, low cost, virtuality will be for sure attributes of the VTET**, and more so when there is an adult public interested in it.
(I-67%)

In Round III, statement 191 read:

By 2025, **flexibility, rapidity, low cost, and virtuality will be for sure attributes of VTET**. Such attributes are very important because there are more and more adults interested in participating in VTET.

193. By 2025, **it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level**, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education for the globalization requires a sound general education.
(A-76%)

In Round III, statement 193 read:

By 2025, **it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level**, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education separately because globalization demands every person to have a sound general education.

201. By 2025, if a neoliberal group continues to govern Brazil, **the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector**. In this sense the “theory” or ideology of the “competencies” or of the basic skills - basic skills - offered by the empirism of the productive world - will be the parameter of the development of a individual for a profession.
(I-52%)

In Round III, statement 201 read:

By 2025, if a neoliberal group continues to govern Brazil, **the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector**. In this sense the “theory” or ideology of the “competencies” or of the basic skills - offered by the empirism of the productive world - will be the parameter of the development of an individual for a profession.

202. By 2025, **development for professions should offered in the format of the classical school.** Theoretically the new scientific-technical base, under the aegis of the microelectronics, genetic engineering, and new sources of energy, structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, such format would constitute in the best development for a profession, even taking as a criteria only the economic dimension. With this would come, however, also, the reality of a citizen able to read critically the reality more and more complex and to organize him/herself to have the right to a worthy life, even that the world of employment be more and more scarce and unnecessary.

(I-33%)

In Round III, statement 202 read:

By 2025, **development for professions should offered in the format of the classical school.** Theoretically, the new scientific-technical base (under the aegis of the microelectronics, genetic engineering, and new sources of energy) structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, the classical format would constitute in the best format for development for a profession, even taking as a criteria only the economic dimension. Attached to that, it would also come, the development of citizens able to read critically the more and more complex reality and to organize themselves to demand the right to have a good living, even knowing that there is a decreasing need for workers in the marketplace.

203. By 2025, if a socialist group governs Brazil, **development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction.** K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnic school.

(I-52%)

In Round III, statement 203 read:

By 2025, if a socialist group governs Brazil, **development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction.** K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnical.

- **Other aspects**

225. By 2025, **it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss in their revenues (wages/salaries).**

(I-57%)

In Round III, statement 225 read:

By 2025, **it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss to the workers' revenues (wages/salaries).**

APPENDIX Q

ROUND III COVER LETTER

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

April 22, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

Thank you for answering the Round II Instrument of my survey about the future of Brazilian federal technological education system.

This is Round III, the planned final Round of the present survey.

In addition to this cover letter, I am sending the Round III Instrument, answer sheets, and explanation/commentary sheets.

The Round III Instrument is the same as to Round II Instrument. A few typographical errors were corrected and a few clarifications were made. Some of the statements are not clear as you and others would like, however, they are the input of the panel of experts, and the statements are as clear as we can get at this point.

The Round III answer sheets are different from Round II answer sheets because they contain not only data regarding to the distribution of all previous responses for each of the 227 items, but also their arithmetic mean responses, your Round II responses to the each of the items, and the number of respondents per item. Not all the participants responded to every item. You will need to use this new answer sheet to record your responses to the questionnaire. Your responses may be sent back to me on the questionnaire itself or the Round III answer sheets, whichever you prefer. I have assigned you a number on the questionnaire and answer sheets so I can keep an organized record of the returned responses.



The explanation/commentary form is to be used whenever you **need to explain or support your answer for any specific item, specially if it disagrees with the majority of the responses for the same item.**

In Round II, I sent you a description of the present state of Brazilian Education (Schooling Education in general, Vocational-Technical Education and Training specifically), and other issues such as Technological Education and Polytechnical Education [Politecnia]. Again, the description may be used if you think it will help you to respond to the Round III Instrument statements, that is, its use is optional. If you need an extra copy of the description, please let me know right away.

As indicated before, the Round III Instrument is the same one you answered in Round II. It contains no open-ended essay questions. It consists of two sections, each dealing with one of the questions that you answered for Round I. In each section, I have consolidated, paraphrased and even moved some answers around. If you don't think all of your answers are included, look closer - they may be included in a carefully worded summary. Your complete responses will be included in my final report.

We have a substantial level of agreement ($AMR < 2.5$ or $AMR > 3.5$) in about sixty percent of the statements in the survey instrument but we need this third Round to verify if everyone may agree on them and to see if we can get more agreement on others ($AMR =$ Arithmetic Mean Response).

As alluded to before, based on the panel's responses to Round II, I calculated the arithmetic mean of the responses for each of the 227 items included in the Round II Survey Instrument. I have also recorded the number of responses for each choice per item by those participants who responded. In Round III, you are asked to revisit the same questionnaire you answered in Round II and taking into consideration the opinion of the other experts, maintain or change your previous responses by marking an "X" on the Likert scale of each statement in the questionnaire. **If, in this third Round, for each statement, you feel you would agree with the majority of the 23 experts participating in the study, simply mark by an "X" the box which contains the highest number in one of five columns (SD, D, NO, A, SA) - see sample. If you do not agree, mark your level of agreement in the appropriate box - see sample - and write a one sentence statement supporting your response in the appropriate form.** The estimated time to complete this Round is around one hour.

I would like your response by Thursday, May 14. Feel free to respond either by using the enclosed envelope or by fax (especially if you miss the deadline). My fax number is listed below. If you prefer to send your answer by email, please let me know your email so that I can send you the answer sheets through electronic means. My email address is listed below.

As I have said before, during the course of this study, your name will not be revealed to the other participants in this study. Even after the conclusion of the research, it will not be possible to associate the participants' names directly with their responses. In my final report, however, I will list your name in the methodology chapter and would like to include a description of each panelist in an appendix. You could help me out a lot by sending to me a **vita/resume or its summary** (education, professional experience, etc.) **along with your responses for the Round III questionnaire.**

I will send you a copy of the results of this study in late June or early July. Thank you for your cooperation, and if you have any questions, please write, call, fax, or email me.

Sincerely,

Paulo de Tarso Costa Henriques

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APPENDIX R

ROUND III SURVEY INSTRUMENT

Expert Number: _____

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ROUND III SURVEY INSTRUMENT

Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in Brazil

SECTION 1: ROLE(S) OF THE BRAZILIAN FEDERAL GOVERNMENT IN VTET

What follows is a consolidated list based on the opinions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to the role(s) of the Brazilian federal government in vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) by the year 2025. If you don't consider a particular listing a role or totally disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Please indicate by an "X" the answer chosen for each item below:

S C A L E

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

1. By 2025, the Brazilian Federal Government should be a conceiver of policies for VTET.

SD	D	NO	A	SA

2. By 2025, the Brazilian Federal Government should be a monitor of public policies for VTET.

SD	D	NO	A	SA

3. By 2025, the Brazilian Federal Government should articulate a national policy for VTET integrated with the public system of work and income generation.

SD	D	NO	A	SA

4. By 2025, the Brazilian Federal Government should have formulated quality standards for VTET which must be frequently updated.

SD	D	NO	A	SA

Expert Number: _____

5. By 2025, the Brazilian Federal Government should **define directives and strategic directions for the organization of VTET.**

SD	D	NO	A	SA

6. By 2025, the Brazilian Federal Government should **play more of a leadership/guidance (vs operational) role in vo-tech education/training**, serving as a catalyst for bringing about high quality program design and implementation at the state and local levels.

SD	D	NO	A	SA

7. By 2025, the Brazilian Federal Government should **provide leadership to the VTET systems not only by developing an education action plan taking into consideration the national priorities, but also by supporting, and monitoring its implementation.**

SD	D	NO	A	SA

8. By 2025, the Brazilian Federal Government should **establish policies and directives in VTET.** The policies and strategies at the federal level must count on partnerships with the states and municipalities, in consortium with the various segments of society. The federal policies must stimulate and respect the regional peculiarities.

SD	D	NO	A	SA

9. By 2025, the Brazilian Federal Government should **develop a national vo-tech education policy that differentiates the roles of the various providers and employers.**

SD	D	NO	A	SA

10. By 2025, the Brazilian Federal Government should **be responsible for establishing the national policies and directives for technological education (and not VTET), having input from the productive sector.**

SD	D	NO	A	SA

11. By 2025, if a socialist group governs Brazil, the Federal Government should **be developing policies for development for professions in conjunction with society.**

SD	D	NO	A	SA

12. By 2025, the Brazilian Federal Government should **be defining and setting the framework of educational policy goals for vo-tech education/training in collaboration with ministries of labour and education/culture.**

SD	D	NO	A	SA

13. By 2025, **technical education** (higher education level) should be offered by **federally owned, supported and operated educational facilities.**

SD	D	NO	A	SA

14. By 2025, **vo-tech education** (secondary level) should be offered by **federally owned supported and operated institutions.**

SD	D	NO	A	SA

15. By 2025, **training** (non formal VTET) should be offered by **federally owned, supported and operated educational institutions.**

SD	D	NO	A	SA

Expert Number: _____

16. By 2025, the Brazilian Federal Government should have **expanded the present federally maintained and operated network of technological education facilities which will remain federal by then.**

SD	D	NO	A	SA

17. By 2025, the Brazilian Federal Government should **own, support and operate a reference network of VTET educational facilities.**

SD	D	NO	A	SA

18. By 2025, if a socialist group governs Brazil, the Federal Government should **be providing development for professions along with other providers.**

SD	D	NO	A	SA

19. By 2025, the Brazilian Federal Government should **offer vo-tech education and training in occupational areas not spontaneously covered by other non totally public systems (S Systems and others).**

SD	D	NO	A	SA

20. By 2025, the Ministry of Education and Sports should **be progressively disengaging or have disengaged of offering vo-tech education which should be transferred to states and/or municipalities. MEC will neither fund or operate.**

SD	D	NO	A	SA

21. By 2025, the Brazilian Federal Government should **fund the whole VTET system, including teachers salaries, buildings, equipments and study materials.**

SD	D	NO	A	SA

22. By 2025, the Brazilian Federal Government should **provide funds for staff development for vo-tech education.**

SD	D	NO	A	SA

23. By 2025, the Brazilian Federal Government should **provide funds for purchase equipment for vo-tech educational facilities.**

SD	D	NO	A	SA

24. By 2025, the Brazilian Federal Government should **provide funds for programs development and dissemination in vo-tech education.**

SD	D	NO	A	SA

25. By 2025, if a neoliberal group continues to govern Brazil, the Federal Government **will be a development for professions public fund distributor (as it happens with the FAT presently) for which public and private institutions, NGOs, and others will compete for.**

SD	D	NO	A	SA

26. By 2025, the Brazilian Federal Government should be **planning, suggesting and evaluating different options of funding vo-tech education/training.** (To tell one functional experience from the other side of the world: The Nordic countries are funding the huge and organized VET systems by tax money that has created equal and democratic choices and opportunities to all people.)

SD	D	NO	A	SA

27. By 2025, the Brazilian Federal Government should **be a provider of funds to activities in technical education** (higher education level).

SD	D	NO	A	SA

Expert Number: _____

28. By 2025, the Brazilian Federal Government should be a provider of funds to activities in vo-tech education (secondary level).

SD	D	NO	A	SA

29. By 2025, the Brazilian Federal Government should be a provider of funds to activities in training (non formal VTET).

SD	D	NO	A	SA

30. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in federally owned and operated schools/educational facilities.

SD	D	NO	A	SA

31. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in state owned and operated schools/educational facilities.

SD	D	NO	A	SA

32. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in municipally owned and operated schools/educational facilities.

SD	D	NO	A	SA

33. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the business and industry federations (such as the S System).

SD	D	NO	A	SA

34. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the workers unions.

SD	D	NO	A	SA

35. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in private schools/educational facilities.

SD	D	NO	A	SA

36. By 2025, the Brazilian Federal Government may fund selectively in some strategic areas, particularly the R&D of training.

SD	D	NO	A	SA

37. By 2025, federal funds should be provided for support of research about vo-tech education and training.

SD	D	NO	A	SA

38. By 2025, federal funds should be provided for support of teacher training for vo-tech education/training programs.

SD	D	NO	A	SA

39. By 2025, federal funds should be provided for support of leadership and administrative training for running vo-tech education and training programs.

SD	D	NO	A	SA

Expert Number: _____

40. By 2025, federal funds should be provided for support of the national advisory council for vo-tech education and training.

SD	D	NO	A	SA

41. By 2025, the Brazilian Federal Government should have no role in VTET.

SD	D	NO	A	SA

42. By 2025, the Brazilian Federal Government should not be setting standards in VTET themselves; however, they should help to manage a process by which high standards are set with the concurrence of all interested and affected parties.

SD	D	NO	A	SA

43. By 2025, the Brazilian Federal Government should provide technical assistance and information on best practices and leading innovation to providers and practitioners of VTET.

SD	D	NO	A	SA

44. By 2025, the Brazilian Federal Government should ensure that disadvantaged and disabled individuals have access to services in VTET. The federal government must ensure access to high quality programs for all individuals, which means they must provide supplemental services in some cases where needed.

SD	D	NO	A	SA

45. By 2025, the Brazilian Federal Government should lead VTET through positive encouragement or incentive, not through overmanagement, overly prescribed regulation or negative consequences for certain behaviors.

SD	D	NO	A	SA

46. By 2025, the Brazilian Federal Government agencies and officials should model the kinds of behavior they expect from regional or local institutions and individuals in VTET.

SD	D	NO	A	SA

47. By 2025, the Brazilian Federal Government should have set up an infrastructure for curriculum development for VTET.

SD	D	NO	A	SA

48. By 2025, the Brazilian Federal Government should have set up a system for VTET teacher training.

SD	D	NO	A	SA

49. By 2025, the Brazilian Federal Government should be using a balanced system of school-based and national testing in VTET.

SD	D	NO	A	SA

50. By 2025, the Brazilian Federal Government should have a system for school-into-work transition.

SD	D	NO	A	SA

51. By 2025, the Brazilian Federal Government should provide incentives for the creation and maintenance of VTET schools that operate as Vocational-Technical/Technical Reference Centers for the regions where they are located and for the occupational areas for which they have programs.

SD	D	NO	A	SA

Expert Number: _____

52. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for maintaining more effective program operations and management.**

SD	D	NO	A	SA

53. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for establishing stronger partnerships between vo-tech/training programs and the private sector.**

SD	D	NO	A	SA

54. By 2025, the Brazilian Federal Government should **provide leadership to states** for assisting **local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for assessing more frequently, and in different ways, regional manpower needs and job skill requirements.**

SD	D	NO	A	SA

55. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for developing broader-based program curricula, materials, and instructional methodology.**

SD	D	NO	A	SA

56. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for forming, and using more effectively, local program advisory committees.**

SD	D	NO	A	SA

57. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for refining and expanding business/industry cooperative and other joint training ventures.**

SD	D	NO	A	SA

58. By 2025, the Brazilian Federal Government should **support research in the development of curricula, materials, and new approaches to teaching/learning in vo-tech education/training, as well as new modes of worker utilization, e.g., worker teaming, etc., and ways to respond more quickly to employer demands for new worker skills.**

SD	D	NO	A	SA

59. By 2025, the Brazilian Federal Government should **provide guidelines for state and local development/adaptation of curricula and materials for vo-tech education and training.**

SD	D	NO	A	SA

Expert Number: _____

60. By 2025, the Brazilian Federal Government should **provide incentives for state and local development/demonstration of exemplary programs in vo-tech education and training.**

SD	D	NO	A	SA

61. By 2025, the Brazilian Federal Government should **provide leadership and financial support to universities** (selected competitively), possibly through states, **for developing high quality and relevant teacher education/training, as well as special programs for developing vocational-technical/training leadership and administrative personnel to serve at the federal, state, and local levels.**

SD	D	NO	A	SA

62. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing computer-based job information programs for vocational/career counseling of secondary students.**

SD	D	NO	A	SA

63. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing effective student/graduate placement programs.**

SD	D	NO	A	SA

64. By 2025, the Brazilian Federal Government should **provide leadership to states for establishing rapid response adult education/training programs** to assist workers in job advancement, keeping abreast of new technology, career changes, etc.

SD	D	NO	A	SA

65. By 2025, the Brazilian Federal Government should **establish a national advisory council** to keep in touch with the nation's workforce needs and recommend federal policy on development, funding, and evaluation of the country's vo-tech/training system.

SD	D	NO	A	SA

66. By 2025, the Brazilian Federal Government should **stimulate the private sector to be a provider of services in VTET.**

SD	D	NO	A	SA

67. By 2025, the Brazilian Federal Government should **have implemented the Technological Education National System, which has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector (as it is said in the Act 8948/94).**

SD	D	NO	A	SA

68. By 2025, the Brazilian Federal Government should **be coordinating the Technological Education National System.**

SD	D	NO	A	SA

Expert Number: _____

69. By 2025, the Brazilian Federal Government should be **promoting and making accessible secondary level basic development in 5-6 big occupational clusters**, such as: Computer Science and Telecommunications; Mechanics and Electronics; Communications, Language and Arts; Business Administration and Accounting; Urban and Regional Planning and Environment; Health Occupations and Biotechnology.

SD	D	NO	A	SA

70. By 2025, **at the post secondary level**, the Brazilian Federal Government should be **primarily supporting, in partnership with the states, programs that are profession-related lasting 2-3 years targeting specific professions.**

SD	D	NO	A	SA

71. By 2025, **at the post secondary level**, the Brazilian Federal Government should be **primarily supporting, in partnership with the municipalities, programs that are profession-related lasting 2-3 years targeting specific professions.**

SD	D	NO	A	SA

72. By 2025, the Brazilian Federal Government should **provide the political leadership needed to move vocational-technical education to the top of the national agenda.**

SD	D	NO	A	SA

73. By 2025, the Brazilian Federal Government serve a **national "clearing house" function in VTET.**

SD	D	NO	A	SA

74. By 2025, the Brazilian Federal Government role should be **largely framework-setting with greater control at provincial levels. Federalized systems probably will not be responsive to area needs.** There is a positive, forceful role for government - but not as provider!

SD	D	NO	A	SA

75. By 2025, the Brazilian Federal Government should **promote all forms of vocational preparation and re-training through a mix of institutional approaches and should use a mix of incentives to insure that workforce entrants and participants - as well as employers at all levels - are induced to fully participate.**

SD	D	NO	A	SA

76. By 2025, if a neoliberal group continues to govern Brazil, the development for professions will be **under the Ministry of Labor and not anymore under the Ministry of Education and Sports.**

SD	D	NO	A	SA

77. By 2025, if a socialist group governs Brazil, the Federal Government should be **implementing a public, tuition-free, lay, universal, unitary and technological or polytechnic school system.**

SD	D	NO	A	SA

78. By 2025, if a socialist group governs Brazil, the Federal Government should be **democratizing the control of development for professions providers that use public funds.**

SD	D	NO	A	SA

79. By 2025, if a socialist group governs Brazil, the Federal Government should **implementing legislation that favors the participation of youngsters and workers in development for professions.**

SD	D	NO	A	SA

Expert Number: _____

80. By 2025, the Brazilian Federal Government should **have the role of organizer for the development of world-class VTET**. Organize through strategic planning for the future, focusing on world-class VTET as a top priority for 2025.

