# A COMPARATIVE STUDY OF VOCATIONAL AND TECHNICAL EDUCATION IN SELECTED COUNTRIES WITH IMPLICATIONS FOR PROGRAM DEVELOPMENT IN BRAZIL

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Submitted to the Faculty of the Graduate College
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in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
May, 1988

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ACKNOWLEDGMENTS

The success and completion of this study rests on the contribution of many people. The author wishes to acknowledge the contribution of the doctoral committee members: Dr. Donald Robinson, Dr. Cecil Dugger, Dr. Kenneth St. Clair, Dr. John L. Baird, and Dr. Garry R. Bice, who served as chairman of the committee and thesis advisor. Dr. Bice deserves a special thanks and appreciation for both his competency and expertise and his patience and friendship. This is also extended to his lovely wife, Dr. Juanita Bice, for her kindness to me and my family.

The author also wishes to acknowledge the immense contribution rendered by Dr. Lloyd D. Briggs, from the World Bank, who made the arrangements for my interviews in Washington, D. C., and to those people who agreed to participate in the interviews. The author also is thankful for the contribution of Dr. Melvin D. Miller, Dr. Francis Tuttle, Dr. William Segall, and all of the O.S.U. staff, faculty and secretaries from the School of Occupational and Adult Education for their help and cooperation during my course work. A special gratitude is due to Dr. John Deveny, from the O.S.U. Foreign Language Department, who helped me so much with the revision and correction of this work.

Much appreciation and thanks goes to my family, especially my wife, Maria Francoise, whose support, patience and effort in keeping the house in order and typing my drafts, is well deserving of the glory

of this work. A special thanks is due to my sons, Osvaldo Junior and Glauber. They have supported me with their enthusiasm, noise, house's destruction, and the hope and faith in the future, which is proper of their youth. They remind me that success is a never ending journey throughout life. It is my hope that they will learn from my personal dedication and hard work. My children's support made me realize that any effort toward education is always worthwhile, for me "the show must go on."

Last but not least, the author wishes to acknowledge the silent support of my mother, Felizbela; my brothers, Jose, Nelson, Erasmo; my sister Rizonete,; my nephews and nieces as well as my father and mother-in-law, Ezequiel and Clementina. Their prayers, "saudades", and patience in suffering our absence from home for so long well deserve my gratitude from the depth of my heart. Finally, to the memory of my unforgettable father, Pedro Vieira do Nascimento and the people of "Ipiranga", the author wishes to dedicate this work. They both had a common dream. Their dream became my dream and challenge. Now that dream has come true. Rest in peace my father and be proud my Ipiranga people, your child has become a doctor.

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# CHAPTER I

## INTRODUCTION

Comparative studies in vocational-technical education are a very recent development. Though comparative education has long been included in the training of school teachers, such studies rarely have made more than a passing reference to vocational-technical education, and then only as a relatively unimportant fringe.

During the last decade particularly, vocational-technical educators throughout the world have begun to know one another and to compare the various systems in current use. Population migration and common cultural heritage have previously been powerful factors in creating "norms" of education, general and vocational-technical, which excluded any specific attempts at standardization for political or economic reasons.

Glancing briefly at the world as it was ten years ago and comparing it with the world as it is today, the timeliness of comparative studies becomes obvious. It seems that with sound principles, good will, exchange of experience and information, and mutual financial aid, education everywhere could become more democratic, offering better opportunities to all in terms of personality development and career openings and would be an active agent in the development process of effective programs.

Ten years ago it seemed that economic resources were available

to expand vocational-technical education in the interest of economic development, democratization of education and society, and adjustment between education and the world of work in terms of employment. As it turned out, the situation was not what would have been expected. The world economy has slumped into near recession due to the energy crisis and it looks as if it will remain a constant factor no matter what form it takes. The lack of stability due to wildly fluctuating exchange rates is a trademark of the current world economy. These circumstances have affected virtually all countries, especially the developing countries.

For the developing countries, all these factors have combined to produce increased unemployment and an underemployment situation. This problem is a result of the economic situation combined with profound changes in the employment structure precipitated by technological change. In human terms this means that developing countries are obligated to address the problem of how to prepare young people to adapt to structural and technological changes, in order to advance in their careers, and to promote economic development in those countries.

Under these circumstances, many developing countries are realizing the role of vocational-technical education and training in their economic and social growth. Many developing countries are reforming their educational systems, instituting new legislation and embarking on wide ranging structural changes to give more emphasis to vocational-technical education and training at all levels. Brazil is one of the countries involved in this effort.

The goal of Brazil is to democratize education in such a way as to broaden opportunities for all and develop individual capacities to the

fullest, both in individual terms and in terms of their role in society and the working world. As far as vocational-technical education and training are concerned, developing countries including Brazil, have much to learn from developed countries in terms of policy development, planning, organizational structure, administration, and implementation of vocational-technical education systems.

The intent of this study was to examine vocational-technical education in selected developed countries to analyze the performance of such systems in order to exchange experience and information needed to draw conclusions and to develop recommendations that may be used in policy and program development in Brazil.

## Statement of the Problem

The problem is that there is not a body of knowledge or pool of information available to public policy makers in Brazil to permit them to fully utilize the knowledge and experience of developed countries, as policy makers develop a manpower training delivery system.

## Purpose of the Study

The primary purpose of the study was to look at the vocational-technical education and training systems in France, West Germany and the United States of America in order to understand and compare those systems in terms of the following aspects:

1. The structure of organization, administration and offering of programs in the delivery system.

2. The basic framework for policy development and planning for vocational-technical education and training.

3. The financial support for vocational-technical education and training.

4. The trends and issues in vocational-technical education and training for the future.

Based upon understanding and comparison of these aspects, the researcher gathered basic information needed to answer the research questions proposed which would help contribute to the solution of the research problem, as well as to extract implications and develop recommendations to be applied to improving the existing vocational-technical education and training system in Brazil.

The choice of the three countries was based upon the wide recognition of their development, the recognized success of their vocational-technical education and training systems, and the relative degree of influence of those countries on Brazil's educational system as a whole.

At a time when economic, technological and sociological changes are happening as rapidly as they are today, a developing country like Brazil can ill afford to waste valuable capital and human resources to develop a manpower training system that will permit its economy to compete with the existing global economy. By taking advantage of the knowledge and experience of successful practices in those developed countries, countries like Brazil should make major steps forward at relatively little expense.

## Research Questions to Be Answered

1. What are the basic philosophy, principles, mission and characteristics of the vocational-technical education and training

system in the countries of France, West Germany and the United States of America?

2. What are the main differences, similarities and trends in terms of structure, organization, administration, policy development, planning and implementation of vocational-technical education and training in the countries of France, West Germany and the United States of America?

3. How is vocational-technical education and training perceived by different segments within the society as well as the society as a whole and what are the effects of these perceptions on the development of the vocational-technical education systems in the countries of France, West Germany and the United States of America?

4. What are the main problems related to the development of vocational-technical education and training which the countries of France, West Germany and the United States of America are facing and what are some perspective approaches for solving them?

5. What are the basic implications that can be concluded from these countries as related to the vocational-technical education training system that can be successfully applied in the improvement of the existing vocational-technical education system in Brazil?

6. What are the basic aspects to be considered in the process of transferring the knowledge, experience, skills, and policy development related to vocational-technical education and training system from these developed countries to a developing country such as Brazil?

7. What should be the importance of a vocational-technical education and training system in a developing country like Brazil in terms of its educational cultural, social, economic, technical, and

scientific development?

8. What should be the importance of policy development and planning for vocational-technical education and training system in a developing country such as Brazil and what should be the basic factors and information to be considered in this process?

9. How can a country like Brazil face the problem of finance and cost-effectiveness in vocational-technical education and training?

10. What can be done through international cooperation to help a developing country such as Brazil to improve and develop to the fullest its existing vocational-technical education and training system?

## Limitations of the Study

This study has the following limitations:

1. The countries selected were based on the personal interest of the researcher, their actual stage of development, the recognized success of their vocational-technical education and training system, and the degree to which those countries influenced Brazilian education, particularly the vocational-technical and training system.

2. The study is conducted on the basis of the literature available since no access to those countries was possible due to the lack of funds.

3. The number of people interviewed such as international education experts, policy makers and decision makers was also limited to their availability and to the extent of the funds available.

4. The implications, recommendations and conclusions derived from this study are specifically addressed only to Brazil.

## Assumptions and Definition of Terms

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

Scope - The scope of the study assumed vocational-technical education and training as all forms and aspects of education which are vocational and technical in nature, provided either in educational institutions or under their authority, directly by public authorities or through other forms of organized education, public or private, according to the revised recommendations set by UNESCO at its eighteenth session held from 17 October to 23 November, 1974 in Paris.

According to the above revised recommendations cited, the terms "vocational-technical education" and "training" were used as comprehensive terms referring to those aspects of the educational process involving, in addition to general education, the study of technologies and the acquisition of practical skills, attitudes, understanding and knowledge related to occupations in various sectors of economic life. Vocational-technical education and training is further understood to be (a) an integral part of general education; (b) a means of preparing for an occupational field; and (c) an aspect of continuing education (UNESCO, 1974).

For the purpose of this study, the terms "general education" or "academic education" refer to forms of education which are not designed to prepare for an occupation, whereas basic education refers to literacy such as reading, writing and arithmetic.

For the purpose of this study, the terms "vocational and technical education" or "vocational-technical education" and "training system" were used to refer to the general organized framework in which

vocational-technical education and training is delivered.

Structure - For the purpose of this study the term "structure" was used to refer to the diagramatic form in which the general education system and particularly the vocational-technical education and training system is arranged.

Organization - For the purpose of this study the term "organization" was used to refer to the form in which the general education system and, particularly the vocational-technical education and training system is organized.

Administration - For the purpose of this study the term "administration" was used to refer to the general framework in which policy and planning are developed, and decisions are made and implemented in order to operate the general education system, and particularly the vocational-technical education and training system.

Finance - For the purpose of this study the terms "finance" or "financial support" were used to refer to the form in which vocational-technical education and training was funded or paid for.

## Other Terms

Policy Makers - This term was used to refer to a person who has/had the responsibility or is/has been in a position of formulating federal/national educational policy in vocational-technical education and training (Taylor, 1984).

Policy - For the purpose of this study, this term was used to refer to the broader goals or objectives of vocational-technical education and training (Miller, 1986).

Decision Makers - For the purpose of this study, this term was

used to refer to a person who has/had the responsibility, or is/has been in a position to set policy or make decisions regarding the optional resolution of problems in vocational-technical education and training (Taylor, 1984).

Educational Expert or Specialist - For the purpose of this study this term was used to refer to a person who is recognized as possessing considerable knowledge, expertise and working experience in the development of vocational-technical education and training.

## Organization of the Study

Chapter I introduced the study and included the statement of the problem, the purpose of the study, research questions to be answered, limitations, assumptions, and definition of terms used in the study.

Chapter II reviewed the literature that was deemed pertinent to a comparative study orientation related to vocational-technical education and training. The information included: (1) methodology of comparative studies; (2) process for development recommendations; (3) extrapolating from one culture to another; (4) relationship of vocational-technical education and training to economic development; and (5) comparative studies of vocational-technical education.

Chapter III discussed the design, methods and procedures in conducting the study. Chapter IV reported the findings on the literature related to the vocational-technical education and training systems in West Germany and the United States and summarized the major findings from both the literature and the interviews.

Chapter V presented the answer to the research questions, discussion, analysis and interpretations of the major findings as well

as the implications, recommendations and conclusions designed to improve the existing vocational-technical education and training system in Brazil and for further studies.

# CHAPTER II

## REVIEW OF LITERATURE

Key (1975, p. 72) stated that "One of the main purposes of the review of the literature is to provide a basis for the research questions, objectives, or hypotheses." This review was begun with that in mind. The literature reviewed indicated many studies have been conducted on vocational-technical education, but few studies have been conducted on the comparison of vocational-technical education among developed and developing countries.

The literature reviewed in this chapter was selected on the basis of its relevance to the problem under study. The review was divided into five sections as follows: (1) methodology of comparative education studies, (2) process for development of recommendations, (3) extrapolation from one culture to another, (4) relationship of vocational-technical education and training to economic development, and (5) comparative studies of vocational-technical education and training.

### Methodology of Comparative Education Studies

Mallison (1977, p. 10) stated:

> The various attempts that have been made to define the purpose and scope of a study of comparative education since the pioneering days of Matthew Arnold and Sir Michael Sadler have made it increasingly clear that no satisfactory definition can be obtained until the whole purpose of education as a social force has been closely examined.

He built his comparative education studies on the notion of national character. According to Holmes (1981) the uniqueness of national systems of education as expressions of national life and national character was well understood by Ushinsky who compared science and education as:

> 'Science is science,' he wrote 'education takes the whole man as he is, with all his national and individual characteristics - his body, soul and mind - and above all addresses itself to a man's character; and character is that very soil in which national characteristics are rooted' (p. 10).

Holmes (1981) sustained that the notion of science and unique national characteristics is not antithetical. Holmes argued that among the academic pioneers of comparative education, the notion that "national character" could be used to explain differences between systems having the same origins found a good deal of favor. Holmes also found that among comparative educationists who have built on this notion of national character, Mallison (1910) had made much of it. More succinctly, Holmes (1981) sustained that "Mallison regarded national character as equivalent to a collective fixed mental constitution that guarantees a common purpose and forms of behavior on the part of those who share it" (p. 25).

Higginson (1961) cited that Sir Michael Sadler, Director of the British office of special inquiries and reports between 1895-1903, led to increased recognition of the importance of cultural context as a methodology for study in comparative education. As he pointed out:

> In studying foreign systems of education we should forget that the things outside the schools matter even more than the things inside the schools, and govern and interpret the things inside. We cannot wander at pleasure among the educational system of the world, like a child strolling through a garden, and pick off a flower from one bush and some leaves from another, and then expect that if we stick

> what we have gathered into the soil at home, we shall have a living plant (p. 15).

Holmes (1981) found that even before the notion of national character, cultural borrowing was used as a comparative method. He argued:

> Cultural borrowing has a long history. Among its exponents, Plato is the most famous. As an observer of a spart he then incorporated all that he thought best in the city-state in his ideal republic. For this he has been regarded as a pioneer of comparative method (p. 22).

Hans (1949), in an account of the work of English Pioneers of Comparative Education, claimed,

> The purpose of comparative education is not only to compare existing systems but to envisage reform best suited to new social and economic conditions. Comparative education quite resolutely looks into the future with a firm intent of reform (p. 39).

Kendel (1939, p. 17) stated that:

> The study of comparative education becomes a variant philosophy of education based not on theories but on actual practices which prevail. The study of foreign systems of education means a critical approach and a challenge to one's own philosophy and, therefore, a clearer analysis of the background and basis underlying the educational system of one's own nation.

In an issue of Comparative Education, Stenhouse (1979, p. 9) argued "Comparative education will miss making an important contribution to the understanding of schooling if it does not participate in the current development of case study approaches to educational institutions." Stenhouse (1979, p. 10) went on to suggest that "We develop in our field a better grounded representation of day-to-day educational reality resting on the careful study of particular cases."

Crossley and Graham (1984) argued that the concept of the case study is an ambiguous one because it means different things to

different people. They distinguished among three traditions of case study in educational research (1) the anthropological, (2) the sociological, and (3) the use of the case study for curriculum and program evaluation. Smith (1978) treated educational ethnography, participant observation, case study or field studies as synonymous.

Skilbeck (1983, p. 15) argued that ethnographic case studies are incompatible with evaluation. Crossley and Graham (1984) remember that the ethnographic case study of a single community or culture has been central to anthropological inquiry since Malinowski's pioneering field studies earlier this century. However, case studies of schools from such a perspective emerged in the late 1940's and the early 1950's with anthropologists such as George Spindler and Jules Henry. Issues concerning cultural pluralism and culture conflicts permeate much of this research in the anthropological tradition.

Stenhouse (1979, p. 8) argued that "Predictive social models may become possible to provide a body of general principles which would help to guide policy makers and reformers by predicting, with some assurance, the possible outcomes." He went on to sustain that "Case study characteristics is the fundamental data source of comparative education which deals in insight rather than law as a basis for understanding."

Fraser and Brickman (1968) demonstrated that during the prehistory of comparative education, first hand observation and description of school practice was both advocated and conducted by influential traveling educators. These traveling educators inspired the more systematic collection of varied data subsequently advocated by the French scholar Jullien, who is today widely acknowledged as the father

of comparative education. In 1908, for example, the distinguished professor, Cesar August Basset, recognized the usefulness of making observations in foreign countries about education and instruction in general. Moreover, he called for the appointment of university personnel to carry out this work and warned that such individuals should ". . . judge men and things in accordance with real and established facts and not in terms of written system of speculative plans".

Hammersley and Woods (1976, p. 77) found that "There has been increased support for approaches that acknowledge the capacity of individuals to interpret social events and to attribute personal meanings to the world in which they function." They further stated "Meaning is derived from social interaction, that subjective meanings are a legitimate focus for study and that case studies' research must be conducted in a social context."

Blumer (1969, p. 60) stated "The social scientist should aim to respect the nature of the empirical world and organize a methodological stance to reflect that respect." Young (1971) recognized that case studies of both classroom interaction of knowledge and educational settings formed an integral part of the new sociology of education. Sharp and Green (1975) and Willis (1977) have made more attempts to relate microstudies of school processes to more traditional macro concerns for the relationships between schooling and the broader structural feature of society through case studies.

While not denying the value of quantitative and macro level research within comparative education, Crossley and Graham (1984, p. 197) argued that the tendency for many studies to dismiss the

significance of detailed observation and description at the school level is misguided. They say that this is not to suggest that schooling should be studied independently of the wider context in which it is set, but simply to reaffirm that what goes on within schools (or other educational institutions) is by no means clearly understood, and that detailed research at the school level is a valid and worthwhile focus for comparativists. They still argued that the modern case study should not be equated with the unsystematic field reports popularized by nineteenth century writers or be dismissed as an outdated mode of inquiry in comparative education. Epstein (1983) has stressed that while it is convenient to refer to the evolution of comparative education through distinct methodological phases, "This perspective has created confusion over the relative utility and value of alternative approaches" (p. 4). Crossley and Graham (1984, p. 197) sustained that we are unwise to view the "old" methods as necessarily inferior to the "new". Different approaches to comparative education each have their own strengths and limitations, and thus it is suggested, applies as much to descriptive research based upon detailed observation at the school level as it does to historical or quantitative social science methods.

In view of the above, and given the desire of some researchers to make more meaningful contributions towards educational practice and/or decision making, Crossley and Graham (1984) argued that the case study research paradigm holds considerable potential for comparative education. The cross fertilization of ideas between ethnographers already working within the field and educationists involved in contemporary case study research and evaluation could, for example,

generate challenges to the epistimological and idealogical dominance of the positivist. To cite Heyman (1981, p. 451):

> The traditional process of theory making in the social sciences unselfconsciously draws upon common sense formulations of an objective social world when it ought to be formulating descriptions and interpretations of the very practices its theory making takes for granted.

A theme to which this is especially pertinent, and one where Crossley and Graham (1984, p. 128) feel case study research can play a vital role in comparative education, is the divorce between policies and the practice of schooling. They found that comparisons between schooling in different countries are almost exclusively conducted in terms of educational policies and only rarely, for example in Hawes, et al. (1979) are questions raised as to the relationship of such policies to the realities of schooling.

Fullan and Pamfret (1977) believe that during the last few years, there has been a growing recognition of the importance of research into the implementation of educational policies as opposed to research into the properties of innovation or an assessment of its outcomes. Dalin (1978, p. 1) maintained "Understanding the culture of the school is essential if we are to identify change strategies which will succeed in the complex task of renewing the educational system." Havelock and Huberman's (1977) pioneering analysis in this field used a questionnaire to gather empirical data. More recently, Adams and Chen (1975, pp. 259-260) present a stimulating comparative analysis of the process of educational innovation but, despite their claims to have used an "ethnographic" approach, most of their data were collected by interview, with very little recourse to observational research conducted in a natural setting.

A recent review of the literature on attempts to diversify secondary school curricula in developing countries. Lillis & Hogan (1983) conclude that the absence of detailed case studies is a major constraint upon the production of valid theory as to the causes of success or failure of such schemes. Crossley and Graham (1984) pointed out "The absence of data within developing countries is especially critical" since, as Beeby (1978) pointed out, "Historical factors have ensured that educational research throughout the third world has become particularly dominated by the methods and assumptions of positivistic science, which have so proved of limited value" (p. 151).

Vulliamy (1980) maintained that through their concern with the everyday practices of teachers and students, case study methods are well placed to identify important constraints and innovation which may not be apparent to policy makers who necessarily lack a detailed understanding of the local context in which innovations are being attempted. Sharp and Green (1975) and Ball (1981a) stated that the absence of such studies in developing societies has dire consequences for any sociological or comparative analysis of schooling. As Ball (1981b) argued:

> It is virtually impossible to find sociological accounts that employ the words and meanings of the educated' themselves, as sources of data. In so far as sociologists are able to contribute to the deliberations of policy making, they need theories of schooling which articulate with the realities confronted on a day-to-day basis by teachers, pupils and administrators. Furthermore, the sociological focus on education in developing societies has been, and continues to be, incredibly narrow. Not only do we find a tendency of international aggregation. The vital differences between elite and mass schooling, Christian and Muslim schooling, day and boarding school, etc., have been glassed over (p. 311).

Crossley and Graham (1984) argued that the main strength of the

case study technique as a research methodology lies in their maximation of the ecological validity of the data. The concept of "ecological alidity" was originally developed in threats to the external validity of experiments, but more recently both Atkinson (1979) and Hammersley (1979) have demonstrated its importance in any consideration of ethnographic and case study methodology. According to Crossley and Graham (1984, p. 198), ecological validity refers to the extent to which behavior observed in one context is generalizable to another. To put it simply, the problem with more traditional research methods, such as questionnaires or experiments, is that the methods are unlikely to give an accurate portrayal of the realities of teaching in a natural or conventional setting. Such considerations are especially relevant to the study of educational innovations. Crossley and Graham insist, stating that questionnaire surveys are prone to the reproduction of rhetoric, where respondents are often unwilling to admit "failures" for fear they will be partly blamed for them. Questionnaires also have difficulty focusing upon either the process or the unanticipated outcomes of innovation. The structures of experimental design are such that only very rarely does the setting approximate the realities of "normal" schooling to which generalizations need to be made.

Case study methods have been subjected to numerous criticisms and they are still "often regarded with suspicion and even hostility" (Adelman, Jenkins & Kemmis, 1976, p. 139).

Crossley and Graham (1984, p. 198) stated that case study methods can play a part in contributing to a greater democratization of research through the provision of reports that are comprehensible enough to those studied to allow them to give feedback on them. This

is particularly important in developing countries where fewer teachers, or even policy makers, are likely to have research expertise. On the other hand, they share with others some considerable misgivings concerning the evaluation of the case study tradition. Spindler (1982, p. 8) argued:

> As in-depth study that gives accurate knowledge of one setting not markedly dissimilar from other relevant settings, it is better to have in-depth, accurate knowledge of one setting than superficial and possibly skewed or misleading information about isolated relationship in many settings

Vulliamy (1981) and Crossley (1983) argued:

> Such a view contains an implicit assumption that, in case studies of schooling, issues concerning ecological validity are likely to be more important than those concerning population validity. This may often be true, but attempts should be made to address such issues when writing up research (p. 37).