SD	D	NO	A	SA

81. By 2025, the Brazilian Federal Government should **have the role of facilitator for the development of world-class VTET**. Facilitate the collaboration of the various ministries, organizations, businesses, industries and municipalities to achieve world-class VTET.

SD	D	NO	A	SA

82. By 2025, the Brazilian Federal Government should **have the role of "cheerleader" for the development of world-class VTET**. Actively support (cheerleader) and publicize the movement toward world-class VTET, educating people in the need for world-class VTET and the contributions it can make to economic and social development.

SD	D	NO	A	SA

83. By 2025, the Brazilian Federal Government should **be the coordinator of the development of human resources for the various occupational areas and skills levels required by the productive sectors**.

SD	D	NO	A	SA

84. By 2025, the Brazilian Federal Government should **retain its normative role in VTET**.

SD	D	NO	A	SA

85. By 2025, the Brazilian Federal Government should **retain its evaluation role in VTET**.

SD	D	NO	A	SA

86. By 2025, the Brazilian Federal Government should **be creating many optional models of vo-tech education and training including modern technology for people**. Brazil is a large country with heterogeneous population. Different people with varied social backgrounds will need many choices.

SD	D	NO	A	SA

87. By 2025, the Brazilian Federal Government should be **ensuring that vo-tech education and training is an essential and integrated part of the Brazilian educational system at all levels** (kindergarten, primary, secondary, tertiary and adult education).

SD	D	NO	A	SA

88. By 2025, the Brazilian Federal Government should be **to planning and suggesting optional educational pathways to advance in vo-tech education and training** (e.g., school-based route, work-based or apprenticeship route, mixed routes, vo-tech education and training examination for adults recognizing prior learning etc.)

SD	D	NO	A	SA

Expert Number: _____

SECTION 2: ORGANIZATION OF VTET IN BRAZIL

What follows is a consolidated list based on the predictions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to aspects of the organization of vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) in Brazil by the year 2025 - who should provide it, who should fund it, in which format, etc. If you don't consider a particular listing an aspect of the organization or strongly disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Please indicate by an "X" the answer chosen for each item below:

S C A L E

SD = Strongly Disagree, D = Disagree, NO = No Opinion, A = Agree, SA = Strongly Agree

• **Who to provide it?**

89. By 2025, there should exist a system of VTET that relies on many different providers.

SD	D	NO	A	SA

90. By 2025, there should be VTET schools organized and maintained by workers organized in unions and Union Centrals. Such schools would be funded by compulsory contributions of the kind as the union tax and the Assistance to the Unions contribution.

SD	D	NO	A	SA

91. By 2025, VTET may be delivered in "public VTET centers" of tripartite management (government, entrepreneurs and workers).

SD	D	NO	A	SA

92. By 2025, VTET will be offered only by the companies. There will not be a government system (public) which offers VTET.

SD	D	NO	A	SA

93. By 2025, there will be need to involve business and industry to a much greater extent for selected occupational areas, with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

Expert Number: _____

94. By 2025, **vo-tech schools** will need to provide more in-service training for workers through joint ventures with local employers. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

95. By 2025, a **system of regional vo-tech schools** will be necessary for the basic, more general, training, with authority vested in the regions' perspective states for supervision and for ensuring that basic academic and training standards are being met. Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

SD	D	NO	A	SA

96. By 2025, **VTET should be offered by double partnerships (government/private sector) or triple ones (government/private sector/ society), or others**, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

SD	D	NO	A	SA

97. By 2025, **technical education** (higher education level) should be offered by **state** owned, supported and operated educational facilities.

SD	D	NO	A	SA

98. By 2025, **vocational-technical education** (secondary level) should be offered by **state** owned, supported and operated educational facilities.

SD	D	NO	A	SA

99. By 2025, **training** (non formal VTET) should be offered by **state** owned, supported and operated educational facilities.

SD	D	NO	A	SA

100. By 2025, **technical education** (higher education level) should be offered by **municipally** owned, supported and operated educational facilities.

SD	D	NO	A	SA

101. By 2025, **vo-tech education** (secondary level) should be offered by **municipally** owned, supported and operated educational facilities.

SD	D	NO	A	SA

102. By 2025, **training** (non formal VTET) should be offered by **municipally** owned, supported and operated educational facilities.

SD	D	NO	A	SA

103. By 2025, **technical education** (higher education level) should be offered by **privately** owned, supported and operated educational facilities (owned by companies or not).

SD	D	NO	A	SA

104. By 2025, **vo-tech education** (secondary level) should be offered by **privately** owned, supported and operated educational facilities (owned by companies or not).

SD	D	NO	A	SA

Expert Number: _____

105. By 2025, **training** (non formal VTET) should be offered by **privately owned, supported and operated educational facilities** (owned by companies or not).

SD	D	NO	A	SA

106. By 2025, **technical education** (higher education level) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

107. By 2025, **vo-tech education** (secondary level) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

108. By 2025, **training** (non formal VTET) should be offered by **semi public educational facilities** such as the S System ones.

SD	D	NO	A	SA

109. By 2025, **technological education** should be offered in **specialized institutions**, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favoring the professional competency of its employees). In our case, the **present CEFETs constitute the reference model which can be improved**, the later regarding to specific career and autonomy.

SD	D	NO	A	SA

110. By 2025, **technological education** should be offered **preponderantly in public institutions** (normally federal and state ones).

SD	D	NO	A	SA

111. By 2025, if a neoliberal group continues to govern Brazil - as it is presently -, **education for professions** should be mostly offered by the **business or entrepreneurial world**, through institutions such as Euvaldo Lodi, Herbert Levy and other traditional ones, transformed in service rendering companies for providing education for professions - SENAI, SENAC, SESC, SESI, etc.

SD	D	NO	A	SA

112. By 2025, if a socialist group governs Brazil, **education for specific professions** should be offered only by **public institutions**.

SD	D	NO	A	SA

113. By 2025, **initial development for professions** should be provided by a **mixed system**, that is, through public vocational and training facilities, and semi public and private ones which operate in an articulated way.

SD	D	NO	A	SA

114. By 2025, any **development for a profession after the initial one** should be provided by the **companies** themselves.

SD	D	NO	A	SA

115. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **public institutions** in occupational areas not spontaneously covered by **non totally public ones**.

SD	D	NO	A	SA

116. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **private institutions**.

SD	D	NO	A	SA

Expert Number: _____

117. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **semi-public institutions**.

SD	D	NO	A	SA

118. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **public institutions**.

SD	D	NO	A	SA

119. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **public institutions in partnerships with private organizations**.

SD	D	NO	A	SA

120. By 2025, **development for specific professions** should be offered by **private institutions/organizations**.

SD	D	NO	A	SA

121. By 2025, the **entrepreneurs** will invest in highly specialized development for professions and, fundamentally, necessary to the productive processes.

SD	D	NO	A	SA

122. By 2025, the **unions** will have programs of retraining for professions by the means of the utilization of agreements with specialized institutions.

SD	D	NO	A	SA

123. By 2025, the **human resources development agencies directed to the entrepreneurs' interests**, such as Senai, Senac, Senar, and others, should continue to exist.

SD	D	NO	A	SA

124. By 2025, the **development of the individual** (youngsters and adults) for the exercise of a profession only will be offered by governments. The offer of development for a specific profession will be independent of the demand of the latter by any company at that moment in time. Such offer will correspond solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create a company related to this profession, besides other motives. Such characteristic of development does not pass concretely in front of the critical view of the companies.

SD	D	NO	A	SA

125. By 2025, there will be a wide range of private suppliers, particularly for short courses or those which combine modest costs and a vibrant labor market (such as computer science today).

SD	D	NO	A	SA

126. By 2025, **foreign proprietary courses** will compete successfully in some areas, often in joint ventures with local providers.

SD	D	NO	A	SA

127. By 2025, **firms** will invest in offering short and highly specialized training to its own workers (eventually opening these offerings to outsiders).

SD	D	NO	A	SA

Expert Number: _____

128. By 2025, vo-tech education/training (VET) might be delivered in VET centers depending on needs of trainees and business life.

SD	D	NO	A	SA

• Who to fund it?

129. By 2025, the funding of VTET will be public and private, combined and maximizing the various different existing funds (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments).

SD	D	NO	A	SA

130. By 2025, all different existing funds for VTET (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments) should be articulated, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favour of the generation of work and income, as well as in the modernization of the productive sector.

SD	D	NO	A	SA

131. By 2025, funding for VTET would come from the government but would be provided directly to individuals, as opposed to institutions or programs. Once an individual received funding support, based on need or some other criteria, he or she could use that support to pay for services from a wide range of providers, including the private sector.

SD	D	NO	A	SA

132. By 2025, the respective state governments will need to provide a portion (possibly 1/2) of the funds required for operation of the vo-tech schools. The remaining operational funds would need to be generated locally, e.g., from local taxes, private sector contributions, income earned from joint training ventures with business and industry, adult training tuition, etc.

SD	D	NO	A	SA

133. By 2025, funding for VTET will come from the companies themselves, with some government incentives for programs considered to be strategic manpower development. That is, there will be no public funding for VTET - apart from what was specified above.

SD	D	NO	A	SA

134. By 2025, funding for VTET may come from double partnerships (government/private sector) or triple ones (government/private sector/ society), or others, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.

SD	D	NO	A	SA

135. By 2025, state governments should be providers of funds to activities in technical education (higher education level).

SD	D	NO	A	SA

136. By 2025, state governments should be providers of funds to activities in vocational-technical education (secondary level).

SD	D	NO	A	SA

Expert Number: _____

137. By 2025, state governments should be providers of funds to activities in training (non formal VTET).

SD	D	NO	A	SA

138. By 2025, municipal governments should be providers of funds to activities in technical education (higher education level).

SD	D	NO	A	SA

139. By 2025, municipal governments should be providers of funds to activities in vocational-technical education (secondary level).

SD	D	NO	A	SA

140. By 2025, municipal governments should be providers of funds of activities in training (non formal VTET).

SD	D	NO	A	SA

141. By 2025, semi public organizations should be providers of funds to activities in technical education (higher education level).

SD	D	NO	A	SA

142. By 2025, semi public organizations should be providers of funds to activities in vocational-technical education (secondary level).

SD	D	NO	A	SA

143. By 2025, semi public organizations should be providers of funds to activities in training (non formal VTET).

SD	D	NO	A	SA

144. By 2025, private organizations should be providers of funds to activities in technical education (higher education level).

SD	D	NO	A	SA

145. By 2025, private organizations should be providers of funds to activities in vocational-technical education (secondary level).

SD	D	NO	A	SA

146. By 2025, private organizations should be providers of funds to activities in training (non formal VTET).

SD	D	NO	A	SA

147. By 2025, private institutions, for profit or not, may receive subsidies for offering training (non formal VTET) based on a certain amount of money per slot offered or scholarships for enrollment.

SD	D	NO	A	SA

148. By 2025, students enrolled in technical programs (higher education level) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

149. By 2025, students enrolled in vocational-technical programs (secondary level) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

Expert Number: _____

150. By 2025, students enrolled in training programs (non formal VTET) in public schools/educational facilities should pay tuition - if they can afford to - to cover for part of the costs of such programs.

SD	D	NO	A	SA

151. By 2025, the S System institutions should have kept its present funding form.

SD	D	NO	A	SA

152. By 2025, student loans should be provided to individuals for getting VTET in private organizations.

SD	D	NO	A	SA

153. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses.

SD	D	NO	A	SA

154. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses being admissible complementary and additional forms of fund raising, through co-operative societies and service rendering (extension services must not be charged).

SD	D	NO	A	SA

155. By 2025, if any nation wants to be competitive it should have earmarked governmental funds for skill development.

SD	D	NO	A	SA

156. By 2025, technological education should be offered preponderantly in public institutions (normally federal and state ones) and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

SD	D	NO	A	SA

157. By 2025, funding for vo-tech education/training will continue to be a critical issue. Much of the funding for vo-tech education/training should be private through various incentives - both push and pull. Loans to individuals under long term (repayment provisions) may be an important means of shifting responsibility for a productive return to the beneficiary.

SD	D	NO	A	SA

158. By 2025, if a neoliberal group continues to govern Brazil, funding for VTET should, in part, come from the public fund in partnerships with the private sector.

SD	D	NO	A	SA

159. By 2025, if a neoliberal group continues to govern Brazil, funding for VTET should, in part, come from students which would pay for certain programs/courses.

SD	D	NO	A	SA

160. By 2025, if a socialist group governs Brazil, development for specific professions should be funded only by public resources.

SD	D	NO	A	SA

Expert Number: _____

161. By 2025, **basic development for professions** (inclusive in areas of innovation) should be supported by **public funding**.

SD	D	NO	A	SA

162. By 2025, **development for specific professions** should be supported by **private funding with public incentives**.

SD	D	NO	A	SA

163. By 2025, **funding for VTET** will come from private interests when it meets their specific needs.

SD	D	NO	A	SA

164. By 2025, **funding for VTET** will come from public resources in order to meet the persons' needs independent of companies ones.

SD	D	NO	A	SA

165. By 2025, the public sectors (not MEC) will concentrate on **funding of expensive and long training, particularly in complex technologies**.

SD	D	NO	A	SA

166. By 2025, **expensive and long training, particularly in complex technologies** will be delivered by private and semi public providers (the successors of the S System).

SD	D	NO	A	SA

167. By 2025, **longer and more expensive VTET programs** will operate under a complex mix of cost recovery and public subsidies.

SD	D	NO	A	SA

168. By 2025, **public VTET** will charge a variable fee from students.

SD	D	NO	A	SA

169. By 2025, **private VTET** will get subsidies.

SD	D	NO	A	SA

170. By 2025, **students** may get vouchers to attend chosen schools.

SD	D	NO	A	SA

171. By 2025, **ability to pay and individual potential** will generate complex algorithms to determine pay/subsidies for VTET programs/courses.

SD	D	NO	A	SA

• **In what format?**

172. By 2025, **VTET courses and programs** will be offered based on the marketplace and workers demand (instead of depending on the offer of the VTET providers, as it happens today, which rarely takes into consideration the profile of the clientele and the needs of the labor market).

SD	D	NO	A	SA

Expert Number: _____

173. By 2025, some amount of VTET would be provided through distance learning.

This opens up a whole range of opportunities for individual learners, especially those who are in remote locations.

SD	D	NO	A	SA

174. By 2025, VTET programs, for adults already in the workforce, will be shorter and more often related directly to work needs and often provided on the job.

SD	D	NO	A	SA

175. By 2025, classroom teaching in VTET will have to be linked to real work applications and experiences.

SD	D	NO	A	SA

176. By 2025, further training beyond the first general qualification should be provided by the employers.

SD	D	NO	A	SA

177. By 2025, training of unemployed should be the responsibility of the State (Public Government).

SD	D	NO	A	SA

178. By 2025, there should be a VTET system funded by the State (Public Government), tuition-free, open to unskilled individuals.

SD	D	NO	A	SA

179. By 2025, there should be a VTET funded by the State (Public Government), tuition-free, open to those that want to upgrade their current skills or to acquire new ones - it does not matter if the individual is employed or not.

SD	D	NO	A	SA

180. By 2025, the present vocational-technical schools should have become Technology and Technical Reference Centers (Technical and Vocational-Technical Education Reference Centers) for the regions where they are located and for the occupational clusters in which they offer programs.

SD	D	NO	A	SA

181. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer training programs/courses (non formal VTET) - independent of the number of school years the candidate has completed before beginning a program.

SD	D	NO	A	SA

182. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer secondary level assistant technicians programs: for those who completed K-8 grade education.

SD	D	NO	A	SA

183. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer secondary level technician programs: for students that are in 9-11/12 grade school or who have completed this level of instruction.

SD	D	NO	A	SA

184. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer associate of science programs: for those who completed 9-11/12 grade school.

SD	D	NO	A	SA

Expert Number: _____

185. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer work-targeted specialization, improvement and updating programs to individuals who have already joined the workforce or that have already been trained before.

SD	D	NO	A	SA

186. By 2025, the present vo-tech schools as Technology and Technical Reference Centers should offer alternatives of vocational-technical certification for those who acquire their skills through work-based training, taking advantage of the non formal alternatives of development for work, or through self-learning. The criteria and parameters of this occupational certification will be agreed upon among the educators, workers and entrepreneurs, mediated by the Government.

SD	D	NO	A	SA

187. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. This will allow room in the curricula for expanding/increasing the general education content and for providing more generalized, broader-based technical instruction in preparation for the specialized training.

SD	D	NO	A	SA

188. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. There will be need to build in some formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire program

SD	D	NO	A	SA

189. By 2025, the organization of VTET will be completely determined by the companies individually or by partnership systems among them, without any interference or participation of the federal government.

SD	D	NO	A	SA

190. By 2025, VTET will be offered through the format of specialized, short-term and for updating/recycling skills training, through continuing education.

SD	D	NO	A	SA

191. By 2025, flexibility, rapidity, low cost, and virtuality will be for sure attributes of VTET. Such attributes are very important because there are more and more adults interested in participating in VTET.

SD	D	NO	A	SA

192. By 2025, creativity and openness to changes will have to be emphasized in VTET so that the new generations can each time more adapt themselves to the new age, contributing to its evolution.

SD	D	NO	A	SA

193. By 2025, it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education separately because globalization demands every person to have a sound general education.

SD	D	NO	A	SA

Expert Number: _____

194. By 2025, the basic development for professions - in one of the 5-6 clusters profession clusters - should occur mandatorily during 9-11/12 grade instruction, being part of the curriculum along with disciplines of general humanistic and scientific development: Communication, Social Studies, and Sciences. Contents more "applied" or of major applicability taught presently in 9-11/12 grade instruction will become part of the "profession-gear" curriculum.

SD	D	NO	A	SA

195. By 2025, mandatory 9-11/12 grade and profession geared instruction should be offered concomitantly or in the same school, public or private, or in Schools Consortiums where certain disciplines may be taken. In order to complete 9-11/12 grade instruction, the students will have to taken all the general and "profession-gear" courses which will have an equivalent number of hours of instruction.