Bracht and Glass (1968) pointed out "Nevertheless, notwithstanding these, the issue of potential generalizability is a critical one. High ecological validity is a strength of the case study method, low population is a weakness" (p. 19). Population validity, according to Bracht and Glass (1968), refers to the extent to which generalizations can be made from the research sample to other populations. Vulliamy (1980) demonstrated that comparative case studies can also be used to enhance the potential generalizability of research findings.

Another potential weakness of case studies is their failure to situate action in a social or historical context (Crossley and Graham 1984). Whitty (1981) criticized some case studies for neglecting the sociological and political realities of schooling. Reynolds (1980) addressed similar criticisms to both evaluation case studies and research in the "new sociology of education", and Foster (1972, p. 31) dismissed the ". . . whole anthropological tradition of educational

case study in like manner." For some comparativists the promotion of the case study may be seen to lead away from the pursuit of comparison itself. It is also argued that the aversion of many comparativists to detailed case study research at the school level is misplaced. Rather, the potential of such work within the field is considerable. Case study research need not be purely descriptive; it need not be limited to the micro level; and it need not ignore comparative analysis itself. By focusing upon the complexities of educational practice, it can lead to important modifications of both educational policies and comparative theories of educational systems. Furthermore, given recent methodological developments within educational research and evaluation, along with adequate attention to the rigors of its parent disciplines, case study research need not be the "shallow end" of any educational research. Indeed, while the case study method, like all modes of disciplined inquiry, has notable weaknesses and limitations, it is suggested that, where the focus of inquiry is appropriate, the careful application of such research methods has much to offer that 'lose unity of separate though thriving currents' (Epstein, 1983, p. 28) that is comparative education (Crossley & Graham, 1984, p. 203).

## Process for Development of Recommendations

Yarwood (1971, p. 232) stated: "Agency policy making may be considered a cyclical process with five sequential stages: initiating, preliminary drafting, public participation, final drafting, and reviewing." Yarwood found that:

> In the concept of social decision making, vague commitments of a normative and political nature are translated into specific commitments to one or more causes of action. In this sense, recommendation processes and the

> policy alternatives to choice can play an important role in the decision making process for policy formulation (p. 232).

Yarwood argued that, "Since decision making includes an element of choice, it is the most deliberate and voluntaristic aspect of social conduct" (p. 232). In the process of development of recommendations for policy formulation or to orient cause of action, Yarwood suggested taking into consideration three conceptions of decision making with assumptions that give varying weights to conscious choice of the decision makers: (1) rationalist models which tend to posit a high degree of control over the decision situation on the part of the decision maker; (2) the incrementalist approach that presents an alternative model referred to as "muddling through" which assumes much less command over the environment, and (3) a mixed scanning which combines the rationalistic and the incrementalist approach.

Copa (1984) stated that policy analysis, is complex and multi-optioned, the policy analyst's role is seldom simple, but the search for policy alternatives . . . is an essential undertaking. He suggested the following procedures for policy recommendations: ". . . statement and analysis of the problem and its implications, surveying the scene, special aspects to be considered, summary and policy alternatives, conclusions and recommendations" (p. 3). Following this process, Copa (1984, p. 10) suggested, "Each policy alternative should be discussed briefly to make the subject of study (or the problem) clear and to give some background." Following this discussion are the policy recommendations that are thought to address the role of the decision maker in the policy arena of the problem. Copa sustained:

> Recommendations should be as specific as the preceding

> analysis allows and should be based on the examination of the source of the problem. Each recommendation should be following by a listing of its available relevant facts, assumptions, contributions to decision making purpose effectiveness, feasibility, and integration (p. 10).

Helwig (1984, p. 30) found that the

> . . . purpose of the statement and analysis of the problem is to give some general background and to generate policy alternatives. He suggested that in the process of recommendation each alternative should be measured against specific criteria addressed to the problem, as well as its impact, constraints, limitations and consequences.

According to Swanson (1984), policy recommendations are focused directly on the desired goal and based on the purpose oriented definition of the elements involved. Sheppard (1984) considers that in the process of policy recommendation, after careful analysis of the advantages and disadvantages for each policy alternative the alternatives are recommended according to which alternatives would be most effective.

Maurice (1984, p. 48) stated:

> Consideration for policy recommendations and deliberations must be converted into three basic requisites: (a) the determination of the specific policy objective to be pursued; (b) the development of a theoretical understanding of the field (in terms of both the existing legal framework within each recommended policy that will be implemented and the alternative explanations for the circumstances that create deficient conditions; (c) the assessment of policy arena to identify participating interest groups and to note their potential influence on perspective policies.

Maurice further sustained:

> Although policy alternatives that are recommended are derived from the use of specific criteria, and although they were generated in an atmosphere of discussion and compromise, there is still some discomfort about recommending specific policies as preferred to others (p. 48).

Finally, Maurice (1984) argued that:

> Such discomfort arises because each policy has its unique value and its inherent disadvantages. Not knowing

> the range of policy choices the policy maker will face, and not knowing the compromises that may be necessary in the policy development process, it is difficult to ascertain which policy alternative will 'best fit' the circumstances existing at the time of policy development. . . . therefore the most prudent course of action is to examine the policies from the perspective of the contribution they can make to the field and to provide a detailed analysis so that the decision maker can have some knowledge if any of the policies to be pursued (p. 48).

Robinson (1969, pp. 134-135) stated that "Recommendations are precipitated from the conclusions in that they propose a course of action which should be taken in light of the conclusions." Robinson argued that "The statement of conclusions is perhaps the most basic statement of truth the writer can make after he has done the best job possible in analyzing and interpreting his data." He further suggested

> In making a report, the place of conclusions and recommendations is at the end section of the report. The placement of conclusions and recommendations at the beginning of a report poses the risk of alienating the attention of a reader who takes a subjective, dogmatic exception to the conclusions (p. 134).

Robinson (1969 p. 134) further argued that "Such a reader becomes so preoccupied with bolstering his mental defenses against adopting the recommendations that he is prone to read and accept little, if any, of the supporting analysis which follows."

## Extrapolating From One Culture to Another

Francis (1956, p. 34) in a Horace Mann lecture stated:

> The third dimension of the demands on education is the need for establishing intercommunication among the diverse cultures of the earth as a basis for building a world community. There was a time when acquaintance with the elements entering into western civilization would entitle one to qualify as an educated citizen of the United States. This is no longer true. The responsibilities of American citizenship in our closely knit world demand some knowledge of the diverse cultures of the East. For our own protection, as well as in the interest of our obligation to

> mankind, we need citizens who can understand the people of India or Brazil, on their own terms; who can comprehend something of the clash of values taking place in China or Egypt as they attempt to reconcile ancient traditions with the development of modern industrial society; who can see these and other people once so alien to us not only as children of a common humanity, but also as the offspring of their own environments and the peculiar sets of conditions which have shaped their value systems and their institutions

It was Amadeu Mahtar M'Bow, the distinguished Senegalese educator, who concluded the Lagos Conference of African Ministers of Education in 1976, by saying that "Present day systems of education are a means of perpetuating ways of thought and life that are different from those of the African societies. The full development of cultural identify cannot be ensured unless the educational systems inherited from colonial days are called in question."

Bembeck (1976, p. 75) has also argued that "Because of the growth of multi-cultural societies, educational planners, politicians, and academics are increasingly concerned about educational change processes in cross-national and cross-cultural context."

Carton (1984, p. 151) stated:

> The analysis of the market--economy industrialized countries may seem quite foreign to the situation in developing countries, and more especially in the less advanced of them (most of which are in Africa). It is quite obvious that their geographic, sociological, historical and political circumstances are quite different from those of countries which have entered into a new economic revolution.

Rudel (1982, p. 18) found that "Cultural lag occurs when one of two parts of a culture which are correlated changes before, or in greater degree than the other part does, thereby causing less adjustment between the parts." Haugh (1975, p. 105) found that "The transfer of information about technology, from one culture to another, is a communication process which couples performers (those who produce

technology) and users (those who react or use the technical information)." Haugh concluded by stating:

> (1) Integration of new technology yields both favorable and unfavorable results. Favorable results are freedom from unpleasant work, more convenient and efficient services, new and less expensive goals, and social and economic opportunity. Unfavorable results are job displacement, hazards, unequal development, degradation of the environment and increasing government intervention. (2) The effect of new technology is difficult to assess because the technology must be assessed in a future technological environment. Each technology develops its own time lags for adaptation and integration; (3) Federal government regulations, fund expenditures, economic policies, and support of R and D may advance or retard the integrating process (p. 105).

## Relationship of Vocational and Technical Education to Economic Development

Lewin (1985) found that the last two decades have witnessed unprecedented investment in educational provision throughout the countries of the developing world. Many countries have been allocating 15 percent or more of public expenditures to education and the enrollment ratios have grown significantly even in the poorest countries. Lewin noted:

> Five features of educational development stand out as shaping the recent growth of systems. There are relationships between education and national development; the impact of growth on quality; the importance of historical experience; the influence of selection and allocation systems; the experience with educational innovation (p. 3).

Throughout the 1960's many argued, as if it were self-evident, that a more educated labor force was necessarily more productive and would make more efficient use of national resources and available capital. The main aspects of this debate are still in recent papers. Well known studies demonstrate that correlations exist between GNP/capita and

educational provisions across countries; that within countries' educational levels, occupation and earnings were highly intercorrelated; and that economic growth could not be explained by increases in conventional factor inputs alone but only through the inclusion of a "residual" factor related closely to increases in educational provision. Psachoropoulous (1973) found that rates of return to investment in education were commonly high and were argued to be indicative of the potential contribution to economic development that increased educational provision could make. In the 1970's, faith in education as an "engine of growth" began to wane as some countries began to experience "educated unemployment" suggesting to some that there was an over investment in education at particular levels.

Lewin (1985, p. 3) stated:

> Few seriously contend now that investment in educational provision is, as motherhood might have been thought to be, an absolute good which is morally unassailable and economically wise. The development experience of the last two decades has laid bare some of the more obvious fallacies--that, for example, massive educational investment would precipitate sustained economic growth and that the goal of equality would necessarily be well served by expanding the educational franchise.

Even so he found that:

> There is evidence that, under specific circumstances, there is a strong probability that education can contribute to productivity, to health and nutritional status, to reducing fertility, to the realization of cognitive growth potential, to non-cognitive attributes of individuals, to increase participation of marginalized groups.

Lewin (1985, p. 19) concluded by stating that: "Such probabilities depend both on the articulation of national development goals about which there is some consensus and on the quality of curricular experience provided by educational institutions."

Psacharopoulos (1973), in cross national studies, found the evidence regarding the rate of return to investment in vocational education vis-a-vis general education inconclusive. Haddad (1980) in the World Bank Education Sector Policy stated that after 25 years of experience, the Bank was not in a position to say definitely how effective formal education was as a development strategy. Ducci (1980) argued that it was the failure of the formal vocational school, that is, its inability to adapt to the quantitative and qualitative requirements of skilled labor, which led to the search for nontraditional training delivery systems (such as Sena and Ince) in Latin America.