SD	D	NO	A	SA

196. By 2025, there should be allowed flexibility in VTET instruction at the regional and local levels.

SD	D	NO	A	SA

197. By 2025, most technical specific training should happen at the post secondary or apprenticeship levels. Much of the ground work and systems work for VTET should happen at the secondary levels. The 2+2 Tech Prep Associate Degree Program is an example of that. It is important to develop a seamless curricular program.

SD	D	NO	A	SA

198. By 2025, CEFETs or equivalent institutions should be in place to meet the demands of HR in their various levels of instruction of technological education which articulate naturally among themselves. In that way, those institutions must have as characteristics the verticality of instruction (all possible levels of instruction in the same institution), and strong interaction with the productive sector.

SD	D	NO	A	SA

199. By 2025, for school leavers at any age, hopefully 16-18 years, but even 14 years, a vocational option through training should be available.

SD	D	NO	A	SA

200. By 2025, adult vocational education (training) for those who have discontinued academic studies is a vital objective, whether for 14, 24, 34, or 44-year old person. Prosperity for all will not occur without societal intent to achieve full employment in a dynamic, technologically-advanced economy. A constantly churning vocational education system is a necessity.

SD	D	NO	A	SA

201. By 2025, if a neoliberal group continues to govern Brazil, the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector. In this sense the "theory" or ideology of the "competencies" or of the basic skills - offered by the empirism of the productive world - will be the parameter of the development of an individual for a profession.

SD	D	NO	A	SA

Expert Number: _____

202. By 2025, **development for professions should offered in the format of the classical school.** Theoretically, the new scientific-technical base (under the aegis of the microelectronics, genetic engineering, and new sources of energy) structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, the classical format would constitute in the best format for development for a profession, even taking as a criteria only the economic dimension. Attached to that, it would also come, the development of citizens able to read critically the more and more complex reality and to organize themselves to demand the right to have a good living,
even knowing that there is a decreasing need for workers in the marketplace.

SD	D	NO	A	SA

203. By 2025, if a socialist group governs Brazil, **development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction.** K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnical.

SD	D	NO	A	SA

204. By 2025, if a socialist group governs Brazil, **development for specific professions should be done after the completion of 9-11/12 grade polytechnic instruction or in parallel to the latter - this last option should be offered in a specific school system which provided both 9-11/12 grade polytechnic instruction and education for a specific profession in the same school with an increased school workload.** In both situations, education should be public, tuition-free, lay, universal, unitary and technological or polytechnical.

SD	D	NO	A	SA

205. By 2025, **the S System should be being run by a triparty administration (entrepreneurs, workers, and government) which would control all its aspects.**

SD	D	NO	A	SA

206. By 2025, **public centers of development for professions should be in operation.** Such organizations would have flexible schedules and a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific type of development.

SD	D	NO	A	SA

207. By 2025, **Public Government will not get involved in the development of individuals for specific professions (the tendency would be the dissemination of the corporative education, interested in the organization of the production and capital).**

SD	D	NO	A	SA

208. By 2025, **there should be oversight for vo-tech education and training at the highest level of government through a joint council.**

SD	D	NO	A	SA

209. By 2025, **vo-tech education and training responsibilities should be detailed and those who are given certain responsibilities must be held accountable for results.**

SD	D	NO	A	SA

210. By 2025, **curriculum links should have been forged between public vo-tech education and training and others to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises.**

SD	D	NO	A	SA

Expert Number: _____

211. By 2025, the vocational-technical vs vocational (training) distinction will fade.

SD	D	NO	A	SA

212. By 2025, the fixed structures presently observed in vocational (training) and vocational-technical education will fade.

SD	D	NO	A	SA

213. By 2025, training in general will be offered through a number of delivery methods (combination of various instructional technologies packages will be pervasive).

SD	D	NO	A	SA

214. By 2025, simple courses will be franchised to smaller operators, such as MacDonal'd's or Yazigi's.

SD	D	NO	A	SA

215. By 2025, the states governments should monitor the efforts of meeting the policy goals of vo-tech education and training (VET).

SD	D	NO	A	SA

216. By 2025, the municipalities governments should monitor the efforts of meeting the policy goals of VET.

SD	D	NO	A	SA

217. By 2025, the types of providers of VET should be related to age groups and their needs.

SD	D	NO	A	SA

218. By 2025, one of the formats of delivering VET should be the school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems.

SD	D	NO	A	SA

219. By 2025, one of the formats of delivering VET should be the work-based model avoiding the disadvantages of the German dual system.

SD	D	NO	A	SA

220. By 2025, one of the formats of delivering VET should be the mix of school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems and the work-based model avoiding the disadvantages of the German dual system (see the recent Austrian reforms).

SD	D	NO	A	SA

221. By 2025, one of the formats of delivering VET should be qualification-based examination for adults and experienced persons to recognize their competencies.

SD	D	NO	A	SA

• Other aspects

222. By 2025, the tripartism (government, workers, and entrepreneurs) or multipartism in the management of public VTET schools/educational facilities must be implemented.

SD	D	NO	A	SA

Expert Number: _____

223. By 2025, VTET should have eliminated the distance between intellectual and manual work. It is necessary to have brought closer the conception and execution functions.

SD	D	NO	A	SA

224. By 2025, VTET should go beyond the learning of simple technical applications for immediate entrance in the labor market. VTET involvement with the advancements of sciences and techniques become necessary for the establishment of the circle of participation among the generation, transfer and application of technologies. As a matter of fact, the selection, use and absorption of a technology requires a level of technological familiarity, of the same magnitude of the necessity to generate it.

SD	D	NO	A	SA

225. By 2025, it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss to the workers' revenues (wages/salaries).

SD	D	NO	A	SA

226. By 2025, development for professions should develop individuals that, at the same time, are technically competent and that also have a scientific spirit and ability, and critic sense to integrate themselves effectively as citizens and influence on the decision about who and how many people science, technic, and production should serve.

SD	D	NO	A	SA

227. By 2025, the public policies and activities should not inhibit the VTET initiatives of the productive segments that belong to the private sector.

SD	D	NO	A	SA

THANK YOU

APPENDIX S

ROUND III ANSWER SHEETS

ROUND III SURVEY INSTRUMENT Answer Sheet	Paulo de Tarso Costa Henriques 38 South University Place Apt. 7 Stillwater, Oklahoma 74075 - USA Phone: (405) 744-2841 Fax: (405) 377-7169 Email: ptchenriqu@aol.com
Changing of Paradigm: Developing a Contemporary Strategy for Technological Education in Brazil	
Expert Number: 315	

The numbers in the boxes below SD, D, NO, A, SA display Round II Responses by participants. Please indicate by an "X" the column that best resembles your new response for each item below:
IN = Item Number AMR = Arithmetic Mean Response YPR = Your Previous Response NoR (Number of Respondents) = Total of Participants (= 23) - Number of No Responses

SD = 1 Strongly Disagree	D = 2 Disagree	NO = 3 No Opinion	A = 4 Agree	SA = 5 Strongly Agree
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IN	SD	D	NO	A	SA	AMR	YPR	NoR	IN	SD	D	NO	A	SA	AMR	YPR	NoR
001	3	0	1	8	9	4.0	5	21	031	1	4	1	13	1	3.5	4	20
002	1	1	2	12	5	3.9	4	21	032	1	5	1	12	2	3.4	5	21
003	0	2	1	10	8	4.1	4	21	033	4	5	2	8	2	3.0	2	21
004	0	4	0	10	7	4.0	5	21	034	4	5	3	9	0	2.8	1	21
005	0	0	3	9	9	4.3	4	21	035	6	7	3	5	0	2.3	2	21
006	0	4	1	13	3	3.7	4	21	036	0	0	2	9	10	4.4	5	21
007	2	3	0	11	5	3.7	5	21	037	0	1	2	11	7	4.1	4	21
008	0	0	0	9	12	4.6	4	21	038	0	1	1	11	8	4.2	4	21
009	0	2	2	9	8	4.1	4	21	039	0	1	3	12	5	4.0	5	21
010	1	3	1	10	6	3.8	5	21	040	3	1	5	9	3	3.4	4	21
011	1	2	1	10	7	4.0	4	21	041	15	4	2	0	0	1.4	2	21
012	0	2	3	9	7	4.0	4	21	042	0	3	2	12	4	3.8	4	21
013	4	8	2	6	1	2.6	2	21	043	0	2	0	15	4	4.0	5	21
014	4	8	3	5	1	2.6	1	21	044	0	1	3	11	6	4.0	4	21
015	6	12	1	2	0	2.0	2	21	045	0	1	0	12	8	4.3	4	21
016	2	3	3	10	2	3.4	3	20	046	0	5	1	8	6	3.8	5	20
017	1	5	5	8	2	3.2	4	21	047	1	2	4	8	6	3.8	4	21
018	1	6	2	8	4	3.4	2	21	048	0	0	4	12	5	4.0	4	21
019	1	3	5	11	1	3.4	3	21	049	0	3	5	8	4	3.7	4	20
020	5	8	1	6	1	2.5	1	21	050	1	2	4	11	3	3.6	5	21
021	7	8	3	2	1	2.1	4	21	051	0	0	1	15	4	4.2	3	20
022	0	3	2	12	4	3.8	4	21	052	0	1	0	14	6	4.2	4	21
023	1	4	2	11	3	3.5	5	21	053	0	1	1	13	6	4.1	4	21
024	1	2	4	10	4	3.7	4	21	054	0	2	1	13	5	4.0	5	21
025	3	2	7	8	0	3.0	4	20	055	0	1	1	14	5	4.1	4	21
026	0	2	1	12	6	4.0	2	21	056	0	1	3	12	5	4.0	4	21
027	1	1	1	13	4	3.9	4	20	057	0	2	2	11	6	4.0	4	21
028	1	4	0	13	3	3.6	5	21	058	0	1	2	10	8	4.2	4	21
029	1	9	2	7	2	3.0	2	21	059	0	5	0	11	5	3.8	5	21
030	1	5	1	10	3	3.5	5	20	060	0	5	1	11	4	3.7	5	21

TO BE CONTINUED

Expert Number: 315

The numbers in the boxes below SD, D, NO, A, SA display Round II Responses by participants. Please indicate by an "X" the column that best resembles your new response for each item below:

IN = Item Number AMR = Arithmetic Mean Response YPR = Your Previous Response
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IN	SD	D	NO	A	SA	AMR	YPR	NoR	IN	SD	D	NO	A	SA	AMR	YPR	NoR
061	0	2	2	8	8	4.1	5	20	091	0	2	3	11	5	3.9	5	21
062	0	1	2	11	7	4.1	5	21	092	10	10	0	1	0	1.6	1	21
063	0	2	2	11	6	4.0	5	21	093	1	1	3	14	2	3.7	4	21
064	0	2	0	13	6	4.0	5	21	094	1	0	1	17	2	3.9	5	21
065	0	3	6	7	5	3.7	5	21	095	0	4	5	10	2	3.5	4	21
066	0	2	0	15	4	4.0	4	21	096	0	2	2	13	4	3.9	3	21
067	1	1	3	9	7	4.0	3	21	097	2	6	2	10	0	3.0	4	20
068	1	2	2	10	6	3.9	4	21	098	2	5	3	10	0	3.1	4	20
069	1	2	5	11	2	3.5	4	21	099	3	10	2	5	0	2.5	2	20
070	1	6	3	9	2	3.2	4	21	100	2	11	2	4	1	2.6	1	20
071	1	10	4	5	0	2.7	3	20	101	2	8	3	6	1	2.8	2	20
072	2	1	3	8	7	3.8	4	21	102	3	7	1	8	1	2.9	2	20
073	0	4	2	11	3	3.7	5	20	103	3	6	3	9	0	2.9	4	21
074	2	2	3	9	4	3.6	3	20	104	3	7	3	8	0	2.8	2	21
075	1	3	1	13	3	3.7	4	21	105	3	4	3	11	0	3.0	4	21
076	6	6	5	1	2	2.4	2	20	106	2	4	1	10	2	3.3	0	19
077	4	6	3	5	3	2.9	4	21	107	1	6	1	9	2	3.3	4	19
078	3	3	4	9	2	3.2	4	21	108	2	3	2	10	2	3.4	4	19
079	3	2	3	9	4	3.4	5	21	109	1	1	4	9	5	3.8	3	20
080	0	4	1	9	7	3.9	5	21	110	1	5	0	11	3	3.5	4	20
081	0	2	2	10	7	4.0	5	21	111	5	4	5	7	0	2.7	3	21
082	0	2	3	9	7	4.0	3	21	112	3	10	4	3	0	2.4	2	20
083	1	5	2	11	2	3.4	4	21	113	1	1	1	12	5	4.0	3	20
084	2	5	2	8	3	3.3	4	20	114	3	11	2	4	0	2.4	4	20
085	2	2	1	11	5	3.7	5	21	115	1	5	3	11	0	3.2	2	20
086	1	1	1	12	6	4.0	3	21	116	1	9	2	8	0	2.9	4	20
087	1	3	2	7	7	3.8	4	20	117	1	6	2	11	0	3.2	4	20
088	1	1	2	9	8	4.0	5	21	118	1	7	2	9	1	3.1	4	20
089	0	3	0	9	9	4.1	2	21	119	1	3	1	13	2	3.6	5	20
090	1	8	1	10	0	3.0	3	20	120	2	5	2	11	0	3.1	4	20

TO BE CONTINUED

Expert Number: 315

The numbers in the boxes below SD, D, NO, A, SA display Round II Responses by participants. Please indicate by an "X" the column that best resembles your new response for each item below:

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NoR (Number of Respondents) = Total of Participants (= 23) - Number of No Responses

SD = 1 Strongly Disagree	D = 2 Disagree	NO = 3 No Opinion	A = 4 Agree	SA = 5 Strongly Agree
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IN	SD	D	NO	A	SA	AMR	YPR	NoR	IN	SD	D	NO	A	SA	AMR	YPR	NoR
121	0	3	1	17	0	3.7	4	21	151	1	6	7	5	1	3.0	3	20
122	0	2	0	18	0	3.8	4	20	152	0	3	2	14	2	3.7	4	21
123	0	1	2	12	5	4.1	4	20	153	0	4	3	8	6	3.8	3	21
124	2	4	6	6	2	3.1	3	20	154	0	1	3	10	6	4.1	3	20
125	0	1	1	13	6	4.1	4	21	155	1	1	0	10	9	4.2	4	21
126	2	1	1	14	3	3.7	5	21	156	1	5	4	9	2	3.3	3	21
127	0	0	2	14	5	4.1	4	21	157	4	7	4	3	3	2.7	4	21
128	1	1	1	14	4	3.9	4	21	158	2	2	5	10	1	3.3	3	20
129	0	2	2	12	5	4.0	3	21	159	4	3	4	8	1	3.0	4	20
130	0	2	4	11	4	3.8	4	21	160	3	9	3	5	0	2.5	3	20
131	7	7	4	2	0	2.1	3	20	161	2	2	3	12	1	3.4	4	20
132	1	2	4	12	1	3.5	3	20	162	2	2	5	11	0	3.3	3	20
133	4	9	4	4	0	2.4	4	21	163	2	3	1	13	2	3.5	4	21
134	0	1	1	13	6	4.1	3	21	164	2	5	2	8	4	3.4	4	21
135	1	3	2	12	2	3.6	3	20	165	1	6	3	10	1	3.2	4	21
136	1	1	2	14	2	3.8	4	20	166	1	5	4	10	0	3.2	3	20
137	2	5	2	9	2	3.2	2	20	167	0	4	4	11	2	3.5	3	21
138	1	7	2	8	2	3.2	3	20	168	2	4	5	8	1	3.1	4	20
139	1	4	2	11	2	3.5	3	20	169	2	3	3	12	1	3.3	3	21
140	2	3	2	11	2	3.4	4	20	170	2	4	3	12	0	3.2	2	21
141	2	1	2	13	2	3.6	4	20	171	0	8	4	4	4	3.2	3	20
142	1	2	2	13	2	3.7	3	20	172	0	2	1	12	6	4.0	4	21
143	1	1	3	13	2	3.7	3	20	173	0	1	0	12	8	4.3	4	21
144	2	5	1	10	2	3.3	3	20	174	0	0	0	13	8	4.4	4	21
145	2	3	1	12	2	3.5	4	20	175	0	0	0	11	10	4.5	4	21
146	2	1	1	14	2	3.7	4	20	176	0	14	3	4	0	2.5	4	21
147	3	4	0	11	2	3.3	2	20	177	0	5	3	9	4	3.6	5	21
148	4	4	1	11	1	3.0	4	21	178	0	2	2	12	5	4.0	5	21
149	5	7	1	8	0	2.6	2	21	179	0	6	1	10	4	3.6	4	21
150	4	4	2	11	0	3.0	3	21	180	0	0	4	9	6	4.1	4	19

TO BE CONTINUED

Expert Number: 315

The numbers in the boxes below SD, D, NO, A, SA display Round II Responses by participants. Please indicate by an "X" the column that best resembles your new response for each item below:

IN = Item Number AMR = Arithmetic Mean Response YPR = Your Previous Response
NoR (Number of Respondents) = Total of Participants (= 23) - Number of No Responses

SD = 1 Strongly Disagree	D = 2 Disagree	NO = 3 No Opinion	A = 4 Agree	SA = 5 Strongly Agree
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IN	SD	D	NO	A	SA	AMR	YPR	NoR	IN	SD	D	NO	A	SA	AMR	YPR	NoR
181	1	2	4	9	2	3.5	4	18	211	1	7	4	8	1	3.0	4	21
182	0	3	4	10	2	3.6	4	19	212	0	6	4	10	1	3.3	3	21
183	1	1	3	11	4	3.8	4	20	213	0	0	2	12	7	4.2	5	21
184	1	2	2	12	3	3.7	4	20	214	1	4	5	9	1	3.3	2	20
185	1	0	3	12	4	3.9	3	20	215	1	2	2	13	2	3.7	4	20
186	1	0	2	13	4	4.0	3	20	216	1	2	2	13	1	3.6	4	19
187	1	4	1	10	5	3.7	2	21	217	0	5	6	10	0	3.2	3	21
188	2	1	2	12	4	3.7	4	21	218	0	3	6	11	1	3.5	4	21
189	7	12	0	1	1	1.9	1	21	219	0	4	5	12	0	3.4	4	21
190	3	4	2	12	0	3.1	1	21	220	0	1	3	16	1	3.8	3	21
191	1	2	4	11	3	3.6	3	21	221	0	1	2	14	4	4.0	5	21
192	0	1	0	11	9	4.3	4	21	222	0	2	0	14	5	4.0	4	21
193	2	1	2	9	7	3.9	4	21	223	0	2	1	11	6	4.1	3	20
194	1	6	3	9	2	3.2	3	21	224	0	2	0	12	7	4.1	5	21
195	2	5	4	8	2	3.1	5	21	225	1	5	1	10	2	3.4	4	19
196	0	1	0	18	2	4.0	4	21	226	0	0	1	11	8	4.4	5	20
197	0	3	1	14	3	3.8	4	21	227	0	0	2	10	8	4.3	5	20
198	0	0	3	10	6	4.2	4	19									
199	1	1	0	14	5	4.0	5	21									
200	0	1	1	12	7	4.2	4	21									
201	4	7	4	4	1	2.6	3	20									
202	2	5	6	4	2	2.9	4	19									
203	3	8	3	5	1	2.7	4	20									
204	3	6	6	3	2	2.8	3	20									
205	1	2	7	7	3	3.5	5	20									
206	0	2	4	8	6	3.9	5	20									
207	1	10	3	5	2	2.9	4	21									
208	1	5	6	5	4	3.3	2	21									
209	1	1	5	11	3	3.7	3	21									
210	1	1	3	11	5	3.9	4	21									

THANK YOU

ROUND III SURVEY INSTRUMENT Answer Sheet Changing of Paradigm: Developing a SAMPLE Contemporary Strategy for Technological Education in Brazil Expert Number: 527 (sample)	Paulo de Tarso Costa Henriques 38 South University Place Apt. 7 Stillwater, Oklahoma 74075 - USA Phone: (405) 744-2841 Fax: (405) 377-7169 Email: ptchenriqu@aol.com
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The numbers in the boxes below SD, D, NO, A, SA display Round II Responses by participants. Please indicate by an "X" the column that best resembles your new response for each item below:

IN = Item Number AMR = Arithmetic Mean Response YPR = Your Previous Response
 NoR (Number of Respondents) = Total of Participants (= 23) - Number of No Responses

SD = 1 Strongly Disagree	D = 2 Disagree	NO = 3 No Opinion	A = 4 Agree	SA = 5 Strongly Agree
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IN	SD	D	NO	A	SA	AMR	YPR	NoR	IN	SD	D	NO	A	SA	AMR	YPR	NoR
001	3	0	1	8	9	4.0	5	21	031	1	4	1	13	1	3.5	4	20
002	1	1	2	12	5	3.9	4	21	032	1	5	1	12	2	3.4	3	21
003	0	2	1	10	8	4.1	2	21	033	4	5	2	8	2	3.0	0	21
004	0	3	0	10	7	4.0	2	21	034	4	3	9	0	0	2.8	2	21
005	0	0	3	10	9	4.3	4	21	035	6	3	3	0	0	2.5	1	21
006	0	4	1	8	3	3.7	4	21	036	0	0	2	9	10	4.4	5	21
007	2	2	0	11	5	3.7	1	21	037	0	1	2	11	7	4.1	4	21
008	0	0	0	8	12	4.6	4	21	038	0	1	1	8	8	4.2	4	21
009	0	2	2	9	8	4.1	2	21	039	0	1	3	8	5	4.0	3	21
010	1	3	1	10	6	3.8	2	21	040	3	1	5	8	3	3.4	4	21
011	1	2	1	16	7	4.0	4	21	041	3	4	2	0	0	1.4	2	21
012	0	2	3	10	4	4.0	3	21	042	0	3	3	10	4	3.8	5	21
013	4	8	2	6	1	2.6	2	21	043	0	2	0	15	3	4.0	5	21
014	4	8	3	5	1	2.6	4	21	044	0	1	3	11	6	4.0	3	21
015	6	12	1	2	0	2.0	2	21	045	0	1	0	12	8	4.3	4	21
016	2	3	3	10	2	3.4	4	20	046	0	5	1	8	6	3.8	4	20
017	1	5	5	8	2	3.2	5	21	047	1	2	4	8	6	3.8	3	21
018	1	6	2	8	4	3.4	4	21	048	0	0	4	11	5	4.0	3	21
019	1	3	3	10	4	3.4	4	21	049	0	3	3	10	4	3.8	3	20
020	5	8	1	8	1	2.5	4	21	050	1	2	4	11	3	3.6	4	21
021	7	8	3	2	1	2.1	1	21	051	0	0	1	14	4	4.2	4	20
022	0	3	2	12	4	3.8	4	21	052	0	1	0	14	6	4.2	4	21
023	1	4	2	11	3	3.5	2	21	053	0	1	1	13	6	4.1	4	21
024	1	2	4	10	4	3.7	3	21	054	0	2	1	13	5	4.0	4	21
025	3	2	7	8	0	3.0	4	20	055	0	1	1	14	5	4.1	5	21
026	0	2	3	10	3	3.0	5	21	056	0	1	3	10	4	3.8	4	21
027	1	1	1	13	4	3.9	4	20	057	0	2	2	11	6	4.0	5	21
028	1	4	0	13	3	3.6	2	21	058	0	1	2	10	8	4.2	4	21
029	1	9	2	7	2	3.0	2	21	059	0	5	0	11	5	3.8	4	21
030	1	3	1	10	3	3.5	2	20	060	0	5	1	11	4	3.7	5	21

TO BE CONTINUED

APPENDIX T

ROUND III EXPLANATION/

COMMENTARY FORM

ROUND III SURVEY INSTRUMENT
Explanation/Commentary Form

**Changing of Paradigm: Developing a
 Contemporary Strategy for
 Technological Education in Brazil**

Expert Number: 315

Paulo de Tarso Costa Henriques

38 South University Place Apt. 7
 Stillwater, Oklahoma 74075 - USA
 Phone: (405) 744-2841
 Fax: (405) 377-7169
 Email: ptchenriqu@aol.com

Item Number:	1
2	
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Item Number:	1
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Item Number:	1
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Item Number:	1
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Item Number:	1
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Item Number:	1
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Item Number:	1
2	
3	

THANK YOU

APPENDIX U

ROUND III FOLLOW-UP LETTERS

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

May 6, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

As of today, I have not yet received your responses to the Round III questionnaire of my study of the future of Brazilian federal technological education system. If you have already mailed your questionnaire back, please disregard this letter. It is only a reminder.

In case you have misplaced the questionnaire, please let me know so that I can send you another copy of the Round III Survey Instrument. I would appreciate receiving your responses and your vita/resume or its summary as soon as possible.

You can **mail** your responses and vita to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** your responses and vita to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** your responses and vita to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please feel free to contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education



The Campaign for OSU

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

May 17, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756
 Fax: (703) 225-7645

Dear Dr. Labor:

I have sent you the Round III questionnaire of my study of the future of Brazilian federal technological education system. So far I have not received your responses. If you have already mailed your questionnaire back, please disregard this letter. It is only a reminder.

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

I have already received the responses of many participants. If you have not had time to answer the questionnaire yet, please I would like to know when you plan to do so.

In case you have misplaced the questionnaire, please let me know so that I can send you another copy of the Round III Survey Instrument. I would appreciate receiving your responses and your vita/resume or its summary as soon as possible.

You can **mail** your responses and vita to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** your responses and vita to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** your responses and vita to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please feel free to contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841

The Campaign for OSU



APPENDIX V

ROUND III VITA REQUEST LETTERS

OKLAHOMA STATE UNIVERSITY



College of Education
 School of Curriculum and Educational Leadership
 245 Willard Hall
 Stillwater, Oklahoma 74078-4042
 405-744-7125, 405-744-8893
 Fax 405-744-6290

May 17, 1998.

Dr. John Labor
 Professor
 School of Occupational Studies
 College of Education
 Webster University
 New Oxford, VA 22756

Dear Dr. Labor:

Thank you for having answered the Round III questionnaire of my study of the future of Brazilian federal technological education system.

Curriculum Studies/
 Supervision

Educational
 Leadership

Elementary,
 Secondary and K-12
 Education

Occupational
 Education Studies

Reading Education

Special Education

In my final report, I will list the name of the participants of the Delphi survey in the methodology chapter and would like to include a description of each panelist in an appendix. I would appreciate if you could send me your vita/resume or its summary (education, professional experience, etc.). It would be very helpful to me. I am be glad to pay for mailing or telephone expenses.

You can **mail** your vita to:

Paulo de Tarso C. Henriques
 38 South University Place Apt. 7
 Stillwater, OK 74075;

or **fax** it to:

Paulo de Tarso C. Henriques
 (405) 377-7169;

or **email** it to:

Paulo de Tarso C. Henriques
 ptchenriqu@aol.com.

If you have any questions, please contact me.

Thank you for your cooperation.

Paulo de Tarso Costa Henriques
 Phone: (405) 744-2841



The Campaign for OSU

APPENDIX W

ROUND III COMMENTARIES/EXPLANATIONS

ROUND III COMMENTARIES/EXPLANATIONS

SECTION 1: ROLE(S) OF THE BRAZILIAN FEDERAL GOVERNMENT IN VTET

What follows is a consolidated list based on the opinions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to the role(s) of the Brazilian federal government in vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) by the year 2025. If you don't consider a particular listing a role or totally disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Note: **A = Agreement, D = Disagreement, and I = Indecisive**

• **Policy**

1. By 2025, the Brazilian Federal Government should be a conceiver of policies for VTET. **(A-85%)**

Panelist:

My answer is SA and not SD. In round II, I had marked the wrong box.

Minha resposta é CF e não DF, por erro de lançamento na etapa II.

2. By 2025, the Brazilian Federal Government should be a monitor of public policies for VTET. **(A-85%)**

Panelist:

My new answer is A, because my understanding of this item in round II was mistaken.

Minha nova resposta é C, pois meu entendimento deste item na etapa II foi equivocado.

3. By 2025, the Brazilian Federal Government should articulate a national policy for VTET integrated with the public system of work and income generation. **(A-90%)**

Panelist:

A national policy for technological education (all levels) should be integrated with the global system of work and income generation, where the private system is preponderant.

Uma política nacional para a educação tecnológica (todos os níveis) deve estar integrada com o sistema global de geração de trabalho e renda, onde o setor privado é preponderante.

4. By 2025, the Brazilian Federal Government should **have formulated quality standards for VTET which must be frequently updated.** (A-90%)

5. By 2025, the Brazilian Federal Government should **define directives and strategic directions for the organization of VTET.** (A-100%)

6. By 2025, the Brazilian Federal Government should **play more of a leadership/guidance (vs operational) role in vo-tech education/training**, serving as a catalyst for bringing about high quality program design and implementation at the state and local levels. (A-75%)

Panelist:

This item to be consistent should apply to technological education (in all levels). Besides that, *EP básica* (training) is a mistaken classification: it is not base for anything.

Este item para ser consistente deve estar voltado para a educação tecnológica (em todos os níveis). Além disso, EP básica é uma classificação equivocada: não é base para nada.

Panelist:

Brazil is a country with large part of its population living in poverty (many in absolute poverty), therefore, it is illusion to think that the federal government should only play the roles of articulator and policies developer. It has to have a broader role. In 2025 life will be better, but not so much better.

O Brasil é um país com uma imensa faixa populacional em nível de pobreza (muitos em pobreza absoluta), portanto, é ilusão achar que o governo federal pode ficar apenas como um articulador e formador de políticas. Ele tem que ir a luta também. Em 2025 as coisas estarão melhores, mas não tão melhores.

7. By 2025, the Brazilian Federal Government should **provide leadership to the VTET systems not only by developing an education action plan taking into consideration the national priorities, but also by supporting, and monitoring its implementation.** (A-90%)

8. By 2025, the Brazilian Federal Government should **establish policies and directives in VTET.** The policies and strategies at the federal level must count on partnerships with the states and municipalities, in consortium with the various segments of society. The federal policies must stimulate and respect the regional peculiarities. (A-100%)

9. By 2025, the Brazilian Federal Government should **develop a national vo-tech education policy that differentiates the roles of the various providers and employers.** (A-85%)

Panelist:

This item is restrictive. The policy to be put in place should encompass technological education in all levels, and not only the technical level as proposed.

Este item é restritivo. A política prevista deve abranger a educação tecnológica em todos os níveis, e não somente o nível técnico como proposto.

10. By 2025, the Brazilian Federal Government should **be responsible for establishing the national policies and directives for technological education (and not VTET), having input from the productive sector.** (A-95%)

11. By 2025, if a socialist group governs Brazil, the Federal Government should **be developing policies for development for professions in conjunction with society.** (A-85%)

12. By 2025, the Brazilian Federal Government should be **defining and setting the framework of educational policy goals for vo-tech education/training in collaboration with ministries of labour and education/culture.** (A-80%)

Panelist:

This item is also restrictive. An educational policy should encompass all technological education (all levels) and not only *EP básica* (training) (a mistaken designation) and *técnica* (secondary vocational-technical education).

Este item é também restritivo. Uma política educacional deve envolver toda a educação tecnológica (todos os níveis) e não somente EP básica (designação equivocada) e técnica.

• **Provider of programs/courses**

13. By 2025, **technical education** (higher education level) **should be offered by federally owned, supported and operated educational facilities.** (I-70%)

Panelist:

The agreement with item is due to the fact that technological education (in all levels) be strategic for the technological and social development of the country (various developed countries provide technological education).

A concordância com este item deve-se ao fato de a educação tecnológica (em todos os níveis) ser estratégica para o desenvolvimento tecnológico e social do país (vários países desenvolvidos a mantêm).

14. By 2025, **vo-tech education** (secondary level) **should be offered by federally owned supported and operated institutions.** (I-70%)

Panelist:

The agreement with item is due to the fact that technological education (in all levels) be strategic for the technological and social development of the country (various developed countries provide technological education).

A concordância com este item deve-se ao fato de a educação tecnológica (em todos os níveis) ser estratégica para o desenvolvimento tecnológico e social do país (vários países desenvolvidos a mantêm).

15. By 2025, **training** (non formal VTET) **should be offered by federally owned, supported and operated educational institutions.** (D-75%)

16. By 2025, the Brazilian Federal Government should have **expanded the present federally maintained and operated network of technological education facilities which will remain federal by then.** (A-75%)

17. By 2025, the Brazilian Federal Government should **own, support and operate a reference network of VTET educational facilities.** (A-80%)

18. By 2025, if a socialist group governs Brazil, the Federal Government should **be providing development for professions along with other providers.** (A-80%)

19. By 2025, the Brazilian Federal Government should **offer vo-tech education and training in occupational areas not spontaneously covered by other non totally public systems (S Systems and others).** (A-75%)

Panelist:

This item would be consistent if, instead of *EP básica* (?) (training) and *técnica* (secondary vocational-technical education), it encompassed technological education in all levels.

Este item seria consistente se, em vez de EP básica (?) e técnica, envolvesse a educação tecnológica em todos os níveis.

Panelist:

I don't believe the federal government should offer such training. I believe the private market should fill in - if there is such a need for a certain type of training.

20. By 2025, the Ministry of Education and Sports should **be progressively disengaging or have disengaged of offering vo-tech education which should be transferred to states and/or municipalities**. MEC will neither fund or operate. **(D-75%)**

Panelist:

I don't believe the federal government should offer training. The federal government can provide funds to states - question is not entirely clear.

- **Funding**

21. By 2025, the Brazilian Federal Government should **fund the whole VTET system, including teachers salaries, buildings, equipments and study materials**. **(D-85%)**

Panelist:

My answer continues to be A, because technological education (in all levels), for being strategic, should have the correspondent federal institutions funded by the federal government.

Minha resposta continua C, pois a educação tecnológica (em todos os níveis), por ser estratégica deverá ter as correspondentes instituições federais financiadas pelo governo federal.

22. By 2025, the Brazilian Federal Government should **provide funds for staff development for vo-tech education**. **(A-90%)**

23. By 2025, the Brazilian Federal Government should **provide funds for purchase equipment for vo-tech educational facilities**. **(A-85%)**

24. By 2025, the Brazilian Federal Government should **provide funds for programs development and dissemination in vo-tech education**. **(A-85%)**

25. By 2025, if a neoliberal group continues to govern Brazil, the Federal Government **will be a development for professions public fund distributor (as it happens with the FAT presently) for which public and private institutions, NGOs, and others will compete for**. **(I-55%)**

Panelist:

I strongly disagree, because there is no justification for having a public fund to support private institutions, NGOs, and others, that, normally aim profit, without compromise with the quality of instruction.

Discordo fortemente, pois não se justifica um fundo público apoiar instituições privadas, ONGs e outras, que, normalmente objetivam o lucro, sem compromisso com a qualidade do ensino.

26. By 2025, the Brazilian Federal Government should be **planning, suggesting and evaluating different options of funding vo-tech education/training**. (To tell one functional experience from the other side of the world: The Nordic countries are funding the huge and organized VET systems by tax money that has created equal and democratic choices and opportunities to all people.) **(A-90%)**

Panelist:

I disagree, because the item is restrictive. For it to be consistent, funding should encompass technological education (in all levels) and not only *EP básica* (?) (training) and *técnica* (secondary vocational-technical education).

Discordo, pois o item é restritivo. Para ter consistência o financiamento previsto deveria envolver a educação tecnológica (em todos os níveis) e não somente EP básica (?) e técnica.

27. By 2025, the Brazilian Federal Government should be a **provider of funds to activities in technical education** (higher education level). **(A-90%)**

28. By 2025, the Brazilian Federal Government should be a **provider of funds to activities in vo-tech education** (secondary level). **(A-90%)**

29. By 2025, the Brazilian Federal Government should be a **provider of funds to activities in training** (non formal VTET). **(I-50%)**

Panelist:

If there be demand, I do not see why not.

Se houver demanda, não vejo porque não.

30. By 2025, the Brazilian Federal Government should be a **provider of funds to be used for offering VTET (some level of it) in federally owned and operated schools/educational facilities**. **(I-70%)**

Panelist:

Why not in others too?

Por que não também em outras ?

Panelist:

I do not believe the federal government should operate its own schools.

31. By 2025, the Brazilian Federal Government should **be a provider of funds to be used for offering VTET (some level of it) in state owned and operated schools/educational facilities.** (A-75%)

Panelist:

I disagree with this item, because state institutions should be funded by their respective governments, for being, in principle, providing some level of technological education that is of interest for the development of such states.

Discordo deste item, pois instituições estaduais devem ser financiadas pelos seus respectivos governos, por estarem, a principio, ofertando algum nível de educação tecnológica de interesse ao desenvolvimento correspondente.

32. By 2025, the Brazilian Federal Government should **be a provider of funds to be used for offering VTET (some level of it) in municipally owned and operated schools/educational facilities.** (I-70%)

Panelist:

I disagree with this item, because municipal institutions should be funded by their respective governments, for being, in principle, providing some level of technological education that is of interest for the development of such municipalites.

Discordo deste item, pois instituições municipais devem ser financiadas pelos seus respectivos governos, por estarem, a principio, ofertando algum nível de educação tecnológica de interesse ao desenvolvimento correspondente.