Morgan and Donna (1981) found that there have been serious shortcomings with this literature, beginning with the way in which questions pertaining to the efficacy of vocational education tend to be framed. They argued that typically this is in terms of causality whether vocational education leads directly to economic growth. Attempts to question whether vocationalization is a reasonable strategy to correct historical curricular imbalances, or to meet labor market demand quickly in former colonies are rare. Morgan and Donna (1981) continued by stating that attempts are also rare that try to understand the psychology of vocationalization in societies historically burdened with the yoke of dependence. Another shortcoming they found was "The failure to examine the historical role of vocational education in developed countries" (p. 18). Lewis and Mertens (1981, p. 18) cited:

> 'This omission leaves unexamined the City and Guilds tradition of Great Britain; the elaborate vocational training delivery system of the United States entrenched by the Smith-Hughes Act of 1917, and reaffirmed by the Vocational Education Act of 1963 and its 1968 and 1976 amendments; and the important role which formal vocational

> education plays in the social and economic development of Eastern Bloc countries (See Bogatav, 1975 and Benavot, 1983)'.

By failing to address adequately the obvious positive role of vocational education in these settings the debate has in effect been biased. If, following the Council of Metropolitan Scholars, Third World countries are to reject vocationalization, it should be at least explained as to why the practice continues unabated in the first and second worlds.

Finally, a third shortcoming cited, and perhaps the most telling, is that the research base for much of the literature is weak. They also stated that Blaug's (1974) statement (often cited) that formal vocational education makes little sense did not emerge from any discernible body of evidence. This dearth of research evidence, particularly country case studies has left the vocationalization debate too wide open to conjecture. Morgan and Donna (1981) concluded the study by stating:

> It would help, if it could be accepted as a principle, that there is some place for formal vocational education system (as it relates to economic development also). The task for countries which exercise this option is to delineate as best they can the limits beyond which a social form it is no longer realizable. These limits will be conditioned by a host of variables including historical antecedents, political antecedents, political ideology, the degree of control of economic levers and the stage and pace of modernization (p. 61).

In a study related to the expansion of vocational-technical education in underdeveloped and developing countries carried out by UNESCO (UNESCO Educational Studies and Documents, No. 33), it was shown that:

> The purpose of a more horizontal expansion of vocational education facilities, at secondary level, designed to provide a skilled and semi-skilled labor force more quickly, is to

> reduce the technological barriers to expansion in underdeveloping countries. These barriers illustrate one aspect of the problem of capital formation, which is basic to the question of how fast such countries can develop. The effort to acquire the technological basis for economic development is scarcely less difficult than the problem of capital formation. But to the extent that the effort is successful, capital formation should become easier. This sets the priority for education as an objective of economic policy (p. 12).

About the often raised question, if education is a consumption or investment, the study stated that in economic terms, expenditures on education may be regarded as consumption, in the sense of providing a higher cultural standard leading to more expensive tastes or investment, in the sense of providing a cadre of skilled labor. In planning its economic development programs, the government of an underdeveloped country should reduce as far as possible the element of consumption expenditure. A development plan would, for instance, not include costly and magnificent hotels unless it was expected to cater largely to foreign tourists or businessmen. Similar considerations are relevant in the building of schools, though they are very difficult to apply. Lavish provisions for schools may seem unnecessary, and at the primary level almost certainly are, but equally it may be desirable to have well appointed secondary and vocational-technical schools simply in order to encourage people to go to them since at that level attendance is not compulsory.

In 1986, the National Center for Research in Vocational Education at the Ohio State University, Columbus, Ohio, conducted a study on "Vocational Education and Economic Growth: Connections and Conundrums". For the review of the literature in that study, it is important to note the study's relevant findings. According to the study (Rosenfeld, 1986), no objective is more strongly identified with

the education reform movement of the 1980's (in the United States) than economic growth. Each of the reports that elevated education into the national spotlight links the quality of the nation's education system to the future strength of the economy. The Education Commission of the States stated it boldly in the title of its study team, "Task Force on Education Economic Growth." Rosenfeld (1986) sustained that The National Commission on Excellence in Education used the linkage as a challenge to stimulate action in A Nation at Risk (1983), "Our once unchallenged preeminence in commerce, industry, science and technological innovation is being overtaken by competitors throughout the world" (p. 17); the Twentieth Century Fund (1983) stated matter of factly that "They (the public schools) should ensure the availability of large numbers of skilled and capable individuals without whom we cannot sustain a complex and competitive society" (p. 17). Each report emphasized the importance of education to economic growth. The study (Rosenfeld, 1986, p. 21) emphasized that:

> Although the notion that improving the quality and quantity of education as related to the growth of the economy may have been a revelation to some people in the 1980's, it did not come as a surprise to the vocational education community. Economic growth has been a basic goal and an expected outcome of vocational education for three quarters of a century. It also suggested that there are many important economic links between vocational education and economic growth that cannot be reduced to econometric models. Moreover, even though these links are not always recognized and thus not utilized effectively, they are intrinsic to vocational education.

The study also shows that there are two assumptions about how vocational education was related to economic growth that molded policy during the early period of vocational education (in the United States, which began with the Smith-Hughes Act of 1917 and lasted until

mid-century). The first assumption concerned the quality of labor - that a more educated and highly skilled work force would lead to greater efficiency and higher overall productivity. The second related to quantity of labor - that vocational education could more effectively meet labor demand and supply a work force capable of meeting the needs of expanding urban industrialization. Each assumption implied the need for vocational education to meet the needs of and promote economic growth. Increased competition and growing economic disparities led to two new and related hypotheses about vocational education and economic growth. The first assumption is based on the notion that there are specific and identifiable resources in a community that encourage and nourish growth, and that vocational education is one of the sources. As such, it is a contributing factor in decisions regarding business start-ups and expansions. Vocational education, in this role is part of the local infrastructure. The Nation at Risk report emphasized:

> The Committee on Vocational Education convened by the National Academy of Sciences interpreted vocational education as a form of the program to meet or adapt to specific needs of employers, not the number of students trained or the pool created, that has the potential to attract jobs (p. 25).

This new idea of vocational education as infrastructure was appended to the traditional notion that vocational education facilities and program improve the level of skill in the local work force, crediting vocational education with a much stronger role in economic growth. The other new hypothesis is based on the notion that there are certain conditions in a community, sometimes referred to as a "business climate", that foster growth.

The study concluded by stating:

> Recent and anticipated conditions point to potential connections that are as yet unaddressed by government policies.

> One potential connection is based on the role of vocational education in the ongoing transformation of the basis of the economy from production of goods to the provision of services. The other potential connection is based on the expanding search for new ways to stimulate new business development. Although new information on the impact of small businesses on job growth drew attention to the emerging connections, it is more a new national perception of the entrepreneur, (not the multinational firm, as the key to future growth) that will generate the future connections. In this context, vocational education is itself both a service industry and an entrepreneur. The other potential connection they found '. . . is based on the fact that vocational education can do more than just prepare for employment; it can create new employment opportunities' (p. 25).

Those are some of the conclusions of this study. It can be seen by the literature reviewed that despite a wide open debate related to education as a relevant factor for economic development, as far as vocational and technical education is concerned, its relationship to economic development does exist.

## Comparative Studies of Vocational-Technical Education

Mallison (1977, p. 237) stated:

> The growth and development of industrial enterprises throughout the nineteenth century brought in a new phase in human existence which not only altered the character and structure of society but also made it imperative to organize a system of education that should not only educate the few (the elite) but also the huge mass of the people.

In studying vocational-technical education in different countries, Mallison (1977) developed the following findings:

> - Vocational-technical education is rapidly growing, is being liberally financed, and is eagerly sought after. Now, the proliferation of vocational-technical subjects, and the increasingly higher degrees of specialization required in industry, raise several important problems which are met characteristically by each individual country according to traditional beliefs and practices.

He identified the following important problems:

> a) the relationship between occupational training and general education.
>
> b) determining how soon specialization shall begin.
>
> c) persuading the right kind of person to take up technical work and making such work 'respectable' and attractive to those who have traditionally sought an academic type of education and white collar job, no matter how unsuited in reality they were to such jobs.
>
> d) Lastly, there is the problem arising from the rapidly changing needs of the world of work and of the newer and ample complicated techniques to be employed in industrial concerns.

Mallison (1977, p. 237) concluded:

> It is just that process that the major European countries are now through in making the effort required from them by the strident demands of modern technological progress.

## The Experience of Some Developed Countries

Hayes (1986, p. 3) stated:

> In a world of turbulence and uncertainty, three of the advanced industrial countries came through the recession better than the others: The Federal Republic of Germany, the United States of America, and Japan. The reasons for this achievement have been widely explored, sometimes in a broadly political way, sometimes from the point of view of research and innovation, sometimes by comparing fiscal, investment or marketing strategies. In a world of fierce competition, the search for the 'secret' ingredients that make for successful companies and, by extension, a successful country has caught the attention and imagination of people the world over. The worldwide popularity of <u>In Search of Excellence</u> reflects this interest, as does the never ending stream of reports about Japan.

Hayes argued:

> It is becoming clearer that in the transition from a society driven by the concepts of the manufacturing industry to one dominated by the flow of information, those who are successful are moving the development of human resources from the periphery of business concern to the heart of the organization. This emphasis is true for the private and

also for the public sectors (p. 3).

In a study under the title, "Four National Training Systems Compared: Achievements and Issues", prepared by the British National Economic Development Council (NEDC) and the Britain Manpower Services Commission (MSC), Hayes (1986) presented a comparative study of the national training systems involving West Germany, the United States, Japan, and England. Some of the main conclusions of this report are:

> (1) The general perception in successful organizations everywhere is that vocational-technical education and training does not itself ensure economic success, but equally widespread is the belief that investment in vocational-technical education and training is one of the indispensable ingredients for any organization, at the level of a country as a whole to the level of the organization, and also to the level of the individual; (2) Business leaders, politicians, public servants, researchers and ordinary men and women believe that the rate of change and the penetration of micro-electronic technology, fierce international competition, and the general climate of instability and uncertainty impose more demanding patterns of behavior on many companies than in the past and demands of individuals a far greater competence to position themselves in insecure labor markets (p. 3).

The report also made very interesting comparisons among the countries studied. Hayes (1986) did not compare the educational system as it relates to the organization, structure, intake, and other features of this kind. Instead, his aim was to offer some insights into why vocational-technical education and training in each country is developing in particular ways and what the expectations, attitudes and values are that underlie the actions in the different cultures. Hayes (1986, p. 3) found that:

> Such an analysis inevitably stresses differences and refers to occasional similarities. It does not easily account for the fact that the desired outcomes of vocational-technical education and training may be very similar because they are overwhelmingly influenced by an environment that is the same competitive world market and by a similar level of industrial development.

According to Hayes (1986) seven characteristics illuminate the role played by vocational-technical education and training in Germany, Japan, the United States, and Britain. The seven categories are as follows:

(1) Shared general beliefs - often unconsciously held, that find expression in the way most people expect things to get done;

(2) Shared views about goals related to vocational and technical education and training - certain explicit or unspoken assumptions about aims, attitudes and beliefs that exert an important influence on vocational and technical education and training;

(3) Shared beliefs about achieving vocational and technical and training goals and preferred ways for coping with what needs to be done;

(4) Goals perceived to be important for vocational and technical education and training;

(5) Key vocational and technical education and training inputs - the differences are more telling than the similarities;

(6) Benefits of successful vocational and technical education and training - characteristic value judgments in each country;

(7) Continuous learning - the reasons for fostering continuing employee learning (e.g., the 'learning company) (p. 3).

The results of his findings are as follows:

The Federal Republic of Germany:

* Shared general beliefs: A stable and well ordered society committed to national success.

* Shared views about goals related to vo-tech education and training: Quality in all products is a matter of pride, competent people make the difference.