33. By 2025, the Brazilian Federal Government should **be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the business and industry federations (such as the S System).** (I-55%)

Panelist:

I strongly disagree, because the responsibility of the federal government should be to fund only the federal system of technological education (in all levels) and not semi public institutions and others.

Discordo fortemente, pois a responsabilidade do governo federal deve ser de financiar somente o sistema federal de educação tecnológica (em todos os níveis) e não instituições semi-públicas e outras.

Panelist:

There is already in legislation a form of support to these organizations. It is enough to meet their demands. Besides, they even exaggerate in the spending with the implementation of some Technological Centers.

Já há na legislação a forma de apoio para estas organizações. Ela basta para atender-lhes as demandas. Aliás, até exageram nos gastos com a implementação de alguns Centros Tecnológicos.

Panelist:

The funding of any institution where private resources are involved should be, mostly, with private resources.

O financiamento de qualquer instituição onde apareçam recursos privados devem ser, majoritariamente, com recursos privados.

34. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in semi public schools/educational facilities operated by the workers unions. (I-60%)

Panelist:

I disagree strongly, because the responsibility of the federal government should be funding only the federal system of technological education (in all levels) and not semi public institutions and others.

Discordo fortemente, pois a responsabilidade do governo federal deve ser de financiar somente o sistema federal de educação tecnológica (em todos os níveis) e não instituições semi-públicas e outras.

Panelist:

My experience with union operated schools has not been very good.

35. By 2025, the Brazilian Federal Government should be a provider of funds to be used for offering VTET (some level of it) in private schools/educational facilities. (I-70%)

Panelist:

If they are private not for-profit I think they should be included.

Panelist:

Ownership of facilities is irrelevant; funding is relevant.

36. By 2025, the Brazilian Federal Government **may fund selectively in some strategic areas, particularly the R&D of training.** (A-95%)

37. By 2025, **federal funds should be provided for support of research about vo-tech education and training.** (A-85%)

Panelist:

I disagree, because it is restrictive. Federal funds should be used to finance research about technological education (in all levels) and not only about *EP básica* (?) (training) and *técnica* (secondary vocational-technical education).

Discordo, pois é restritivo. Fundos federais devem financiar a pesquisa no âmbito da educação tecnológica (em todos os níveis) e não somente em EP básica (?) e técnica.

38. By 2025, **federal funds should be provided for support of teacher training for vo-tech education/training programs.** (A-90%)

Panelist:

I disagree, because it is restrictive. Federal funds should be used to finance instructors development in the range in technological education (in all levels) and not only in *EP básica* (?) (training) and *técnica* (secondary vocational-technical education).

Discordo, pois é restritivo. Fundos federais devem financiar a capacitação de professores no âmbito da educação tecnológica (em todos os níveis) e não somente em EP básica (?) e técnica.

39. By 2025, **federal funds should be provided for support of leadership and administrative training for running vo-tech education and training programs.** (A-85%)

Panelist:

I disagree, because it is restrictive. This item would be consistent if it encompassed technological education in all levels and not only *EP básica* (training) (mistaken denomination) and *técnica* (secondary vocational-technical education).

Discordo, pois é restritivo. Este item seria consistente se abrangesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

40. By 2025, **federal funds should be provided for support of the national advisory council for vo-tech education and training.** (I-60%)

Panelist:

I disagree, because it is restrictive. This item would be consistent if it encompassed technological education in all levels and not only *EP básica* (training) (mistaken denomination) and *técnica* (secondary vocational-technical education).

Discordo, pois é restritivo. Este item seria consistente se abrangesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

Panelist:

I don't believe the national advising council is necessary.

Panelist:

This council should operate by the demand of the institutions involved which would fund its needs. The members should not be individuals, but institutions.

Este conselho deve funcionar pelo interesse das instituições envolvidas que suprirão suas necessidades. Os membros não devem ser pessoas e, sim, instituições.

Panelist:

It is nonsense.

Não tem nada a ver.

- **Others**

41. By 2025, the Brazilian Federal Government should **have no role in VTET**.
(D-95%)

Panelist:

There was, really, a mistake of my part.

Houve, de fato, um lapso de minha parte.

42. By 2025, the Brazilian Federal Government should **not be setting standards in VTET themselves; however, they should help to manage a process by which high standards are set with the concurrence of all interested and affected parties**.
(A-100%)

43. By 2025, the Brazilian Federal Government should **provide technical assistance and information on best practices and leading innovation to providers and practitioners of VTET**.

(A-100%)

44. By 2025, the Brazilian Federal Government should **ensure that disadvantaged and disabled individuals have access to services in VTET**. The federal government must ensure access to high quality programs for all individuals, which means they must provide supplemental services in some cases where needed.

(A-90%)

Panelist:

“Access” and “opportunity” are two key words for any VTET program.

45. By 2025, the Brazilian Federal Government should **lead VTET through positive encouragement or incentive**, not through overmanagement, overly prescribed regulation or negative consequences for certain behaviors.

(A-100%)

Panelist:

“Access” and “opportunity” are two key words for any VTET program.

46. By 2025, the Brazilian Federal Government **agencies and officials should model the kinds of behavior they expect from regional or local institutions and individuals in VTET**.

(I-65%)

Panelist:

It is an unfortunate statement. The behavior of Federal Government agencies and, mainly, officials has been clumsy, by incompetence, prepotence, casuistry and authoritarianism. Therefore, they should be models for nothing. Maybe for 2100?

Trata-se de uma assertiva infeliz. O comportamento de órgãos e principalmente de dirigentes do governo federal tem sido desastrado, por incompetência, prepotência, casuismo e autoritarismo. Portanto, não servir de modelo para nada. Talvez para 2100 ?

Panelist:

“Access” and “opportunity” are two key words for any VTET program.

47. By 2025, the Brazilian Federal Government should **have set up an infrastructure for curriculum development for VTET**.

(A-90%)

Panelist:

The government should not get involved with curriculum development. It should give autonomy to the technological education institutions (in all levels) for developing curriculum, in articulation with the productive sectors.

Não cabe ao governo este mister. Trata-se, como saída, de dar autonomia às instituições de educação tecnológica (em todos os níveis), para a elaboração de currículos, em articulação com os setores produtivos.

Panelist:

“Access” and “opportunity” are two key words for any VTET program.

48. By 2025, the Brazilian Federal Government should **have set up a system for VTET teacher training.**

(A-85%)

Panelist:

The Federal Government should support its own Human Resources Development Systems and not set up new ones to train teachers.

O Governo Federal deve apoiar os Sistemas de Formação de Recursos Humanos que já possui e não montar novos para capacitar docentes.

49. By 2025, the Brazilian Federal Government should **be using a balanced system of school-based and national testing in VTET.**

(I-55%)

Panelist:

As long as tests are national + not federal and not mandatory I would agree.

Panelist:

The labor market is the one which should do the testing. No exam will determine, face the inequalities existing in Brazil, who is better prepared to do what.

O que deve testar é o mercado de trabalho. Nenhuma prova determinará diante das desigualdades do Brasil, quem é melhor formado para quê.

50. By 2025, the Brazilian Federal Government should **have a system for school-into-work transition.**

(A-80%)

Panelist:

I disagree, because technological education in all levels presuppose, as one of its characteristics, a strong interaction and integration with the productive sectors, making unnecessary a system for school-into-work transition.

Discordo, pois a educação tecnológica em todos os níveis pressupõe, como uma de suas características, uma forte interação e integração com os setores produtivos, dispensando um sistema para a transição escola-para-o-trabalho.

51. By 2025, the Brazilian Federal Government should **provide incentives for the creation and maintainance of VTET schools that operate as Vocational-Technical/Technical Reference Centers** for the regions where they are located and for the occupational areas for which they have programs.

(A-100%)

52. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for maintaining more effective program operations and management.**

(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

53. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for establishing stronger partnerships between vo-tech/training programs and the private sector.**

(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

54. By 2025, the Brazilian Federal Government should **provide leadership to states** for assisting **local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for assessing more frequently, and in different ways, regional manpower needs and job skill requirements.**

(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

55. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for developing broader-based program curricula, materials, and instructional methodology.**
(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

56. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for forming, and using more effectively, local program advisory committees.**
(A-90%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

57. By 2025, the Brazilian Federal Government should **provide leadership to states for assisting local school districts** in assuring up-to-date, more efficient, vo-tech/training programs relevant to more rapidly changing employer needs, e.g., **local actions for refining and expanding business/industry cooperative and other joint training ventures.**
(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

58. By 2025, the Brazilian Federal Government should **support research in the development of curricula, materials, and new approaches to teaching/learning in vo-tech education/training, as well as new modes of worker utilization**, e.g., worker teaming, etc., and ways to respond more quickly to employer demands for new worker skills.
(A-95%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

59. By 2025, the Brazilian Federal Government should **provide guidelines for state and local development/adaptation of curricula and materials for vo-tech education and training.**

(A-80%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

Panelist:

I do not believe the federal government should prescribe or be involved in determining state or local curricula.

60. By 2025, the Brazilian Federal Government should **provide incentives for state and local development/demonstration of exemplary programs in vo-tech education and training.**

(A-85%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis e não somente em EP básica (designação equivocada) e técnica.

61. By 2025, the Brazilian Federal Government should **provide leadership and financial support to universities** (selected competitively), possibly through states, **for developing high quality and relevant teacher education/training, as well as special programs for developing vocational-technical/training leadership and administrative personnel to serve at the federal, state, and local levels.**

(I-70%)

Panelist:

The CEFETs are the institutions which have experience and the prerogatives, according to Act no. 6545/78, for the activities of this item involving technological education (in all levels), and not the universities which neither have nor should have experience in those areas.

Quem tem experiência e as prerrogativas para as atividades deste item envolvendo educação tecnológica (em todos os níveis) são os CEFETs, conforme Lei no. 6545/78, e não as universidades que não tem e nem devem ter experiência nessas áreas.

Panelist:

It is a mistake to think that the University has all the competencies. They may participate, but they should not be the only ones to develop instructors and leaderships.

É erro pensar que a Universidade possui todas as competências. Elas podem participar, mas não devem ser as únicas a formar professores e lideranças.

62. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing computer-based job information programs for vocational/career counseling of secondary students.**

(A-100%)

63. By 2025, the Brazilian Federal Government should **provide leadership to the states for assisting municipalities** (local school districts are governed by them) in implementing effective student services programs, i. e., **establishing effective student/graduate placement programs.**

(A-95%)

64. By 2025, the Brazilian Federal Government should **provide leadership to states for establishing rapid response adult education/training programs** to assist workers in job advancement, keeping abreast of new technology, career changes, etc.

(A-100%)

65. By 2025, the Brazilian Federal Government should **establish a national advisory council** to keep in touch with the nation's workforce needs and recommend federal policy on development, funding, and evaluation of the country's vo-tech/training system.
(I-55%)

Panelist:

This item is restrictive. It would be consistent if it encompassed technological education in all levels, and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria consistente se abrangesse a educação tecnológica em todos os níveis, e não somente em EP básica (designação equivocada) e técnica.

Panelist:

It is difficult to conclude about the validity of a national council face the variety and the versatility of the national system of production of goods and services.

É difícil concluir sobre a validade de um conselho nacional diante da variedade e da versatilidade do sistema nacional de produção de bens e serviços.

66. By 2025, the Brazilian Federal Government should **stimulate the private sector to be a provider of services in VTET**.
(A-100%)

Panelist:

I agree, if the services to be provided by the private sector be preponderantly of support and not of providing programs in technological education in all levels, which should be provided by public institutions.

Concordo, desde que os serviços a serem ofertados pelo setor privado sejam preponderantemente de apoio e não de oferta de cursos em educação tecnológica em todos os níveis, que devem ser ofertados por instituições públicas.

67. By 2025, the Brazilian Federal Government should **have implemented the Technological Education National System**, which has the purpose of allowing better articulation of the Technological Education, in its various levels, among the various institutions, among those and the other ones included in the National Policy for Education, aiming at the perfecting of instruction, of extension, of technological research, besides its integration to the various sectors of society and of the productive sector (as it is said in the Act 8948/94).
(A-85%)

68. By 2025, the Brazilian Federal Government should **be coordinating the Technological Education National System**.
(A-90%)

69. By 2025, the Brazilian Federal Government should **be promoting and making accessible secondary level basic development in 5-6 big occupational clusters**, such as: Computer Science and Telecommunications; Mechanics and Electronics; Communications, Language and Arts; Business Administration and Accounting; Urban and Regional Planning and Environment; Health Occupations and Biotechnology.

(A-85%)

70. By 2025, **at the post secondary level**, the Brazilian Federal Government should **be primarily supporting, in partnership with the states, programs that are profession-related lasting 2-3 years targeting specific professions.**

(A-80%)

71. By 2025, **at the post secondary level**, the Brazilian Federal Government should **be primarily supporting, in partnership with the municipalities, programs that are profession-related lasting 2-3 years targeting specific professions.**

(I-55%)

72. By 2025, the Brazilian Federal Government should **provide the political leadership needed to move vocational-technical education to the top of the national agenda.**

(A-75%)

Panelist:

I do not see why vocational-technical education should be on the “top”.

Não vejo razão para estar no “topo”.

Panelist:

There is no reason for positioning a system on the top of the others, considering it more efficient or more necessary. There should be a balance and reality is the one which should dictate the parameters.

Não há porque posicionar um sistema sobre os outros, considerando-o mais eficiente ou mais necessário. Deve haver equilíbrio e a realidade é que deve ditar os parâmetros.

73. By 2025, the Brazilian Federal Government **serve a national “clearing house” function in VTET.**

(A-75%)

Panelist:

Brazil is a giant country and, therefore, all centralization becomes innocuous and fruitless.

O Brasil é um país gigante e, portanto, toda centralização torna-se inócua e infrutífera.

74. By 2025, the Brazilian Federal Government role should **be largely framework-setting with greater control at provincial levels. Federalized systems probably will not be responsive to area needs.** There is a positive, forceful role for government - but not as provider!
(I-65%)

Panelist:

I disagree, because, as technological education in all levels is strategic for the country, it is the duty of the country to maintain federal institutions to guarantee the reference of the model, the quality of instruction and the strategic aspect.

Discordo, pois, por ser a educação tecnológica em todos os níveis estratégica para o país, cabe ao país manter instituições federais para garantir a referência do modelo, a qualidade do ensino e o aspecto estratégico.

Panelist:

Brazil is a country of contrasts. There are states which can do a lot, because they are rich, while others can do nothing, because they are very poor. It is premature to use the word preferentially, if there be no change in the political structure of power in the country.

O Brasil é um país de contrastes. Há estados que podem muito, porque ricos; outros que nada podem, porque paupérrimos. É prematuro usar o preferencialmente, se não houver mudança na estrutura política de poder no país.

75. By 2025, the Brazilian Federal Government should **promote all forms of vocational preparation and re-training through a mix of institutional approaches and should use a mix of incentives to insure that workforce entrants and participants - as well as employers at all levels - are induced to fully participate.**
(A-90%)

Panelist:

There is no previous experience in the country that allows us to make this divagation. We have to watch and understand the Brazilian reality for preventing us from taking the pathway of the projects without a future.

Não há experiência registrada no país, que nos permita esta divagação. Temos que olhar e entender a realidade brasileira para não cairmos nos sonhos dos projetos sem futuro.

76. By 2025, if a neoliberal group continues to govern Brazil, the development for professions will be **under the Ministry of Labor and not anymore under the Ministry of Education and Sports.**
(I-70%)

77. By 2025, if a socialist group governs Brazil, the Federal Government should **be implementing a public, tuition-free, lay, universal, unitary and technological or**

polytechnic school system.

(I-55%)

Panelist:

The statement seems to be coherent with a socialist program.

Parece coerente com um programa socialista.

78. By 2025, if a socialist group governs Brazil, the Federal Government should **be democratizing the control of development for professions providers that use public funds.**

(A-75%)

Panelist:

I disagree, because the public funds should be used only by public institutions. Therefore, the democratization of the control of the providers do not apply to private institutions and others, but only to public institutions.

Discordo, pois os fundos públicos devem ser utilizados somente por instituições públicas. Portanto, a democratização do controle dos ofertantes não se aplica a instituições privadas e outras, mas somente a instituições públicas.

79. By 2025, if a socialist group governs Brazil, the Federal Government should **implementing legislation that favors the participation of youngsters and workers in development for professions.**

(A-75%)

Panelist:

I do not believe in this hypothesis, because what the Brazilian socialist academicism preaches is the implementation of the unitary school with the development for professions done only at higher education level (Frigotto and others). They only respect the academy.

Não acredito nesta hipótese, visto que o que academicismo socialista brasileiro prega é a implementação da escola unitária e com profissionalização somente o terceiro grau (Frigotto, outros). Eles só respeitam a academia.

80. By 2025, the Brazilian Federal Government should **have the role of organizer for the development of world-class VTET.** Organize through strategic planning for the future, focusing on world-class VTET as a top priority for 2025.

(A-85%)

Panelist:

I disagree with this item, because education is something that is not be globalized, but should respond for the regional characteristics, peculiarities, and necessities of each country, specially ours which is very large.

Discordo deste item, pois educação não se globaliza, mas deve responder pelas características, peculiaridades e necessidades regionais de cada país, especialmente o nosso com grande extensão.

Panelist:

This would only favor the internationalization of the capital. The country has to worry about its people and develop processes, national or world-wide, which are grounded in the cultural reality of its population.

Isto só favoreceria a internacionalização do capital. O país tem que se preocupar com sua gente e desenvolver processos, sejam nacionais ou mundiais, que estejam assentados na realidade cultural de sua população.

81. By 2025, the Brazilian Federal Government should **have the role of facilitator for the development of world-class VTET**. Facilitate the collaboration of the various ministries, organizations, businesses, industries and municipalities to achieve world-class VTET. (A-85%)

Panelist:

I disagree with this item, because education is something that is not be globalized, but should respond for the regional characteristics, peculiarities, and necessities of each country, specially ours which is very large.

Discordo deste item, pois educação não se globaliza, mas deve responder pelas características, peculiaridades e necessidades regionais de cada país, especialmente o nosso com grande extensão.

Panelist:

This would only favor the internationalization of the capital. The country has to worry about its people and develop processes, national or world-wide, which are grounded in the cultural reality of its population.

Isto só favoreceria a internacionalização do capital. O país tem que se preocupar com sua gente e desenvolver processos, sejam nacionais ou mundiais, que estejam assentados na realidade cultural de sua população.

82. By 2025, the Brazilian Federal Government should **have the role of “cheerleader” for the development of world-class VTET**. Actively support (cheerleader) and publicize the movement toward world-class VTET, educating people in the need for world-class VTET and the

contributions it can make to economic and social development.