* Shared beliefs about achieving vo-tech education and training: Consensus of employers, trade unions, state and federal government; clear responsibilities; long term planning.

* Goals specific to vo-tech education and training: All entrants to the labor market should be occupationally qualified.

* Key vo-tech education and training inputs: vo-tech education and training is more than acquisition of knowledge and skills; socialization at work is important.

* Benefits of successful vo-tech education and training: 'Overtraining' offers greatest benefits to the nation, the company and the individual; it is the foundation for flexibility.

* Continuous Learning: The only way to remain at the 'leading edge.'

Japan

* Shared general beliefs: Everyone has a place in collective success.

* Shared views about goals related to vo-tech education and training; Perfectionism in product performance through group activity.

* Shared beliefs about achieving vo-tech education and training aims: Consensus with clear responsibilities, long term strategic research, development, and detailed planning.

* Goals specific to vo-tech education and training: A highly educated nation; lifelong training and continuing education.

* Key vo-tech education and training inputs: General education up to age 19 aiming at the 'whole person'; 'blank sheets' for in-house training

* Benefits of successful vo-tech education and training: In - Company mobility rests on 'over training'.

* Continuous learning: The natural way of life.

The United States:

* Shared general beliefs: still the land of opportunity and mobility; a dash of the frontier spirit.

* Shared views about goals related to vo-tech education and training: Commitment to be number 1; 'the market is the master'.

* Shared beliefs about achieving vo-tech education and

training aims: Fast response to events and challenges (e.g., Sputnik, Japan).

* Goals specific to vo-tech education and training: All citizens should be able to look after themselves and be productive in the labor market.

* Key vo-tech education and training inputs: Broad curricula, great diversity.

* Benefits of successful vo-tech education and training: 'if you want to earn more dollars, you have got to go back to school'.

* Continuous learning: Now the only way to be and remain number 1 and see off the competition.

Great Britain

* Shared general beliefs: pragmatism; muddling through

* Shared views about goals related to vo-tech education and training: Scientific innovation by the most able; others act as instructed.

* Shared beliefs about achieving vo-tech education and training aims: Autonomy in a hierarchical structure.

* Goals specific to vo-tech education and training: Certification of the most able; overcoming skill shortages.

* Key vo-tech education and training inputs: High quality highly specific technical knowledge and skills

* Benefits of successful vo-tech education and training: Employee competent to carry out tasks; individuals' progress in education

* Continuous learning: to follow when tasks have changed (p. 3).

In commenting on their findings Hayes (1986) stated:

Even if we were not discerning enough to grasp the most significant characteristic of one or the other category correctly, these comparisons show the great diversity of perceptions. This diversity can be seen reflected in motivations for and timing of major actions, as well as in the language used for policy changes at national and corporate levels.

Looking at the similarities and differences of the four countries,

and with their distinctive flavor freshly in mind, we can look at three issues that have an important bearing on the effectiveness of the contribution vo-tech education and training can make to economic and personal success. Looking to the future, we find they also throw light on the support vo-tech education and training can lend to the efforts in all countries to stay competitive and to provide employment. The issues are not new, but I believe they have acquired a new significance in this period of transition from one historic era to another. Their first concern is whether employees are primarily seen as technical doers or as creative contributors to the organization. Secondly, whether vo-tech education and training is seen primarily as a means of person empowering or of meeting corporate needs; and third, whether vo-tech education and training adapts a reactive or proactive posture in the face of the fast changing environment.

## The Experience of Other Countries

The United Nation's Educational, Scientific and Cultural Organization (UNESCO) published in 1984 a comparative study in technical and vocational education prepared by 16 countries entitled, "Policy, Planning and Management in Technical and Vocational Education." From this study we can see how other countries have experienced vo-tech education and training.

### Algeria

Algeria is in the process of reorganizing its whole approach to vocational-technical education within the framework of the current five-year plan, so not all the policy making and administrative

structures required are as yet in place. Since 1972, the thrust of policy has been to create a common system of basic education consisting of nine years compulsory schooling for all. In the course of these reforms, vocational schools training qualified workers at secondary level were done away with and schools for technician education were created at the upper secondary level. This program was recently created to strengthen technical education and training at secondary and post-secondary levels. This unit will work closely with other ministries interested in vocational-technical education, either because they engage in it directly through their own institutes of technology or because they hire graduates. The unit will also work closely with industry in organizing the practical training required if young people are to achieve qualifications that have validity in the work place. The body primarily responsible for coordinating all these efforts is the Ministry of Planning and National Development, which also has major responsibilities for allocating investments.

Argentina

A special body responsible for vocational-technical education, the National Council of Technical and Vocational Education (CONET), is integrated into the organizational structure of the Ministry of Education and Culture. Originally constituted in 1959 to oversee technical education within the school system, the authority and functions of this body were considerably enlarged in 1971 to include training. It is an autonomous agency with its own structures and can consult the executive authority directly through the Ministry of Education. A special department of planning is responsible for

curriculum development and for gearing programs to manpower needs. The lines of direct connection to educational and training units are through the two respective inspectorates and the regional inspectorates under them, which are responsible for executing the programs and norms adapted in the institutions and units coming within CONET's jurisdiction. CONET also performs a standard setting function for vocational-technical education in institutions outside its direct jurisdiction, in terms of access of graduates of these institutions to post-secondary education in institutions which are under its jurisdiction.

CONET's governing board is appointed by the Executive Authority and includes the President and seven other members, three representing technical teacher's associations, two representing associations of enterprises, one representative from the Ministry of Labor, and one representative of industrial training staff associations.

CONET as a whole is responsible for planning, coordinating, implementing and evaluating vocational-technical education and training and for coordinating school and training center programs with the needs of the economy.

## Australia

Australia is a federal country with the responsibility for education shared between the national authorities and the individual state governments. The national structures for policy making, planning, coordinating and managing education are roughly paralleled by state structures, where most of the responsibilities lie. Because of this federal pattern and the autonomy of the states in educational

matters, educational structures have not developed along uniform lines and so vary from state to state.

Technical and vocational education is the responsibility of the Department of Technical and Further Education (TAFE). The TAFE in individual states receive some of their funds through the TAFE Council at the national level. Virtually all vocational-technical education and training in Australia is offered at post-secondary level, so that TAFE comes within the purview of tertiary education, although the institutions under its authority are distinguished from higher education institutions: the colleges of advanced education and the universities. The Tertiary Education Authority is responsible for coordinating TAFE with higher education. The newly established Industrial and Commercial Training Commission (1981), under the State Ministry for Industrial Affairs, is the agency through which manpower planning and employment will be coordinated with education.

Sudan

Vocational-technical education in the Sudan is the responsibility of the Directorate of Technical Education. It is interesting to note that all education in Sudan is decentralized, with responsibility residing in the regional administrations, except for vocational-technical education, since this is so closely linked with social and economic development.

Planning of vocational-technical education is carried out within the Ministry of Education, which is advised by various research bodies, national councils and planning councils. Higher vocational-technical

education policy making and planning functions are carried out by the National Council for Higher Education.

Indonesia

Vocational-technical education within the school system comes under the authority of a Directorate for Vocational and Technical Education attached to the Directorate General for Primary and Secondary Education within the Ministry of Education. This central office at the national level is mainly concerned with planning and development, while the Regional Directorate for Vocational and Technical Schools is responsible for day-to-day administration. Policy is determined at the national level in accordance with the development planning objectives adapted.

While the Ministry of Education is responsible for the longer courses of vocational-technical education, a number of other ministries are involved in education and training in the fields under their responsibilities, for example, Agriculture, Industry, Mining and Energy, Communications, and Health.

Czechoslovakia

Policy making, planning and administration for vocational-technical education are fully integrated into a total education system. Overall educational policy is determined by the Federal Assembly of the Czechoslovak Socialist Republic and the legislative bodies of the two federated republics, which have similar structures for education. Policy is centrally administered by the federal government and the Ministries of Education of the Czechoslovak Socialist Republic. The

Ministries of Education administer universities and research institutes directly, while all other educational institutions and installations are administered by departments of education of the National Committees. The National Committees have special responsibility for coordination of educational activities of all kinds and for coordination with enterprises and public organizations. In commenting on the organization structure for administration of vocational-technical education and training in those countries, the UNESCO' study concluded by stating:

> The structures presented are as varied as the countries that designed them. These range in the economic development from countries with a primarily agricultural economy, to highly industrialized economies. In size they vary in scale from the continental, to very small countries (p. 35).

The study also pointed out that "Some of the vocational-technical education systems and the related administrative structures have their roots in the last century, when industrialization was getting under way, while others are only a few years old" (p. 35). Despite this variety, the study discerned some general pattern. In terms of prime responsibility for setting and executing policy for vocational-technical education and training, there were two major patterns. In the first pattern, virtually all aspects of vocational-technical education and training come under the national education authorities or are thoroughly integrated into the educational system in some other way. In the second pattern, education and training come under the aegis of separate authorities with degrees of coordination that vary considerably from country to country.

Some systems are highly centralized, with major functions residing in the central government or its agencies. In other systems, state or

regional authorities have considerable leeway not only in the day-to-day management and administration of vocational-technical education but also in formulating policy and planning for future development. A third pattern may be distinguished in which local authorities or individual institutions take on prime responsibility, but in these cases there are mechanisms at national level setting standards and guidelines that must be followed if the local authorities or institutions are to be accredited or to receive public monies to finance their operations. In virtually all of these countries, various advisory and representative councils play an important, and often central role.

## Summary

The first section of this chapter highlighted the purposes and scope of comparative education studies and historical background related to the methodology applied. The literature was selected to cover the following topics: (a) methodology of comparative studies, (b) process of development of recommendations, (c) extrapolation from one culture to another, (d) relationship of vocational-technical education and training to economic development, (e) comparative studies of vocational-technical education and training, and (f) summary.

The following topics were uncovered due to the extent of the whole study:

1. The role of vocational-technical education in developing countries.

2. The structure and organization of vocational-technical education.

3. Policy determinants to be considered in developing a vocational-technical education system.

4. Planning vocational-technical education and training in a developing country.

5. Financing vocational-technical education.

It should be emphasized that the lack of related literature involving comparative vocational-technical education studies relating developed and developing countries has forced the study to take a restricted path. The topics uncovered in this chapter are covered in the second stage of the study. Finally, emphasis should be placed on the fact that no studies have been done on comparing specifically vocational-technical education and training in developed and developing countries as it relates to the organization and administration of the system.

# CHAPTER III

## DESIGN AND PROCEDURE

This study was basically conducted in two stages. The first stage was developed around a library and case study design. The second stage consisted of interviews based primarily upon the research questions and some aspects not covered in the related literature. Each one of the two stages were developed according to the following procedures.

### The First Stage

#### Review of the Related Literature

Based on the review of the related literature, the primary purpose of the study was systematically to identify, locate and examine sources of information related to the research problem and the questions to be answered, as well as to get acquainted with previous work that related to the problem under study and to examine possible strategies, measurement instruments, and procedures that could be productively applied in the study. The review of the related literature was focused on the following aspects:

1. Methodology of Comparative Studies
2. Process for Development of Recommendations
3. Extrapolating from One Culture to Another

4. Relationship of Vocational-Technical Education to Economic Development

5. Comparative Studies of Vocational and Technical Education

The Study of the Vocational-Technical Education System in Each of the Selected Countries

This involved studying the vocational and technical education systems of France, West Germany and the United States of America as it related to the following:

1.1 Their historical educational background

1.2 Their vocational-technical education system:

a) vocational-technical education at secondary level

b) vocational-technical education at postsecondary level

c) articulation between vocational-technical education and other forms of education

d) articulation between vocational-technical education and the world of work

1.3 Their organization and administration:

a) basic characteristic for administering and financing the system

b) basic framework for policy and planning formulation and implementation

1.4 Their teachers' training:

a) the teacher's preparation

b) the role of the teacher

1.5 Trends and issues in vocational-technical education

## Gathering of Information

The information gathered in this first stage was used both to provide the basic information framework to formulate implications for the development of vocational-technical education in Brazil and to provide the basis of information for the development of the second stage of the study (See Appendix A).