(A-85%)

Panelist:

I disagree with this item, because education is something that is not be globalized, but should respond for the regional characteristics, peculiarities, and necessities of each country, specially ours which is very large.

Discordo deste item, pois educação não se globaliza, mas deve responder pelas características, peculiaridades e necessidades regionais de cada país, especialmente o nosso com grande extensão.

Panelist:

This would only favor the internationalization of the capital. The country has to worry about its people and develop processes, national or world-wide, which are grounded in the cultural reality of its population.

Isto só favoreceria a internacionalização do capital. O país tem que se preocupar com sua gente e desenvolver processos, sejam nacionais ou mundiais, que estejam assentados na realidade cultural de sua população.

83. By 2025, the Brazilian Federal Government should **be the coordinator of the development of human resources for the various occupational areas and skills levels required by the productive sectors.**

(A-80%)

Panelist:

Brazil is a country with a multifaceted reality. There is no way how to totally centralize the coordination of any program which wishes to reach positive results.

O Brasil é um país com realidade multifacetada. Não há como centralizar totalmente a coordenação de qualquer programa queira alcançar resultados positivos.

84. By 2025, the Brazilian Federal Government should **retain its normative role in VTET.**

(A-75%)

Panelist:

Not sure what this means.

85. By 2025, the Brazilian Federal Government should **retain its evaluation role in VTET.**

(A-90%)

86. By 2025, the Brazilian Federal Government should **be creating many optional models of vo-tech education and training including modern technology for people**. Brazil is a large country with heterogeneous population. Different people with varied social backgrounds will need many choices.

(A-85%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels, and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis, e não somente EP básica (designação equivocada) e técnica.

87. By 2025, the Brazilian Federal Government should be **ensuring that vo-tech education and training is an essential and integrated part of the Brazilian educational system at all levels** (kindergarten, primary, secondary, tertiary and adult education).

(I-70%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels, and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis, e não somente EP básica (designação equivocada) e técnica.

88. By 2025, the Brazilian Federal Government should be **to planning and suggesting optional educational pathways to advance in vo-tech education and training** (e.g., school-based route, work-based or apprenticeship route, mixed routes, vo-tech education and training examination for adults recognizing prior learning etc.)

(A-85%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels, and not only *EP básica* (mistaken denomination) and *técnica* (secondary vocational-technical education).

Este item é restritivo. Seria pertinente se envolvesse a educação tecnológica em todos os níveis, e não somente EP básica (designação equivocada) e técnica.

SECTION 2: ORGANIZATION OF VTET IN BRAZIL

What follows is a consolidated list based on the predictions of the panelists in this study. In your opinion, to what extent you agree/disagree with each of the following statements related to aspects of the organization of vocational-technical education [including secondary, post secondary and associate levels] and training (VTET) in Brazil by the year 2025 - who should provide it, who should fund it, in which format, etc. If you don't consider a particular listing an aspect of the organization or strongly disagree with a given presumption or perception, then mark the box on the top of "strongly disagree".

Note: A = Agreement, D = Disagreement, and I = Indecisive

• Who to provide it?

89. By 2025, there should exist a system of VTET that relies on many different providers.

(A-100%)

Panelist:

My new answer is A, as long as the providers are predominantly public, for guaranteeing the aspects of strategic interest, quality of instruction and the model of reference.

Minha nova resposta é C, desde que os ofertantes sejam predominante públicos, para garantir os aspectos de interesse estratégico, qualidade de ensino e o modelo de referência.

90. By 2025, there should be VTET schools organized and maintained by workers organized in unions and Union Centrals. Such schools would be funded by compulsory contributions of the kind as the union tax and the Assistance to the Unions contribution.

(I-70%)

Panelist:

I disagree, because unions and union centrals [of instruction (sic)] are not instruction providers, but organizations that represent the interests/revindications of a professional/occupational category. Therefore, there are inadequate for providing instruction at any level.

Discordo, pois sindicatos e centrais sindicais [de ensino (sic)] não são organizações de ensino, mas de interesse classista/revindicatório. Portanto, inadequadas para a oferta de ensino em qualquer nível.

Panelist:

My experience with union operated schools has not been good.

91. By 2025, VTET may be delivered in “public VTET centers” of triparty management (government, entrepreneurs and workers).

(A-90%)

92. By 2025, VTET will be offered only by the companies. There will not be a government system (public) which offers VTET.

(D-90%)

Panelist:

Question is not entirely clear, but for certain occupations, it may be very advantageous to develop a model of ed/try (education/training) that uses a great deal of employer input + involvement.

93. By 2025, there will be need to involve business and industry to a much greater extent for selected occupational areas, **with the vo-tech schools providing general foundation training and employers providing the more advanced training through cooperative arrangements with the schools.** Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

(A-90%)

94. By 2025; **vo-tech schools will need to provide more in-service training for workers through joint ventures with local employers.** Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

(A-100%)

95. By 2025, a **system of regional vo-tech schools will be necessary for the basic, more general, training, with authority vested in the regions’ perspective states for supervision and for ensuring that basic academic and training standards are being met.** Much of vo-tech education by then will need to be at a much higher technical level, requiring broader-based and yet more specialized training with more sophisticated equipment and teaching methodology.

(A-90%)

Panelist:

I disagree, because it is not pertinent that the regional vocational-technical schools provide basic training, but development for professions.

Discordo, pois não é pertinente que escolas técnicas regionais ofertem treinamento básico, mas sim formação técnico-profissional.

96. By 2025, **VTET should be offered by double partnerships (government/private sector) or triple ones (government/private sector/ society), or others**, in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.
(A-100%)

97. By 2025, **technical education (higher education level) should be offered by state owned, supported and operated educational facilities.**
(A-75%)

Panelist:

I believe other providers should exist - at the municipal level, similar to US community colleges.

98. By 2025, **vocational-technical education (secondary level) should be offered by state owned, supported and operated educational facilities.**
(I-65%)

Panelist:

Secondary schools should be controlled as close to home as possible ... and focus upon the integration of vocational education and academic education.

Panelist:

I believe other providers should exist - at the municipal level, similar to US community colleges.

99. By 2025, **training (non formal VTET) should be offered by state owned, supported and operated educational facilities.**
(I-65%)

100. By 2025, **technical education (higher education level) should be offered by municipally owned, supported and operated educational facilities.**
(I-65%)

Panelist:

Similar to 2 questions prior - there should be providers at both the state + municipal levels.

101. By 2025, **vo-tech education (secondary level) should be offered by municipally owned, supported and operated educational facilities.**
(I-55%)

Panelist:

In particular, secondary vo-tech ed should be provided thru local entities.

102. By 2025, **training** (non formal VTET) should be offered by **municipally owned, supported and operated educational facilities**.

(I-60%)

Panelist:

Municipalities have other agendas.

103. By 2025, **technical education** (higher education level) should be offered by **privately owned, supported and operated educational facilities** (owned by companies or not).

(I-60%)

Panelist:

I strongly disagree with this item, because technological education (and not *EP* (vocational-technical education and training)) in all levels should not be provided by institutions owned by companies, but by private educational institutions.

Discordo fortemente deste item, pois educação tecnológica (e não EP) em todos os níveis não deve ser ofertada por instituições pertencentes a empresas, mas sim por instituições privadas de ensino.

104. By 2025, **vo-tech education** (secondary level) should be offered by **privately owned, supported and operated educational facilities** (owned by companies or not).

(I-60%)

Panelist:

I strongly disagree with this item, because technological education (and not *EP* (vocational-technical education and training)) in all levels should not be provided by institutions owned by companies, but by private educational institutions.

Discordo fortemente deste item, pois educação tecnológica (e não EP) em todos os níveis não deve ser ofertada por instituições pertencentes a empresas, mas sim por instituições privadas de ensino.

105. By 2025, **training** (non formal VTET) should be offered by **privately owned, supported and operated educational facilities** (owned by companies or not).

(I-70%)

Panelist:

I strongly disagree with this item, because technological education (and not *EP* (vocational-technical education and training)) in all levels should not be provided by institutions owned by companies, but by private educational institutions.

Discordo fortemente deste item, pois educação tecnológica (e não EP) em todos os níveis não deve ser ofertada por instituições pertencentes a empresas, mas sim por instituições privadas de ensino.

106. By 2025, **technical education** (higher education level) **should be offered by semi public educational facilities** such as the S System ones.

(A-80%)

Panelist:

I strongly disagree with this item, because such institutions, as those who belong to the S System, do not have neither the prerogatives nor the conditions to provide technological education at the technical level (higher education level), but only occupational qualification (training) and vocational-technical education (secondary education level).

Discordo fortemente, pois tais instituições, como as do Sistema S, não têm prerrogativas e nem condições para ofertar educação tecnológica de nível superior, mas somente qualificação profissional e ensino técnico.

107. By 2025, **vo-tech education** (secondary level) **should be offered by semi public educational facilities** such as the S System ones.

(A-80%)

Panelist:

My disagreement relates to what extend they should provide programs/slots, because the S System institutions should continue to act as complementary providers of occupational qualification/requalification (training) and vocational-technical education (secondary education level).

A minha discordância se restringe à abrangência da oferta, pois as instituições do Sistema S devem continuar a ofertar de forma complementar a qualificação/requalificação profissional e o ensino técnico.

Panelist:

Not sure what this means.

108. By 2025, **training** (non formal VTET) **should be offered by semi public educational facilities** such as the S System ones.

(A-85%)

Panelist:

My disagreement relates to what extend they should provide programs/slots, because the S System institutions should continue to act as complementary providers of occupational qualification/requalification (training) and vocational-technical education (secondary education level).

A minha discordância se restringe à abrangência da oferta, pois as instituições do Sistema S devem continuar a ofertar de forma complementar a qualificação/requalificação profissional e o ensino técnico.

109. By 2025, **technological education** should be offered in specialized institutions, with a light and flexible structure, with full autonomy (didactic, administrative and financial), with a specific career (favoring the professional competency of its employees). In our case, **the present CEFETs constitute the reference model which can be improved**, the later regarding to specific career and autonomy.

(A-90%)

110. By 2025, **technological education** should be offered preponderantly in public institutions (normally federal and state ones).

(I-70%)

Panelist:

It should be offered where it is done best; could be private.

111. By 2025, if a neoliberal group continues to govern Brazil - as it is presently -, **education for professions** should be mostly offered by the business or entrepreneurial world, through institutions such as Euvaldo Lodi, Herbert Levy and other traditional ones, transformed in service rendering companies for providing education for professions - SENAI, SENAC, SESC, SESI, etc.

(I-50%)

Panelist:

I believe there should be a mix of providers and state or other public institutions could offer this type of education - should be market based.

112. By 2025, if a socialist group governs Brazil, **education for specific professions** should be offered only by public institutions.

(D-80%)

113. By 2025, **initial development for professions** should be provided by a **mixed system**, that is, through public vocational and training facilities, and semi public and private ones which operate in an articulated way.

(A-85%)

114. By 2025, any **development for a profession after the initial one** should be provided by the **companies** themselves.

(D-80%)

115. By 2025, **basic development for professions** (inclusive in areas of innovation) should be offered by **public institutions** in occupational areas not spontaneously covered by **non totally public ones**.

(A-90%)

116. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by private institutions**.

(I-70%)

Panelist:

There should be options.

Panelist:

Basic development can not be provided exclusively by private institutions.

O ensino fundamental não pode ser exclusivamente privado.

117. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by semi-public institutions**.

(I-65%)

118. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by public institutions**.

(I-70%)

Panelist:

This item is restrictive, because basic technological education (and not *EP fundamental* (basic development for professions)) may also be provided by semi public institutions, such as those which belong to the S System, as well as in partnership with private organizations.

Este item é restritivo, pois a educação tecnológica fundamental (e não EP fundamental) também pode ser ofertada por instituições semi-públicas, tipo S, bem como em parceria com organizações privadas.

119. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be offered by public institutions in partnerships with private organizations**.

(A-95%)

120. By 2025, **development for specific professions** **should be offered by private institutions/organizations**.

(I-65%)

Panelist:

This item is restrictive, because a specific program within the range of technological education in all levels (and not *EP específica* (development for specific professions)) may be also offered by public institutions, specially semi public ones.

Este item é restritivo, pois uma habilitação específica em educação tecnológica em todos os níveis (e não EP específica) poderá também ser ofertada por instituições públicas, especialmente semi-públicas.

Panelist:

Not sure of meaning.

121. By 2025, the **entrepreneurs** will invest in highly specialized development for professions and, fundamentally, necessary to the productive processes. (A-90%)

122. By 2025, the **unions** will have programs of retraining for professions by the means of the utilization of agreements with specialized institutions. (A-100%)

123. By 2025, the **human resources development agencies** directed to the entrepreneurs' interests, such as Senai, Senac, Senar, and others, should continue to exist. (A-95%)

124. By 2025, the **development of the individual** (youngsters and adults) for the exercise of a profession only will be offered by governments. The offer of development for a specific profession will be independent of the demand of the latter by any company at that moment in time. Such offer will correspond solely to the person's will to learn a profession connected to a certain technology or work process as a means of personal fulfilment to get a job in the future or to create a company related to this profession, besides other motives. Such characteristic of development does not pass concretely in front of the critical view of the companies.

(I-45%)

Panelist:

I disagree, because technological education in all levels should only be provided for meeting the needs of the labor market. Otherwise, the interested individual should search for a scientific institution.

Discordo, pois a educação tecnológica em todos os níveis só deve ofertada para o atendimento do mercado de trabalho. Caso contrário, o interessado deve procurar uma instituição de cunho científico.

125. By 2025, there will be a wide range of private suppliers, particularly for short courses or those which combine modest costs and a vibrant labor market (such as computer science today).

(A-95%)

Panelist:

I believe neither in a vibrant labor market nor in the consequent offer [of programs?]. Since when computer science is a short term program?

Não acredito em um vibrante mercado de trabalho e conseqüente oferta. Desde quando a ciência da computação é um curso de curta duração?

126. By 2025, foreign proprietary courses will compete successfully in some areas, often in joint ventures with local providers.

(A-85%)

Panelist:

The statement of this item is unhappy, because a country to be sovereign, at least, should know how to define which education/programs are important for its people and to have competence for providing it/them, from the foreigners only scientific and technological co-operation.

A assertiva deste item é infeliz, pois um país para ser soberano, no mínimo, deve saber definir qual a educação/cursos é importante para o seu povo e ter competência para oferecê-la, dos estrangeiros só cooperação científica e tecnológica.

127. By 2025, firms will invest in offering short and highly specialized training to its own workers (eventually opening these offerings to outsiders).

(A-100%)

128. By 2025, vo-tech education/training (VET) might be delivered in VET centers depending on needs of trainees and business life.

(A-90%)

- **Who to fund it?**

129. By 2025, the funding of VTET will be public and private, combined and maximizing the various different existing funds (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments).

(A-100%)

130. By 2025, all different existing funds for VTET (the FAT, compulsory tributes such as those that fund the S System, external sources, and productive sector investments) should be articulated, without causing any harm to their decentralized use, guaranteeing, at the same time, the participation of the main interested ones - workers and entrepreneurs - in the definition of their use, in favour of the generation of work and income, as well as in the modernization of the productive sector.

(A-90%)

Panelist:

This is a very important concept.

131. By 2025, **funding for VTET would come from the government but would be provided directly to individuals, as opposed to institutions or programs.** Once an individual received funding support, based on need or some other criteria, he or she could use that support to pay for services from a wide range of providers, including the private sector.
(D-95%)

132. By 2025, **the respective state governments will need to provide a portion (possibly 1/2) of the funds required for operation of the vo-tech schools. The remaining operational funds would need to be generated locally, e.g., from local taxes, private sector contributions, income earned from joint training ventures with business and industry, adult training tuition, etc.**
(A-80%)

Panelist:

Not always human resource development is something that is imposed by entrepreneurial needs and I think that the future reserves this [to us?]. Unless there is full employment. As there will not be, the need for development will fall mostly on the citizen and the State will have to provide all the funding.

Nem sempre a formação de recursos humanos é alguma coisa que se impõe pela necessidade empresarial e parece que o futuro reserva isto. A não ser que haja pleno emprego. Como não haverá, a necessidade de formação será maior no cidadão e o Estado terá de suprir quase todo gasto.

133. By 2025, **funding for VTET will come from the companies themselves, with some government incentives for programs considered to be strategic manpower development.** That is, there will be no public funding for VTET - apart from what was specified above.
(D-90%)

134. By 2025, **funding for VTET may come from double partnerships (government/private sector) or triple ones (government/private sector/ society), or others,** in order to reach an ample and non restricted democratization of education, without which there will not be a balanced society.
(A-95%)

135. By 2025, **state governments should be providers of funds to activities in technical education (higher education level).**
(A-85%)

Panelist:

As long as all levels support the activity, that is fine + I agree.

136. By 2025, **state governments** should be providers of funds to activities in **vocational-technical education** (secondary level).

(A-85%)

Panelist:

As long as all levels support the activity, that is fine + I agree.

137. By 2025, **state governments** should be providers of funds to activities in **training** (non formal VTET).

(A-80%)

138. By 2025, **municipal governments** should be providers of funds to activities in **technical education** (higher education level).

(I-55%)

Panelist:

I disagree, because it is the duty of the state, and not of the municipality, to define and fund the activities in technological education at the technical level (higher education level), because it is fundamental to impel its [the state?] technological, economic, and social development.

Discordo, pois cabe ao estado, e não ao município, definir e financiar ações em educação tecnológica de nível superior, pois ser fundamental para alavancar o seu desenvolvimento tecnológico, econômico e social.

Panelist:

Technical education should be a state and federal responsibility.

Panelist:

Municipalities have other agendas.

139. By 2025, **municipal governments** should be providers of funds to activities in **vocational-technical education** (secondary level).

(I-70%)

140. By 2025, **municipal governments** should be providers of funds of activities in **training** (non formal VTET).

(A-80%)

141. By 2025, **semi public organizations** should be providers of funds to activities in **technical education** (higher education level).

(A-85%)

Panelist:

I disagree, because in principle, technological education at the technical level (higher education level) should be provided based on, at least, a state policy of development, and not on the interest of the companies, as it is the case of the semi public organizations.

Discordo, pois a princípio, a educação tecnológica de nível superior deve ser ofertada em função de uma política, no mínimo, estadual de desenvolvimento, e não de interesse de empresas, como é o caso das organizações semi-públicas.

142. By 2025, **semi public organizations** should be providers of funds to activities in **vocational-technical education** (secondary level).

(A-90%)

143. By 2025, **semi public organizations** should be providers of funds to activities in **training** (non formal VTET).

(A-90%)

144. By 2025, **private organizations** should be providers of funds to activities in **technical education** (higher education level).

(A-90%)

Panelist:

I agree, as soon as the funding for technological education in all levels, coming from these organizations, be in articulation with the public educational institutions that provide that education.

Concordo, desde que o financiamento para a educação tecnológica em todos os níveis, por estas organizações, seja em articulação com as instituições públicas de ensino ofertantes dessa educação.

145. By 2025, **private organizations** should be providers of funds to activities in **vocational-technical education** (secondary level).

(A-95%)

Panelist:

I agree, as soon as the funding for technological education in all levels, coming from these organizations, be in articulation with the public educational institutions that provide that education.

Concordo, desde que o financiamento para a educação tecnológica em todos os níveis, por estas organizações, seja em articulação com as instituições públicas de ensino ofertantes dessa educação.

146. By 2025, **private organizations** should be providers of funds to activities in **training** (non formal VTET).

(A-95%)

Panelist:

I agree, as soon as the funding for technological education in all levels, coming from these organizations, be in articulation with the public educational institutions that provide that education.

Concordo, desde que o financiamento para a educação tecnológica em todos os níveis, por estas organizações, seja em articulação com as instituições públicas de ensino ofertantes dessa educação.

147. By 2025, **private institutions**, for profit or not, **may receive subsidies for offering training** (non formal VTET) **based on a certain amount of money per slot offered or scholarships for enrollment.**

(A-75%)

Panelist:

I strongly disagree, because public resources should not subsidize private institutions, specially, in the case of technological education in all levels because it is strategic for the development of the country.

Discordo fortemente, pois recursos públicos não devem subsidiar instituições privadas, especialmente, no caso da educação tecnológica em todos os níveis por ser estratégica para o desenvolvimento do país.

148. By 2025, **students enrolled in technical programs** (higher education level) **in public schools/educational facilities** **should pay tuition - if they can afford to - to cover for part of the costs of such programs.**

(I-60%)

Panelist:

I disagree with this item, because technological education in all levels should continue free and of quality in the public institutions, because it is strategic for the technological, economical, and social development of the country.

Discordo deste item, pois a educação tecnológica em todos os níveis deve continuar gratuita e de qualidade nas instituições públicas, por ser estratégica para o desenvolvimento tecnológico, econômico e social do país.

149. By 2025, **students enrolled in vocational-technical programs** (secondary level) **in public schools/educational facilities** **should pay tuition - if they can afford to - to cover for part of the costs of such programs.**

(I-50%)

Panelist:

I disagree with this item, because technological education in all levels should continue free and of quality in the public institutions, because it is strategic for the technological, economical, and social development of the country.

Discordo deste item, pois a educação tecnológica em todos os níveis deve continuar gratuita e de qualidade nas instituições públicas, por ser estratégica para o desenvolvimento tecnológico, econômico e social do país.

150. By 2025, students enrolled in **training programs** (non formal VTET) in **public schools/educational facilities** should pay tuition - if they can afford to - to cover for part of the costs of such programs.

(I-60%)

Panelist:

I disagree with this item, because technological education in all levels should continue free and of quality in the public institutions, because it is strategic for the technological, economical, and social development of the country.

Discordo deste item, pois a educação tecnológica em todos os níveis deve continuar gratuita e de qualidade nas instituições públicas, por ser estratégica para o desenvolvimento tecnológico, econômico e social do país.

151. By 2025, the **S System institutions** should have kept its present funding form.

(I-30%)

152. By 2025, student loans should be provided to individuals for getting VTET in private organizations.

(A-85%)

153. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses.

(A-75%)

Panelist:

If this means postsecondary then I think students should share in the cost with a small tuition fee.

154. By 2025, VTET public institutions should be funded by public funds offering tuition-free programs and courses being admissible complementary and additional forms of fund raising, through co-operative societies and service rendering (extension services must not be charged).

(A-100%)

155. By 2025, if any nation wants to be competitive it should have earmarked governmental funds for skill development.

(A-95%)

156. By 2025, **technological education should be offered preponderantly in public institutions** (normally federal and state ones) **and, as consequence, funded by the corresponding level of government. Such funding could be done in the co-management format**, (contract or another similar form services rendering), for complying with the national directives and policies for the technological development of the country. Therefore, its continuity will depend on whether the foreseen goals are reached.

(I-70%)

Panelist:

Makes government too pervasive.

157. By 2025, funding for vo-tech education/training will continue to be a critical issue. **Much of the funding for vo-tech education/training should be private through various incentives** - both push and pull. **Loans to individuals under long term** (repairment provisions) **may be an important means of shifting responsibility for a productive return to the beneficiary.**

(I-70%)

158. By 2025, if a neoliberal group continues to govern Brazil, **funding for VTET should, in part, come from the public fund in partnerships with the private sector.**

(A-85%)

159. By 2025, if a neoliberal group continues to govern Brazil, **funding for VTET should, in part, come from students which would pay for certain programs/courses.**

(I-60%)

Panelist:

I disagree with this item, because technological education in all levels should continue free and of quality in the public institutions, because it is strategic for the technological, economical, and social development of the country.

Discordo deste item, pois a educação tecnológica em todos os níveis deve continuar gratuita e de qualidade nas instituições públicas, por ser estratégica para o desenvolvimento tecnológico, econômico e social do país.

160. By 2025, if a socialist group governs Brazil, **development for specific professions should be funded only by public resources.**

(D-80%)

161. By 2025, **basic development for professions** (inclusive in areas of innovation) **should be supported by public funding.**

(A-85%)

162. By 2025, **development for specific professions should be supported by private funding with public incentives.**

(I-60%)

Panelist:

I disagree, because technological education in all levels, including the specific part, should be funded with public resources and also getting private incentives, for guaranteeing an integral and systemic development.

Discordo, pois a educação tecnológica em todos os níveis, inclusive a parte específica, deve ser financiada com recursos públicos e contando com incentivos privados, para garantir uma formação integral e sistêmica.

Panelist:

Not sure of meaning.

163. By 2025, **funding for VTET will come from private interests when it meets their specific needs.**

(A-80%)

Panelist:

The funding of technological education in all levels should be done with public resources and with private support, because TE only justifies its existence if it meets the human resources needs of the labor market.

O financiamento da educação tecnológica em todos os níveis deve ser com recursos públicos e com o apoio privado, pois só se justifica se atender as necessidades de recursos humanos do mercado de trabalho.

164. By 2025, **funding for VTET will come from public resources in order to meet the persons' needs independent of companies ones.**

(A-75%)

Panelist:

I disagree, because the goal of technological education is to meet the HR needs of the labor market, and not the personal interest of individuals.

Discordo, pois o objetivo da educação tecnológica é atender as necessidades de RH do mercado de trabalho, e não o interesse das pessoas em si.

165. By 2025, **the public sectors (not MEC) will concentrate on funding of expensive and long training, particularly in complex technologies.**

(I-65%)

Panelist:

Excluding the Ministry of Education, the statement becomes inconsistent, because the public sectors should fund any levels of training, specially in partnership with the interested sectors of the economy.

Excluindo-se o MEC, a assertiva do item torna-se inconsistente, pois os setores públicos devem financiar quaisquer níveis de treinamento, especialmente em parceria com os setores interessados da economia.

Panelist:

For expensive, long term training, I believe the private sector or the individual will concentrate funding efforts.

166. By 2025, expensive and long training, particularly in complex technologies will be delivered by private and semi public providers (the successors of the S System). (A-80%)

Panelist:

The statement is inconsistent, because public and semi public providers should offer, in partnership with the productive sectors, any levels of training.

A assertiva deste item é inconsistente, pois os provedores públicos e semi-públicos devem ofertar, em parceria com os setores produtivos, quaisquer níveis de treinamento.

Panelist:

Why not the public sector too?

Por que não também pelo setor público ?

Panelist:

I agree, based on a generous interpretation of the statement.

Concordo, a partir de uma interpretação generosa da afirmativa.

167. By 2025, longer and more expensive VTET programs will operate under a complex mix of cost recovery and public subsidies. (A-80%)

Panelist:

Any level of technological education should be always free and of quality; and preferably public. Therefore, it should not have cost recovery, but partnerships with the productive sectors.

Qualquer nível de educação tecnológica deve ser sempre gratuito e de qualidade, e de preferência pública. Portanto, não deve ter retorno de custos, mas parceria com os setores produtivos.

168. By 2025, public VTET will charge a variable fee from students.
(I-50%)

Panelist:

I strongly disagree, because technological education, in all levels, for being strategic for the development of the country, should continue to be free and of quality.

Discordo fortemente, pois a educação tecnológica em todos os níveis, por ser estratégica para o desenvolvimento do país, deve continuar gratuita e de qualidade.

Panelist:

It is incomprehensible to have fees in public schools. More fees (taxes) ?!!

É incompreensível taxas em escolas públicas. Mais taxas ?!!

169. By 2025, private VTET will get subsidies.
(I-70%)

Panelist:

This proposition is improper, because private education normally aims to have profit, and this does not go with technological education in all levels, that for being strategic for the country, should be above profit seeking interests.

Esta proposição é descabida, pois o setor de ensino privado normalmente objetiva o lucro, e isto não se coaduna com a educação tecnológica em todos os níveis, que por ser estratégica para o país, deve estar acima do interesse do lucro.

Panelist:

In principle I am opposed to this concept.

Panelist:

Falha minha !

170. By 2025, students may get vouchers to attend chosen schools.
(I-65%)

Panelist:

This proposition is also improper, because the offer of technological education in all levels, free and of quality, for being strategic for the country, should continue, mostly, with federal and state institutions - the use of vouchers does not apply.

Esta proposição também é descabida, pois a oferta da educação tecnológica em todos os níveis, gratuita e de qualidade, deve continuar, majoritariamente, com as instituições federais e estaduais, por ser estratégica para os país, dispensando-se bolsas.

Panelist:

In principle I am opposed to this concept.

171. By 2025, ability to pay and individual potential will generate complex algorithms to determine pay/subsidies for VTET programs/courses. (I-65%)

Panelist:

Technological education in all levels should continue to be free and of quality, because it is strategic for the technological, economic, and social development of the country.

A educação tecnológica em todos os níveis deve continuar gratuita e com qualidade, por ser estratégica para o desenvolvimento tecnológico, econômico e social do país.

Panelist:

The new text for the statement made me disagree with it.

O novo entendimento me faz não concordar.

- **In what format?**

172. By 2025, VTET courses and programs will be offered based on the marketplace and workers demand (instead of depending on the offer of the VTET providers, as it happens today, which rarely takes into consideration the profile of the clientele and the needs of the labor market). **(A-90%)**

173. By 2025, some amount of VTET would be provided through distance learning. This opens up a whole range of opportunities for individual learners, especially those who are in remote locations.

(A-95%)

174. By 2025, VTET programs, for adults already in the workforce, will be shorter and more often related directly to work needs and often provided on the job.
(A-100%)

175. By 2025, classroom teaching in VTET will have to be linked to real work applications and experiences.
(A-100%)

176. By 2025, further training beyond the first general qualification should be provided by the employers.
(D-85%)

Panelist:

Qualification should be offered permanently.

A qualificação deve ser permanentemente ofertada.

177. By 2025, training of unemployed should be the responsibility of the State (Public Government).
(A-80%)

178. By 2025, there should be a VTET system funded by the State (Public Government), tuition-free, open to unskilled individuals.
(A-85%)

179. By 2025, there should be a VTET funded by the State (Public Government), tuition-free, open to those that want to upgrade their current skills or to acquire new ones - it does not matter if the individual is employed or not.
(A-75%)

Panelist:

I believe there should be a meanstest to determine ability to pay in cases of upskilling + further acquisition of skills.

180. By 2025, the present vocational-technical schools should have become Technology and Technical Reference Centers (Technical and Vocational-Technical Education Reference Centers) for the regions where they are located and for the occupational clusters in which they offer programs.
(A-95%)

Panelist:

I changed my answer in order to be coherent with the answers given to other statements.

Mudei por uma questão de coerência interna às respostas.

181. By 2025, the **present vo-tech schools** as **Technology and Technical Reference Centers should offer training programs/courses** (non formal VTET) - independent of the number of school years the candidate has completed before beginning a program.
(A-75%)

Panelist:

Don't understand a reference center.

182. By 2025, the **present vo-tech schools** as **Technology and Technical Reference Centers should offer secondary level assistant technicians programs:** for those who completed K-8 grade education.
(A-85%)

Panelist:

Don't understand a reference center.

183. By 2025, the **present vo-tech schools** as **Technology and Technical Reference Centers should offer secondary level technician programs:** for students that are in 9-11/12 grade school or who have completed this level of instruction.
(A-85%)

Panelist:

Don't understand a reference center.

184. By 2025, the **present vo-tech schools** as **Technology and Technical Reference Centers should offer associate of science programs:** for those who completed 9-11/12 grade school.
(A-85%)

Panelist:

Degrees should be limited to accredited postsecondary institutions.

185. By 2025, the **present vo-tech schools** as **Technology and Technical Reference Centers should offer work-targeted specialization, improvement and updating**

programs to individuals who have already joined the workforce or that have already been trained before. (A-95%)

186. By 2025, the **present vo-tech schools as Technology and Technical Reference Centers should offer alternatives of vocational-technical certification for those who acquire their skills through work-based training, taking advantage of the non formal alternatives of development for work, or through self-learning.** The criteria and parameters of this occupational certification will be agreed upon among the educators, workers and entrepreneurs, mediated by the Government. (A-100%)

187. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. **This will allow room in the curricula for expanding/increasing the general education content and for providing more generalized, broader-based technical instruction in preparation for the specialized training.** (A-85%)

Panelist:

The statement is ungrounded because secondary level technical development should have an organization. That is optimized, systemic, and mixed (general, occupation, and specific development), therefore not fragmented as it is proposed in this item.

A afirmação é infundada, pois a formação técnica média deve ter uma estruturação otimizada, sistêmica e mesclada entre a parte de formação geral, profissional e específica, portanto não fragmentada como proposto neste item.

188. By 2025, a greater part of vo-tech education and training will have been pushed toward the post-secondary level. **There will be need to build in some formalized entry/exit points in the curricula for those (mostly adults) who recycle for more training or those who, for various reasons, cannot complete the entire program.** (A-90%)

Panelist:

The statement is ungrounded because secondary level technical development should have an organization. That is optimized, systemic, and mixed (general, occupation, and specific development), therefore not fragmented as it is proposed in this item.

A afirmação é infundada, pois a formação técnica média deve ter uma estruturação otimizada, sistêmica e mesclada entre a parte de formação geral, profissional e específica, portanto não fragmentada como proposto neste item.

189. By 2025, the **organization of VTET will be completely determined by the companies individually or by partnership systems among them, without any**

interference or participation of the federal government.
(D-100%)

190. By 2025, **VTET will be offered through the format of specialized, short-term and for updating/recycling skills training, through continuing education.**
(A-75%)

Panelist:

The statement is totally mistaken, because technological education at secondary and higher education level only is done as development and not as training, the latter being directed for updating, recycling, and complement of the individual's development.

A assertiva deste item está totalmente equivocada, pois a educação tecnológica de nível médio e superior só se faz com formação e não treinamento, sendo este destinado para atualização/reciclagem e complemento da formação.

Panelist:

Depends on your definition of VTET - it may not be all short-term - there will be a need for long term, intensive study.

191. By 2025, **flexibility, rapidity, low cost, and virtuality will be for sure attributes of VTET.** Such attributes are very important because there are more and more adults interested in participating in VTET.
(A-85%)

Panelist:

The only attribute from the item above that is pertinent to all levels of technological education (and not VTET) is flexibility - rapidity and low cost are normally pertinent to training, and not to development.

O único atributo pertinente de educação tecnológica em todos os níveis (e não EP) deste item é a flexibilidade. Rapidez e custo reduzido são normalmente pertinentes a treinamento, e não à formação.

Panelist:

These are very important concepts.

192. By 2025, **creativity and openness to changes will have to be emphasized in VTET** so that the new generations can each time more adapt themselves to the new age, contributing to its evolution.

(A-95%)

Panelist:

These are very important concepts.

193. **By 2025, it should be assured compatibility between 9-11/12 grade instruction and vo-tech education so that a student can continue his studies at a higher level**, that is, secondary level students must get secondary level technological education and not 9-11/12 grade instruction and vo-tech education separately because globalization demands every person to have a sound general education.

(A-95%)

Panelist:

These are very important concepts.

194. **By 2025, the basic development for professions - in one of the 5-6 clusters profession clusters - should occur mandatorily during 9-11/12 grade instruction, being part of the curriculum along with disciplines of general humanistic and scientific development: Communication, Social Studies, and Sciences.** Contents more “applied” or of major applicability taught presently in 9-11/12 grade instruction will become part of the “profession-gearred” curriculum.

(I-60%)

Panelist:

These are very important concepts.

195. **By 2025, mandatory 9-11/12 grade and profession geared instruction should be offered concomitantly or in the same school, public or private, or in Schools Consortiums where certain disciplines may be taken.** In order to complete 9-11/12 grade instruction, the students will have to taken all the general and “profession-gearred” courses which will have an equivalent number of hours of instruction.

(I-55%)

Panelist:

The statement is ungrounded, because secondary level technological development should happen in the same educational institution. The secondary level technical development in the latter should be a mix of general, occupational, and specific contents. The specific development should articulate with the productive sectors.

A afirmação deste é infundada, pois a formação técnica média deve ser realizada em uma mesma instituição, onde formação geral e profissional se mesclam e a parte específica também de nível médio deve se articular com os setores produtivos.

Panelist:

These are very important concepts.

196. By 2025, **there should be allowed flexibility in VTET instruction at the regional and local levels.**

(A-100%)

Panelist:

These are very important concepts.

197. By 2025, **most technical specific training should happen at the post secondary or apprenticeship levels. Much of the ground work and systems work for VTET should happen at the secondary levels.** The 2+2 Tech Prep Associate Degree Program is an example of that. It is important to develop a seamless curricular program.

(A-90%)

Panelist:

I disagree, because the specific part of the development at a secondary level technician should not happen at the post secondary level, but in articulation with the productive sectors, in order to guarantee an integrated and consistent development.

Discordo, pois a parte específica da formação de técnico de nível médio não deve ocorrer a nível pós-secundário, mas em articulação com os setores produtivos, para garantir uma formação integrada e consistente.

Panelist:

* This is one of the most important concepts in your whole study.

Panelist:

I have concerns regarding to the idea of acceleration of instruction and/or learning.

Tenho dúvidas quanto a idéia de aceleração de ensino e/ou aprendizagem.

198. By 2025, CEFETs or equivalent institutions should be in place to **meet the demands of HR in their various levels of instruction of technological education which articulate naturally among themselves.** In that way, those institutions must have as characteristics the verticality of instruction (all possible levels of instruction in the same institution), and strong interaction with the productive sector.