## The Second Stage

This second stage of the study consisted of a series of structured interviews based upon the research questions and the information gathered in the first stage of the study.

## The Subjects

Subjects for the interviews were selected on the basis of knowledge and experience considered to be significant for the study. Eight subjects were interviewed. These subjects included the following people: the Manpower Advisor of the U.S. Department of Labor; the Deputy Director of the Office of Vocational and Adult Education at the U. S. Department of Education; the Representative of the Social Sector at the German Embassy; the Representative of the Cultural Sector at the French Embassy; the Technical Education Specialist fro Latin American and Caribbean Region; the Technical Education Specialist for Europe, North Africa and Middle East Region; Senior Technical Educator Specialist; and the Vocational-Technical Educaton Specialist, all from the World Bank. However, it is worth noting that each interview represented individual opinions of the interviewee and did not necessarily represent official positions of their agencies.

## The Interview

The interviews were personally conducted by the researcher, in Washington D.C., following a written guide, sent in advance to the interviewees. The interview guide indicated the topics or aspects related to vocational-technical education to be addressed, the questions and the order in which they were to be asked, as well as additional prompting or probing. Interviews were conducted by the researcher on January 6 through 9, 1988.

Guidelines for the Interview. In order to obtain standardized data and information for comparison, an interview guide and questionnaire were prepared with the assistance of Dr. William Seggal, professor of comparative education in the College of Education at Oklahoma State University. The interview guide consisted of the following areas of interest:

1. The organization and structure of vocational-technical education delivery system
2. Framework for planning and policy development
3. Financial support considerations for vocational-technical education
4. Trends and issues in vocational-technical education

Validation and Pretest. The interview guide and questionnaire prepared was submitted to Dr. Francis Tuttle, former Director of the Oklahoma State Department of Vocational-Technical Education and Professor of Local Administration and Supervision of Vocational-Technical Education at Oklahoma State University; Dr. Lloyd D. Briggs, Senior Technical Education Specialist for Europe, Middle East and North

Africa Region at the World Bank; and Dr. William Segall, professor of Education at Oklahoma State University. Each validated, pretested, and analyzed the content validity of the instrument.

After the validation of the interview guide and questionnaire, a pretest of the analysis and procedure for the data and information was conducted, using data and information gathered by interviewing those mentioned education specialists. Feedback from this pilot interview was used to revise both the guidelines and the questionnaire. The revisions were mainly to clarify terms in the guide that were apparently unclear, to determine if questions elicited the desired information, to determine if the process evoked negative reactions from subjects, as well as to determine whether the resulting data and information could be quantified and analyzed in the manner intended.

## Analysis of the Results

The resulting data and information gathered on the literature were combined with data and information collected form the interviews to be analyzed and interpreted. The analysis and interpretation of these data and information were conducted following a space triangulation method taking the form of comparative research as suggested by Hammersley and Atkinson (1983). The data information source triangulation method consisted of ". . . comparing data or information relating to the same phenomenon but deriving from different phases of the field work and different points in the temporal cycles occurring in the setting" (Hammersley and Atikson, 1983, p. 198). Applying this method, the researcher was able to draw a frame of mind regarding the

material collected, analyze it critically and qualitatively report and interpret them on the basis of the researcher's estimation of its strength from which the findings were arrived.

In order to allow the researcher to answer the research questions and to extract implications, develop conclusions and formulate recommendations for the overall study, the researcher merged the findings obtained in the two stages of the study.

## Summary and Implications

A summary of the study comprised of the most relevant findings, the answer to the research questions and the main implications extracted for the development of vocational-technical education in Brazil was developed. The summary included the relevant findings, data and information gathered from the review of the related literature, the study of the selected countries as well as the interview conducted with the vocational-technical education specialists.

## Conclusions and Recommendations

On the basis of the main findings and relevant implications extracted from the overall study, conclusions were stated and recommendations designed to improve the existing vocational-technical education system in Brazil. Recommendations for further studies were also developed.

# CHAPTER IV

# FINDINGS

## Vocational-Technical Education in France

Vocational-technical education and training in France is basically developed at the secondary and post-secondary level in which regular vocational-technical schools offer occupational courses. There are also combined forms which involve vocational schools and apprenticeship training in companies.

The structure of organization and administration of the vocational-technical education and training system, as any other kind of education in France, is a primary responsibility of the national government. A governmental structure at the national level is responsible for the organization, decision making, policy formulation and planning, and administration of the whole system, including financing and issue of diplomas and certificates.

A detailed description of the vocational-technical education and training system in France, from which the major findings for this study were extracted are given in Appendix B.

## Vocational-Technical Education in West Germany

In West Germany, the responsibility for education lies with the individual states or Lander. However, vocational education is a

responsibility of the federal government and companies in the "dual system" which involves vocational schools and in-company training. Vocational education in Germany involves the whole secondary level and is compulsory.

The structure of organization, administration, decision making, policy formulation, and planning as well as financing the system of teaching are all arranged on the basis of shared participation and responsibilities which involve the federal and state governments as well as employers and employees' organizations. Appendix B provides a detailed description of the vocational-technical education and training system in West Germany, from which the major findings for this study were extracted.

## Vocational-Technical Education in the United States

In the United States, education including vocational-technical education and training are the responsibility of the federal states and local governments. The participation of the federal government is mainly related to national regulations and financing specific vocational-technical training programs which have been identified as national priorities.

The structure of organization and administration of the vocational-technical education and training system vary according to each state. However, the primary basis for organizing, administering, decision making, policy formulation, planning and financing vocational-technical education comes under the responsibility of the individual states and local government. Vocational-technical education

and training are in the public system of education and involves both secondary and post-secondary levels. Some training is provided by private agencies as a part of the free enterprise system. A more detailed description of the vocational-technical education and training system in the United States, from which the major findings for this study were extracted are given in Appendix B.

## The Major Findings of Literature Review

### Overall Framework for Decision Making and Policy Development

The vocational-technical education and training system of France, West Germany and the United States are sufficiently different from one another in terms of their structure of organization and administration as well as in the way in which vocational-technical education and training is delivered. These differences are mainly reflections of their political system and overall educational philosophy. In France, the educational administration includes vocational-technical education and training which is rigidly centralized in the hands of the national government. Thus, national government responsibilities and control over education comes from the regulations, buildings, staff and personnel, through examinations and issuance of diplomas and certificates. In order to exercise these functions, the national government utilizes a heavy administrative state structure in which decisions are made, policies are formulated and implemented, and the whole system is administered.

Contrary to France, the vocational-technical education system in

Germany is rigidly centralized in the individual state for the purpose of its organization structure and administration. This is also the case of any other kind of education in Germany. However, vocational-technical education and training is a federal responsibility and concern not only for national regulations but also for carrying out financial support for research and in-company training in the "dual system". These functions are exercised through an administrative structure which involves federal and state government as well as employers and employees' organizations.

In the United States, the basis for structuring, administering, developing and delivering vocational-technical education and training rests on the federal states' governments and local communities. Thus, the structure of the organization can be said to be characterized by diversity, according to each state. The involvement of the federal government is mainly in terms of federal legislation and support for specific training programs which holds national interest.

## The Teacher's Training

Although the training of teachers may be considered very different in the three countries, they share the same objective--vocational-technical teachers must be both occupationally and professionally competent. Though following different strategies, each country is trying to reach this basic objective in their training of teachers. France is using the Ecole Normale Superieure de 1'Enseignment Technique, the Universities, the Ecoles Natinales d'Inginiurs Art et Metier and the World Market to recruit, prepare and training their teachers. Germany is using its vocational training school

universities and the firms for the same purpose. In the United States, a great variety of methods in teaching has been applied through college and universities to train the teachers they need. In fact, all three countries are aware that the success or failure of its vocational-technical education and training system will depend on the quality of the teachers their educational systems are able to produce.

## The Teaching Profession

The teaching professions in the three countries are very different from one to the other. In France, teachers are public servants and traditionally the teaching profession can be said to hold a very high status in the eyes of the society. This is not the case with Germany and the United States. In Germany, the teaching profession is characterized by a high level of hierarchy which varies according to levels and the nature of the type of instruction they teach. In the United States, the teacher is simply viewed as a professional who puts his work on the business of education.

## Financing Vocational-Technical Education and Training

There are some important differences to note among the three countries. However, for the most part, the expenditures on this type of education come from public funds. Since vocational-technical education and training is by its own nature a very expensive one, each country is trying to find the best way to cope with the financial problem to fund their system. The most common approach found in the three countries has been to increase the participation of businesses

and industries communities in the educational process. Such participation can be either by involving them into the training process itself or by financing training activities provided by the government or both. This has been the case of France where in a general sense all kinds of education is financed by the national government, technological education is also financed by business and industry. There is an imposed tax on enterprises which employ ten or more wage earners to spend a minimum sum each year on the training of their employees. The amount calculated is a percentage of their total wage bill (1.1 percent at present). This employers' contribution is quite separate in the amount and nature from the apprenticeship tax intended for the financing of initial training which is carried out by the employer (apprenticeship tax) and the state.

In Germany, the basis for financing vocational-technical education and training mainly lies on the individual states but either the federal government and the firms participate in sharing costs especially in the "dual system". In the United States, though the federal states are the basis for financing vocational-technical education and training, there are also federal participation as well as business and industry participation. This is done by the financing of specific programs for the former and by donations of equipment, laboratories, workshops, et cetera for the latter. Usually, the student also pays for his/her training (there are some exceptions). This is not the case for France and Germany where the student, instead of paying, receives a certain amount in payment for his/her training as is the case of the apprenticeship training programs in those countries.

## The Trends and Issues in Vocational Technical Education and Training

Trends and issues are basically influenced by two types of factors: the internal factors which are those related to the social, economic, political, scientific and technical development in the domestic life of each country; and the external factors which involves the projection of those international factors on an internal arena. In the three countries, vocational-technical education and training tend to share the same trend for the next few years. It is to be expected that the main role of these systems of specialized education will be more oriented toward two specific aims - to cope with the change in the demographic, economic and employment conditions in those countries and to ensure for each country international competitiveness in the exporting of goods and services in a sophisticated technological world market.

## The Offering of Programs

In the offering of programs, the differences among the three countries are substantial. France is returning to offering apprenticeship programs in close relationship with business and industry. It is also strengthening the secondary level with programs on the basis of a better articulation between the vocational and the general system of education. At the post-secondary level, the programs offered at the I.U.T.'s are the most popular and successful ones.

Germany is very devoted to the tradition of the apprenticeship programs which involves the whole secondary level. Post-secondary programs are also gaining ground on the basis of its long relationship

between the school and the productive system. In the United States, vocational education at the secondary level is more oriented to occupational career exploration whereas technical education at the post-secondary level is the basis for specialized programs. A shared characteristic observed in those countries is the growing in the offering of post-secondary programs in close articulation with both secondary and colleges and universities programs, including continuing education.