(A-95%)

199. By 2025, **for school leavers at any age, hopefully 16-18 years, but even 14 years, a vocational option through training should be available.**
(A-95%)

200. By 2025, **adult vocational education (training) for those who have discontinued academic studies is a vital objective**, whether for 14, 24, 34, or 44-year old person. Prosperity for all will not occur without societal intent to achieve full employment in a dynamic, technologically-advanced economy. A constantly churning vocational education system is a necessity.
(A-100%)

Panelist:

This is another key concept.

201. By 2025, if a neoliberal group continues to govern Brazil, **the content to be taught in development professions programs/courses should be, dominantly, under the control of the private sector.** In this sense the “theory” or ideology of the “competencies” or of the basic skills - offered by the empirism of the productive world - will be the parameter of the development of an individual for a profession.
(D-75%)

Panelist:

I disagree because the content is not only occupational, that is, for a specific occupation.

Discordo porque o conteúdo não é só profissionalizante, quer dizer, em uma específica profissão.

202. By 2025, **development for professions should offered in the format of the classical school.** Theoretically, the new scientific-technical base (under the aegis of the microelectronics, genetic engineering, and new sources of energy) structured the productive process under unitary bases (synthesis of the diverse) of the knowledge. Therefore, the classical format would constitute in the best format for development for a profession, even taking as a criteria only the economic dimension. Attached to that, it would also come, the development of citizens able to read critically the more and more complex reality and to organize themselves to demand the right to have a good living, even knowing that there is a decreasing need for workers in the marketplace.
(I-35%)

Panelist:

I preferred to state clearly my opinion.

Prefiri definir com clareza minha opinião.

203. By 2025, if a socialist group governs Brazil, **development for specific professions should be done only after the completion of 9-11/12 grade polytechnic instruction.** K-11/12 grade education should be public, tuition-free, lay, universal, unitary, and technological or polytechnical.
(I-55%)

204. By 2025, if a socialist group governs Brazil, **development for specific professions should be done after the completion of 9-11/12 grade polytechnic instruction or in parallel to the latter - this last option should be offered in a specific school system which provided both 9-11/12 grade polytechnic instruction and education for a specific profession in the same school with an increased school workload.** In both situations, education should be public, tuition-free, lay, universal, unitary and technological or polytechnical.

(I-45%)

205. By 2025, **the S System should be being run by a triparty administration (entrepreneurs, workers, and government) which would control all its aspects.**

(I-55%)

Panelist:

I do not know the S System enough.

Não conheço o Sistema S com clareza.

206. By 2025, **public centers of development for professions should be in operation.** Such organizations would have flexible schedules and a political-pedagogical proposal able to adapt itself to the diversity of particular situations of different groups of youngsters and adults that demand this specific type of development.

(A-90%)

207. By 2025, **Public Government will not get involved in the development of individuals for specific professions** (the tendency would be the dissemination of the corporative education, interested in the organization of the production and capital).

(I-60%)

Panelist:

Except as guidance counsellors.

208. By 2025, **there should be oversight for vo-tech education and training at the highest level of government through a joint council.**

(I-40%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only training [VTET at basic level] (mistaken terminology) and vocational-technical education.

Este item é restritivo. Seria pertinente se abrangesse a educação tecnológica em todos os níveis e não somente EP básica (designação equivocada) e técnica.

Panelist:

I preferred to state clearly my opinion.

Prefiri definir com clareza minha opinião.

209. By 2025, vo-tech education and training responsibilities should be detailed and those who are given certain responsibilities must be held accountable for results. (A-80%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only training [VTET at basic level] (mistaken terminology) and vocational-technical education.

Este item é restritivo. Seria pertinente se abrangesse a educação tecnológica em todos os níveis e não somente EP básica (designação equivocada) e técnica.

210. By 2025, curriculum links should have been forged between public vo-tech education and training and others to create opportunities for collaboration efforts such as work-based learning, joint apprenticeship agreements, and school-based enterprises. (A-80%)

Panelist:

This item is restrictive. It would be pertinent if it encompassed technological education in all levels and not only training [VTET at basic level] (mistaken terminology) and vocational-technical education.

Este item é restritivo. Seria pertinente se abrangesse a educação tecnológica em todos os níveis e não somente EP básica (designação equivocada) e técnica.

211. By 2025, the vocational-technical vs vocational (training) distinction will fade. (I-55%)

Panelist:

I disagree because due to the technological advances, there will always be need for qualification and requalification, as well as technical development in new areas.

Discordo, pois, tendo o avanço tecnológico, sempre haverá necessidade de qualificação e requalificação, bem como de formação técnica em novas áreas.

212. By 2025, the fixed structures presently observed in vocational (training) and vocational-technical education will fade. (I-60%)

Panelist:

I disagree because due to the technological advances, there will always be need for qualification and requalification, as well as technical development in new areas.

Discordo, pois, tendo o avanço tecnológico, sempre haverá necessidade de qualificação e requalificação, bem como de formação técnica em novas áreas.

213. By 2025, **training in general will be offered through a number of delivery methods** (combination of various instructional technologies packages will be pervasive).
(A-90%)

214. By 2025, **simple courses will be franchised to smaller operators**, such as MacDonal'd's or Yazigi's.
(I-65%)

Panelist:

I disagree because that would mean to have a fragmented view of technological education which should be offered preferably by institutions that provide programs at all levels of instruction, and not by franchised/fragmented institutions.

Discordo, pois isto significaria ter uma visão fragmentada da educação tecnológica, que deve ser oferecida preferencialmente por instituições que atuam em todos os níveis de ensino, e não em instituições franqueadas/fragmentadas.

Panelist:

I do not know the format, the suggestion does not seem viable for general use.

Não conheço o formato, a sugestão não me parece viável para consumo generalizado.

215. By 2025, **the states governments should monitor the efforts of meeting the policy goals of vo-tech education and training (VET)**.
(A-90%)

Panelist:

I disagree with this item because the monitoring of the policy for technological education at all levels, and not only for training or vo-tech education, should be done by the federal government, through, for instance, its CEFETs.

Discordo deste item, pois o monitoramento da política para a educação tecnológica em todos os níveis, e não somente para EP básica e técnica, deve ser do governo federal, através, por exemplo, de seus CEFETs.

216. By 2025, **the municipalities governments should monitor the efforts of meeting the policy goals of VET**.
(A-75%)

Panelist:

I disagree with this item because the monitoring of the policy for technological education at all levels, and not only for training or vo-tech education, should be done by the federal government, through, for instance, its CEFETs.

Discordo deste item, pois o monitoramento da política para a educação tecnológica em todos os níveis, e não somente para EP básica e técnica, deve ser do governo federal, através, por exemplo, de seus CEFETs.

217. By 2025, the types of providers of VET should be related to age groups and their needs.

(I-65%)

Panelist:

Not necessarily, because the providers of technological education at all levels should be able to meet the needs of all those who want to get it, independent of their ages.

Não necessariamente, pois os ofertantes de educação tecnológica em todos os níveis devem possibilitar aos interessados de qualquer idade o atendimento de suas necessidades.

Panelist:

I do not see the reason for the relation with age.

Não vejo a razão do relacionamento com a idade.

218. By 2025, one of the formats of delivering VET should be the school-based model including externship and internship in business avoiding the disadvantages of the Scandinavian VET systems.

(A-75%)

219. By 2025, one of the formats of delivering VET should be the work-based model avoiding the disadvantages of the German dual system.

(A-75%)

Panelist:

I disagree because, technological education at all levels, and not only training and vo-tech education, should be developed at school with internships in the entrepreneurial sector, because the development done at school can not be left aside.

Discordo, pois a educação tecnológica em todos os níveis, e não somente em EP básica e técnica, deve ser desenvolvida na escola com estágios no setor empresarial, porque não se pode prescindir da formação na escola.

220. By 2025, **one of the formats of delivering VET should be the mix of school-based model including externship and internship in business** avoiding the disadvantages of the Scandinavian VET systems **and the work-based model** avoiding the disadvantages of the German dual system (see the recent Austrian reforms).

(A-90%)

221. By 2025, **one of the formats of delivering VET should be qualification-based examination** for adults and experienced persons to recognize their competencies.

(A-95%)

- **Other aspects**

222. By 2025, **the tripartism (government, workers, and entrepreneurs) or multipartism in the management of public VTET schools/educational facilities must be implemented.**

(A-90%)

223. By 2025, **VTET should have eliminated the distance between intellectual and manual work.** It is necessary to have brought closer the conception and execution functions.

(A-95%)

Panelist:

This is a key concept.

224. By 2025, **VTET should go beyond the learning of simple technical applications for immediate entrance in the labor market.** VTET involvement with the advancements of sciences and techniques become necessary for the establishment of the circle of participation among the generation, transfer and application of technologies. As a matter of fact, the selection, use and absorption of a technology requires a level of technological familiarity, of the same magnitude of the necessity to generate it.

(A-95%)

Panelist:

This is a key concept.

225. By 2025, **it should be set in legislation that the number of youngsters' and adults' work hours that are going through development for professions should be reduced without loss to the workers' revenues (wages/salaries).**

(A-80%)

Panelist:

Custom and practice perhaps but not legislation.

226. By 2025, **development for professions** should develop individuals that, at the same time, are technically competent and that also have a scientific spirit and ability, and critic sense to integrate themselves effectively as citizens and influence on the decision about who and how many people science, technic, and production should serve.
(A-100%)

227. By 2025, the public policies and activities should not inhibit the VTET initiatives of the productive segments that belong to the private sector.
(A-95%)

General comments:

Panelist:

ATTENTION: I believe that any educational system will always require additional investments, because there is a large mismatch between the education the population has and that they should have (this is true for the “educated” and the “non educated” parts of the population).

ATENÇÃO: acredito que qualquer sistema educativo sempre exigirá maiores investimentos, pois existe uma grande defasagem na população educada ou não.

Panelist:

I consider harmed all statements that:

- a) have as starting point the premise about the form of government (neoliberal, socialist), once they are simplified and of low explanatory power distinctions about the dynamics of VTET;
- b) refer to the distinctions/levels of VTET (training [*básico*], vocational-technical (*técnica*), technical [*tecnológico*]), also without explanatory power and without support of the new Directives and Basis of National Education Act (*LDB, Act No. 9,394/96*), in its chapter “Vocational-Technical Education and Training [*Educação Profissional*]”

Considerada prejudicada a formulação de todas as questões que:

- a) partem da premissa sobre forma de governo (neoliberal, socialista), uma vez que se trata de distinções simplificadoras e de fraco poder explicativo para a dinâmica da EP;*
- b) referem-se a distinções/níveis de EP (básica, técnica, tecnológica), também sem poder explicativo e sem respaldo na nova LDB (Lei 9394/96), no capítulo “Educação Profissional”.*

Reply from the investigator (after it was sent to the panelist, no additional comments were received):

1) The statements included in Round II and III Survey Instruments are a result of the contribution of the panel of experts. The Delphi technique requires that the researcher be a facilitator of the interaction among the participants, therefore, he has to include in the instruments following each round what was stated by the panelists. It is expected from the participants that they offer opinions and comments about what was proposed by the panelists, as you have done. Summarizing, the researcher must be in a position of neutrality until the end of the panel.

2) As the participants of the panel used different terms in relation to vocational-technical education and training [*educação profissional*] when they answered Round I Survey Instrument, I sent a description of the present context of Brazilian Education (Schooling Education in general and Vocational-technical Education and Training in particular) and of other issues such as Technological Education and *Politecnia* along with Round II Survey Instrument. The utilization of the description was optional. It covered the various points of view proposed by the participants of the survey. It included parts of texts that originated from the proponents of the various views presented. It is opportune to indicate that that description alluded to not only Act No. 9,394/96 but also Decree No. 2,208/97 of April 17, 1997, in addition to other pieces of legislation that addressed particularly vocational-technical education and training.

3) I conclude by informing that the faithfulness to which the participants of the panel stated in the rounds that were held is a presupposition of the Delphi technique. The researcher can not state his opinion during the happening of the panel. The comments made by the panelists have been included in each round survey instrument and will also be taken in consideration in the final phases of the Delphi part of the research and also in the dissertation that is being developed.

1) As afirmativas contidas nos Instrumentos II e III da pesquisa são resultado da contribuição do painel de experts. A técnica Delphi demanda que o pesquisador seja um facilitador da interação entre os participantes, portanto, ele tem que colocar nos instrumentos seguintes a cada etapa o que foi dito pelos painelistas. Cabe a cada participante externar opiniões e apresentar comentários sobre o que foi proposto pelos painelistas, como você o fez. Em resumo, o pesquisador deve colocar-se numa posição de neutralidade até o final do painel.

2) Devido aos participantes do painel terem usado diferentes termos com relação a educação profissional ao responderem o Instrumento I da pesquisa, enviei uma descrição do atual contexto da Educação Brasileira (Educação Escolar em geral e Educação Profissional especificamente) e de outros assuntos tais como Educação Tecnológica e Politecnia acompanhando o Instrumento II. A utilização dela era opcional. Tal descrição abordou os vários pontos de vista propostos pelos participantes da pesquisa, fazendo uso de extratos de textos oriundos de proponentes das diversas visões em questão. Vale salientar que tal descrição faz menção não somente a Lei no. 9.394/96, mas também ao Decreto no. 2.208 de 17 de abril de 1997, além de outras peças legais em vigor que tratam especificamente da educação profissional.

3) Concluo colocando que a fidelidade ao que os participantes disseram nas etapas realizadas é pressuposto da técnica Delphi. O pesquisador não pode manifestar o que pensa durante a realização do painel. Os comentários feitos pelos painelistas vem sendo incorporados aos instrumentos de cada fase e também serão levados em conta nas fases finais da parte Delphi da pesquisa e da dissertação ora sendo realizada.

APPENDIX X

INSTITUTION REVIEW BOARD

APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 10-09-97

IRB#: ED-98-023

Proposal Title: CHANGING OF PARADIGM: DEVELOPING A CONTEMPORARY STRATEGY FOR TECHNOLOGICAL EDUCATION IN BRAZIL

Principal Investigator(s): Garry Bice, Paulo Henriques

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.

APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature: 

Chair of Institutional Review Board
cc: Paulo Henriques

Date: October 27, 1997

VITA

Paulo de Tarso Costa Henriques

Candidate for the Degree of

Doctor of Education

Thesis: CHANGING OF PARADIGM: DEVELOPING A CONTEMPORARY
STRATEGY FOR TECHNOLOGICAL EDUCATION IN BRAZIL

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in João Pessoa, Paraíba, Brazil, September 29, 1956, the son of Herder Paulo Henriques da Silva and Maria Lenira da Costa.

Education: Graduated from the Colégio Marista Pio X, João Pessoa, Paraíba, Brazil, in December, 1975; received Bachelor of Electrical Engineering degree, with an emphasis in Electronics, from Federal University of Paraíba, Campina Grande, Paraíba, Brazil, in January, 1982; Master in Production Engineering, with an emphasis in Industrial Projects, from Federal University of Paraíba, João Pessoa, Paraíba, Brazil, in June, 1987; completed requirements for the Doctor of Education degree at Oklahoma State University in May, 1999.

Professional Experience: Proofreader at Correio da Paraíba newspaper, João Pessoa, Brazil, 1974 to 1975; English Teacher at Fisk Schools in João Pessoa, Paraíba, 1975 to 1976; Bank Clerk at Banco do Brasil, Itabaiana, Brazil, 1976 to 1977 and João Pessoa, Brazil, 1989 to 1990; Experimental Physics Teaching Assistant at Federal University of Paraíba, Campina Grande, Brazil, 1977 to 1979; Pedagogical Coordinator and English Teacher at Fisk Schools in Campina Grande, Brazil, 1977 to 1981; Microwaves Systems Instructor at Redentorista Vocational-technical School in Campina Grande, Brazil, 1981; Intern, Engineer, and Assistant Manager (Transmission and Energy Sector) at Telecommunications of Bahia, in Salvador and in Itabuna, Brazil, 1981 to 1983; Independent

Management and Information Systems Consultant, in João Pessoa, Brazil, 1983 to 1991; Analyst and Programmer, 1983 to 1988, Instructor and Instructional Materials Developer for the Distance Vocational-technical Education project, 1982 to 1985, Electronics/Electrotechnics Programs Laboratories Coordinator, 1989, Electronics Program Coordinator, 1989 to 1990, Entrance Examinations Permanent Committee President - COMPERSE, 1990 to 1991, Electronics, Telecommunications and Industrial Automation Teachers' National Meeting, Central Committee President - X ENPEL - ETF-PB/ETER, 1990 to 1991, Night Programs Coordinator, 1991, Support and Extension Department Director, 1991, Planning Coordinator, 1991 to 1995, "Total Quality Management" Committee Member, 1992 to 1995, "Vocational-technical School of Paraíba [ETF-PB] into Technological Education Center of Paraíba [CEFET-PB] Transformation" Project Committee President, 1993, "ETF-PB/Foreign Institutions Multilateral Cooperation Development" Project Committee Member, 1994 to 1995, and Instructor of Several Courses in the Following Programs: Electronics, Electrotechnics and Computer Science, since 1983 (Professor since January 1999; on leave for graduate studies since 1996) at Federal Technological Education Center of Paraíba, João Pessoa, Brazil; Adviser to the Planning Chamber of General Directors (Superintendents) National Council of the Federal Institutions of Industrial Instruction, 1992 to 1995, Brazil; "Emerging Technological Information Dissemination System" Specialist - Secretariat for Secondary Instruction [SESG], 1987 to 1989, "Secretariat for Secondary and Technological Education [SEMTEC]-MEC (Brazil) / Metrimpex (Hungary) Educational Equipments Import" Project Special Committee Member, 1993 to 1995, Adviser to the Director for Educational Development at SEMTEC, 1995; SEMTEC Representative in the GSAT/MEC (Brazil/UNESCO Agreement), 1995, SEMTEC-MEC/Oklahoma State University Technical Cooperation Project" Coordinator, 1995 to 1996, at Ministry of Education and Sports [MEC], Brazil and USA; Graduate Assistant at the School of Occupational and Adult Education working on the Brazil Project, 1996, Instructor of the Specialization Program in Technical Education Management for Brazilian Federal Technological Education Schools and Centers Administrators - Brazil Project, 1996, Lecturer, Occupational Education Studies, School of Curriculum and Educational Leadership, College of Education, since 1996; at Oklahoma State University.

Professional Memberships: Brazilian Association for Production Engineering, Association for Career and Technical Education, International Vocational Education and Training Association, World Future Society, American Vocational Education Research Association, Association for Supervision and Curriculum Development, Kappa Delta Pi, Phi Kappa Phi.