## Results of the Interviews

The results and findings of the interviews were analyzed, interpreted and summarized as follows:

I. Questions concerning the role of vocational-technical education and training in a developing country like Brazil.

All those interviewed agreed that: (1) vocational-technical education and training should play the same role as academic or general education for the social and economic development of the country; (2) that vocational-technical education and training should serve the individuals, businesses, industries, government and the society, since all will benefit in different ways from it. It follows that the needs of all should receive consideration in the planning and development of programs; (3) that vocational-technical education and training should serve all those in the society who need, desire and profit from taking the program. The Deputy Director of the Office of Vocational and Adult Education at the U. S. Department of Education added that those having social and economic needs should have access to vocational programs if they had a need for them, and the ability for the instruction, but

programs should not be limited in purpose to serving those individuals with special needs; (4) that vocational-technical education and training should be considered a type of education holding the same values as academic or general education but strongly oriented toward the manpower needs of the society; and (5) that vocational-technical education and training should be an integral part of the total instructional program. Again, the representative of the U. S. Department of Education emphasized that the goal should be the training of a worker-citizen, who is competent in a civic sense, socially, emotionally, physically and economically.

II. Questions related to the structure and organization of vocational-technical education.

All those interviewed agreed that: (1) vocational-technical education should be organized as a separate public system of education but closely articulated with the general or academic system and with businesses and industries. The main advantages for this kind of organization cited are as follows:

(a) allows for integration of a comprehensive system to better serve all (cited by the French and German representative, and by the representative of the U. S. Department of Education);

(b) allows for a stronger, better focused program (cited by the representative of the U. S. Department of Education, and all representatives of the World Bank);

(c) allows for more appropriate instructional patterns/formats without having to adhere to normal general education class periods, et cetera (cited by the U. S. representative from the Department of Education; the senior technical specialist from the World Bank, and the

French representative);

(d) provides the necessary separation from academic administrative influence to assure high quality instruction and to preserve the fundamental purposes and objectives of vocational-technical education (cited by the representative of the U. S. Department of Labor, the U. S. Department of Education and the senior technical education specialist from the World Bank);

(g) provides identity and confiability to the system (cited by the technical/vocational education specialist from the World Bank).

When asked about what kind of education a vocational-technical education system in a developing country should deliver, the French representative and the technical education specialist from the World Bank (Latin America and Caribbean Region), agreed that vocational-technical education systems should deliver formal general education and training at any level. The main advantages cited were:

1. The needs of youth, young adults and adults must all be served to make the fullest contribution to individuals, business and industry and society (the French representative).

2. Ensure coordination and articulation of general education and vocational training objectives

3. Facilitate career choice (both cited by the technical education specialist for Latin America and Caribbean Region from the World Bank).

Five of those interviewed agreed that vocational-technical education systems should deliver formal general education at both the secondary and post-secondary levels. The main advantages, cited were: (a) allows for integrated planning to respond to needs of both the

trainee and the potential employer (cited by the U. S. Department of Labor representative, the U. S. Department of Labor representative, the German representative, the senior technical education specialist for Europe, North Africa and Middle East, and the senior technical training specialist from the World Bank).

One of those interviewed (the vocational-technical specialist from the World Bank) favored the idea that vocational-technical education systems should deliver only technical training at any level. The main reasons cited were: (1) job market orientation and (2) cost-effectiveness.

III. Questions related to policy determinant factors to be considered in developing a vocational-technical education system.

Those interviewed appointed--high rate of illiteracy; low society value toward vocational-technical education and manual work; lack of funds available for investment in education; poor level of leadership in political parties, education and business and industries--as the factors which have a negative influence in planning vocational-technical education systems in a developing country. Low society value toward vocational-technical education and manual work was appointed by all the interviewees as the most critical among the negative factors influencing planning vocational education in a developing country. The second most critical factor appointed by the interviewees was a high rate of illiteracy (appointed by all but the German representative who chose lack of funds available for investment in education). Poor level of leadership in political parties, education and business and industry was identified as a negative factor influencing planning vocational-technical education by all specialists

from the World Bank and the representative of the U. S. Department of Education.

The factors: high rate of employment; high rate of business, industry and agriculture growth and low rate of qualified workers were appointed as the factors having a positive influence in planning vocational-technical education in a developing country (selected by all the interviewees). The specialists from the World Bank and the two representatives of the U. S. (education and labor) selected the factor: high society value toward academic or general education and intellectual work as a negative factor influencing planning vocational-technical education. The French and German representatives selected this factor as having a positive influence.

The following strategies were suggested to overcome the most critical negative factors:

1. Low society value toward vocational-technical education and work:

(a) wages and income policies that reflect the economic value of vocational training and education of society to "respect" all forms of work (suggested by the U. S. representative of Labor and Education and the French and Germany representatives).

(b) quality improvement in vocational-technical education combined with a sustained campaign to improve public perception of the value of vocational-technical education (suggested by all the specialists from the World Bank and the U. S. education representative).

2. High rate of illiteracy: student success in vocational-technical education depends on a strong foundation in basic

education; thus development of a good basic education system serving a majority of students of the appropriate age group should precede major investment in vocational-technical education (suggested by all the interviewees; the U. S. representative of education suggested--make a major national trust to develop literacy [basic education] programs at the same time as, and combined with, the development of vocational-technical education system; use the occupational training as the vehicle to teach and give meaning to the learning to read, write and compute.

3. Lack of public funds available for investment in education: all those interviewed suggested private sector participation and creation of an apprenticeship tax.

4. Pool level of leadership in political parties, education and business and industry: special training and study tours abroad provide for selected education leaders (suggested by all interviewees); the specialists from the World Bank and the U. S. representatives suggested: special information program provided for businesses and industries' leaders including identification of influential business leaders who should help encourage support from their peers; the U. S. education representative suggested also: provision of incentives to businesses/industries to assist in the development of vocational-technical education, for example, to serve on industrial advisory committees in order to provide initial job experience for selected students and graduates.

The following policies were cited as having the main reasons for a successful delivery system of vocational-technical education and

training:

1. Involvement of business and industry in the planning process, development and implementation of each and every vocational program through the use of advisory committee (cited by all the interviewees).

2. Make occupational competency the first criteria in the recruitment and selection of teachers (cited by the U. S. education representatives and the senior technical education specialist from the World Bank).

3. Provide teacher training - preservice and inservice to vocational teachers designed to assist new teachers to become effective teachers of the occupations they teach (cited by the U. S. education representative).

4. Committed staff leadership at the national and school level; highly qualified teachers and school administrators; government commitment to provide adequate facilities and equipment (funding); good planning and implementation provided by the highly teachers and administrators (cited by all the interviewees).

5. Integrated planning based on identified manpower needs with sufficient flexibility in the system to allow it to keep up with changing needs. Close ties with industry to ensure that linkage is retained; freedom from teacher employment constraints related to general education systems (cited by the U. S. representatives and the World Bank specialists).

IV. Questions related to planning vocational-technical education and training in a developing country.

All of those interviewed agreed that vocational-technical

education and training should have both strategic or long range planning and short range planning. All interviewees emphasized that both must come together with periodic adjustments as necessary. The representatives of the U. S. (labor and education) and the specialists from the World Bank stated that strategic or long range planning should provide the process for thinking through the goals and objectives for programs which will best serve the needs of individuals, business and industry, and society; specific decisions of course offerings, et cetera, should closely follow the market instead of long range manpower projections. The German representative argued that developing a vocational-technical education system is a long term process which requires manpower studies, industry cultivation, attitudinal changes, development of graduate follow-up studies, program evaluation and refinement, et cetera. The interviewees continued by stating that a dynamic society changes so short range planning must come into play as well. The representatives from the World Bank emphasized that short range planning allows studies to be quickly adapted to the change in the economy. All of those interviewed agreed that both types of planning are essential to ensure the best use of resources; and that planning for vocational-technical education is totally different from planning for general education.

The following policies were identified as might be successfully applied in coordinating and articulating the vocational-technical education system with employment:

1. The use of advisory committees; the development and use of cooperative education program method as part of each training program.; were suggested by the senior technical educator from the World Bank and

both U. S. representatives. The vocational-technical education specialist from the World Bank and the French representative suggested that assistance of small and medium enterprises, "training brothers", are needed (state advisory/support services, private consultants on management/productivity/training).

The following major indicators from the employment system were identified as useful for planning structural changes in the educational system: (1) growth trends of occupations in businesses and industries; (2) potential impact of new technologies on the manpower needs of industry and occupations were identified by the French and German representatives; the U. S. representatives and the senior technical educator from the World Bank; (3) the vocational-technical education specialist from the World Bank identified relative wage levels and employment structure versus education and training output; graduate placement rate; industrial demand for graduates in fields in which they are trained, salary levels of graduates; comparison of salaries of program graduates with those of graduates from similar programs within the region; (4) all the specialists from the World Bank and the U. S. representatives identified - average length of time needed to find a job after graduation; variation of number of workers without qualification hired by the employers; average age of current workers in the occupation or turn over data; (5) the U. S. representative from the Department of Labor and the technical education specialist for the Latin America and Caribbean Region identified - actual vacancies as documented in job offering advertisement; career success of graduates in employment.

V. Question concerned with financing vocational-technical education and training.

All those interviewed agreed that vocational-technical education training should be financed by the government (federal, state and municipal), businesses and industries, and, by the individual (client or student). However, some interviewees added that:

1. All will benefit from vocational-technical education and training; all should pay (both U. S. representatives).

2. Involvement in the partnership helps ensure interest and support for the program (the French and German representative and the vocational-technical specialist from the World Bank).

3. Student tuition or fees. This will also provide the students with the feeling that they are investing in their own effort to prepare themselves for a career, job (the U. S. education representative).

4. Earmarked levies (wages, taxes); contract financing by enterprises (contracts between enterprises and training suppliers - justified for industry or enterprise for specific training) were identified by the French representative and the senior technical education specialist from the World Bank.

5. The French and German representative, the senior technical educator and the technical education specialist for Europe, North Africa and the Middle East Region identified: assessment of payroll tax from employers; cost-recovering schemes operated by schools/programs to cover a portion of training costs; apprenticeship programs which require significant employer contribution.

The following major areas or measures from international cooperation able to help a developing country to improve its

vocational-technical and training system were identified as follows:

1. Consultative services; staff training and development of curriculum (the U. S. representative).

2. Institute better linkages with foreign vocational-technical education systems and related institutions and enterprises; international cooperation to improve management and instructor/ teacher training (the U. S. education representative and the senior technical educator specialist from the World Bank).

3. The French and German representatives and the vocational-technical education specialist from the World Bank identified: develop strong linkages with institutions of developed countries (twinning arrangements); use of selected foreign consultants; careful use of fellowships abroad; study tour to managers or administrators and short periods of technical assistance.

The following three orders of priorities for public investment in education were selected by all those interviewed:

1. primary education

2. secondary education (including vocational)

3. post-secondary vocational-technical education, higher education

However, some of the interviewees emphasized that: (a) the best policy is to develop all aspects of the total program desired together to the extent resources are available rather than one part and the another in some priority order (the U. S. education representative); and (b) development of a good basic education system, develop a secondary general education including vocational education, and limit government subsidation of higher education to a reasonable level while

providing appropriate level of funding for post-secondary technical education (the vocational-technical education specialist from the World Bank).

Finally, the perception of those interviewed about what a successful system of vocational-technical education should become are interpreted and summarized as follows:

1. A system which takes into account the country manpower requirements of all types and levels and which is closely related to businesses and industries as well as taking into account the needs of individuals, all of which should be served to the greatest extent possible. Also, the system must be well planned and implemented with an appropriate degree of articulation with the overall education system (the U. S. education representative, the senior technical education specialist, the French and German representatives).

2. A system accessible to the mass, autonomous and self-financed and linked to the job market (the vocational-technical education specialist from the World Bank).

3. A system that most effectively responds to the country's human resources requirements for maintenance and development, under existing resources constraints (the U. S. labor representative and the technical education specialist for Latin America and Caribbean Region).

4. A system which involves the private sector and all levels of government; serves the individuals of all ages and is an integral part of the total instructional program (the U. S. education representative).

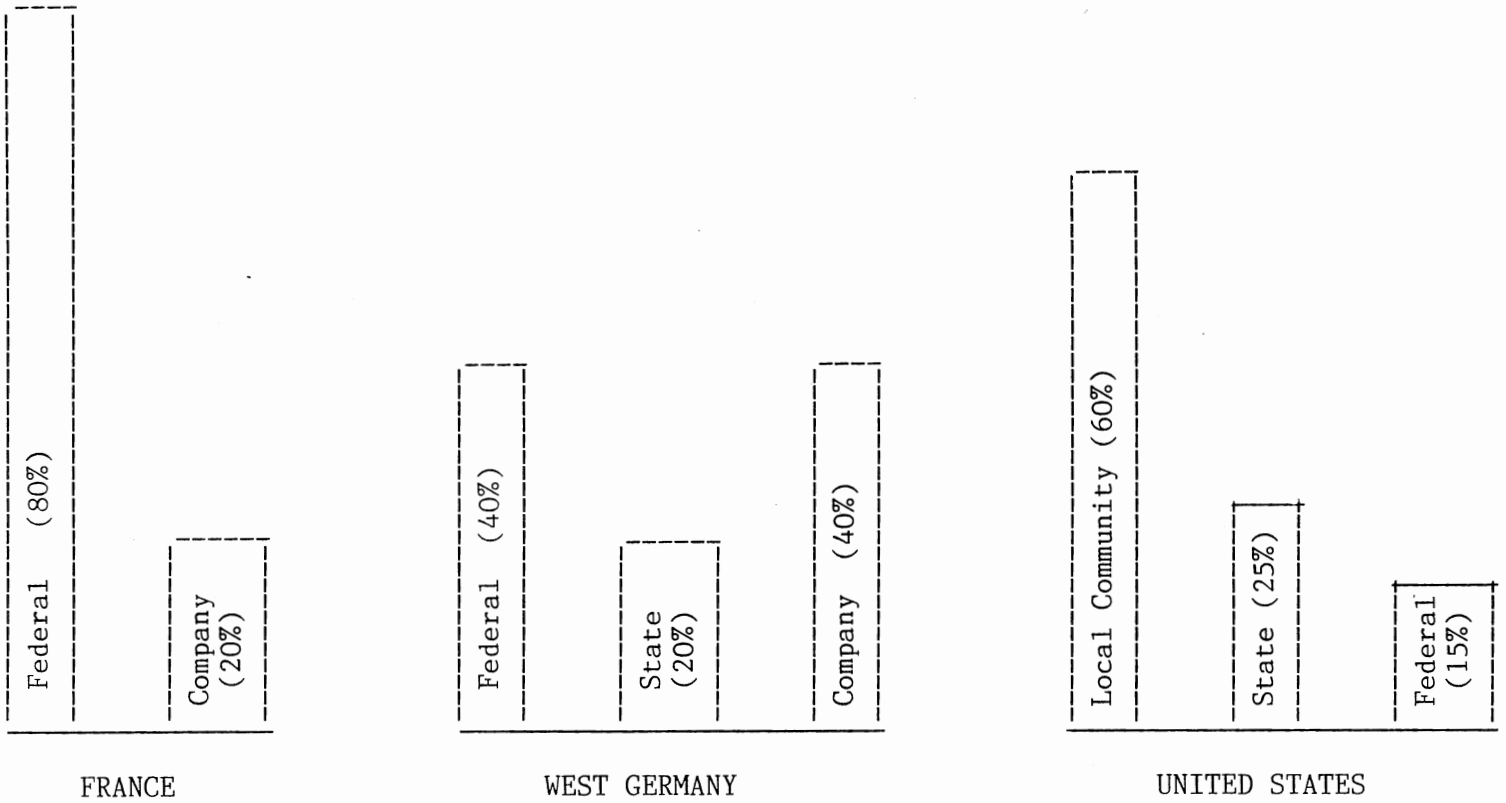
Summaries of the overall characteristics of the vocational-technical education systems in the three selected countries

are presented in Figure 1 and in the chart shown in Figure 2, respectively. Table I shows the educational expenditures for the three countries studied as well as the country of Brazil.

| | Structure and Organization | | Administration | | Decision Making | | Policy and Planning | | Teaching | | Financing | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Responsibility | *Primary | **Secondary | *Primary | **Secondary | *Primary | **Secondary | *Primary | **Secondary | *Primary | **Secondary | *Primary | **Secondary |
| Local Community | USA | | USA | | USA | | USA | | USA | | USA | |
| State | | USA | | USA | | USA | | USA | | | | USA |
| National/ Federal | FRANCE | | FRANCE | | FRANCE | | FRANCE | | FRANCE | | FRANCE | |
| State/ Federal | | | | | | | USA | | | | | USA |
| State/ Federal Company | FRG | | FRG | | FRG | | FRG | | FRG | | FRG | |
| Federal Company | | | | | | | | | FRANCE | | | FRANCE |
| State/Local Community | | | | USA | | USA | | USA | | | | USA |
| Federal/ State/Local Community | | | | | | | | | | | | |
| Company | | FRANCE | | | | | | | | | | |

*Primary - refers to primary responsibility for function
**Secondary - refers to agency with secondary responsibility for the function

Figure 1. Vocational-Technical Education Systems' Responsibilities in France, West Germany (FRG) and the United States (U.S.A.)




Source: The Social Indicators 1978, Table IV/1, Eurostat 1980 and International Handbook of Education Systems, 1980.

Figure 2. Estimated Participation in Financing Vocational-Technical Education and Training

TABLE I

EDUCATIONAL EXPENDITURES*

| Country | Year | Percentage of the GNP | |
|---|---|---|---|
| | | Education | Vo-Tech Education** |
| France | 1987 | 4.9 | 1.8 |
| West Germany | 1987 | 4.6 | 3.0 |
| United States | 1987 | 5.2 | 2.0 |
| Brazil | 1987 | 3.8 | .8 |

*This table includes the educational expenditures as related to the percentage of the Gross National Product for France, West Germany, the United States and Brazil.
**The figures for Vo-Tech education are rough estimates.

Source: International Handbook of Education, pp. 264, 326, 628.

# CHAPTER V

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter is primarily designed to provide a summary of the major findings of the study, answer the research questions, extract implications for planning and policy development in vocational-technical education and training for Brazil and specify recommendations for the improvement of the existing vocational-technical education system in Brazil and for further studies.

### Purpose of the Study

The primary purpose of this study was to analyze the vocational-technical education and training systems of France, West Germany and the United States of America in order to understand those systems in terms of their structure of organization and administration; the offering of programs; the basic framework for policy development and planning; the financial support for vocational-technical education and training; and, the trends and issues in vocational-technical education and training for the next years and then to draw implications and develop recommendations for Brazil.

### The Study

The study was divided into two stages. The first stage was

comprised of a review of the literature and the specific literature related to vocational-technical education and training for the selected countries of France, West Germany and the United States of America. The second stage of the study consisted of a series of eight structured interviews of vocational-technical education and training experts and decision makers. The combined major findings of the two stages were analyzed and reported in Chapter IV.

## The Major Conclusions

The following conclusions were based on the findings arrived at after a careful review of the literature and analysis of data and information gathered during the interviews.

### Conclusions Related to Research Questions

Research Question One: What are the basic philosophy, principles, mission and characteristics of the vocational-technical education and training systems in the countries of France, West Germany and the United States of America?

Based upon the findings, it is concluded that the philosophical bases for the development of vocational-technical education and training systems in those three countries are the same and they emphasize vocational-technical education as:

1. A means to serve the needs of individuals, society and the nation.

2. A means to provide equality of opportunity to all individuals according to their individual capacity.

3. A means to cope with social problems related to unemployment, and promote economic development.

4. A means to cope with scientific and technical advancement, as it relates to changes in technology, efficiency in productivity and world market competition.

Research Question Two: What are the main differences, similarities and trends in terms of structure, organization, administration, policy development, planning and implementation of vocational-technical education and training in those countries?

It is concluded that the differences, similarities and trends among the countries studied include:

1. France developed its vocational-technical education system on the basis of rigid centralization and control by the national government. Regulations, policy development, planning and implementation of policy are the responsibility and under the authority of the central government. Although there was a slight trend toward decentralization, it cannot be expected to bring about a major impact on the present conditions.

2. In conflict with France, the West Germany vocational-technical education and training system is very decentralized from the federal government but rigidly centralized in the individual state. Although vocational-technical education and training under the responsibility of the federal government enforced uniformity of regulations, it does not ensure uniformity of practice. Here, the main trend is toward more centralization by the federal government. However, change in this

direction is not expected to be a very significant one.

3. In the United States, vocational-technical education and training are developed under the responsibility of the states and local communities. The role of the federal government is to enact national regulations and to stimulate specific national, social and manpower programs.

Research Question Three: How is vocational-technical education and training perceived by different segments within the society as well as the society as a whole and what are the effects of these perceptions in the development of the vocational-technical education system in those countries?

Based upon the findings, it is concluded that differences in perceptions about vocational-technical education and training are reflected in both government and societal support and in the performance of the system. In the United States and West Germany where there was a strong society support for the vocational-technical education system, the system has been integrated in the whole public system of education and is experiencing outstanding development. However, in France, the slow development of its vocational-technical education system was mainly due to the fact that the conception of a "good" education has been reserved to general or academic education.

Research Question Four: What are the main problems related to the development of vocational-technical education and training those countries are faced with and what are perspective approaches for solving them?

On the basis of the findings, the main problems are: (1) coping

with changes in both technology and employment; and (2) articulation within the whole educational system and coordination between the educational and the employment systems. Perspective solutions were derived from support from government and society according to the culture of each country.

Research Question Five: What are the basic implications that can be concluded from those countries as related to vocational-technical education and training system that can be successfully applied in the improvement of existing vocational-technical education systems in Brazil?

Based upon the findings, it can be concluded that a successful vocational-technical education and training system rests primarily on two factors: (1) strong government support and (2) strong support from society. The immediate implication for Brazil, derived from that conclusion, to improve its existing vocational-technical education and training system are:

1. To increase both government support and public image in the society toward this type of education

2. Effective involvement of businesses, industries and communities through appropriate governmental policies

3. Rethinking its entire vocational-technical education and training system in terms of structure of organization and administration as well as programs in order to meet both efficient administration and real human resources demands

4. To re-organize its vocational-technical education and training

system as a separated administrative unity from the system of academic education through a federal agency unit specifically designed to develop this type of education.

Research Question Six: What are the basic aspects to be considered in the process of transfering the knowledge, experience, skills and policy development related to vocational-technical education and training system from those developed countries to a developing country like Brazil?

It is concluded that the basic aspects to be considered were changing experience and information on the basis of the outcomes obtained in those countries related to vocational-technical education and training and a critical rationale analysis of the contextual environment involved to produce these results.

Research Question Seven: What should be the importance of a vocational-technical education and training system in a developing county like Brazil in terms of its educational, cultural, social, technical and scientific development?

It is concluded that vocational-technical education and training systems should play a very important and unique role in all aspects of a developing country life. As concluded from the experience of developed countries, this type of education can make the difference between development and progress,
and, stagnation for any country.

Research Question Eight: What should be the importance of policy development and planning for vocational-technical education and

training system in a developing country like Brazil and what should be the basic factors and information to be considered in this process?

Policy and planning are means to scanning the country's needs and to searching for the best solution to meet these needs to the extent of the resources available. Therefore it can be concluded that a sound management information system should be a major concern of Brazil.

Research Question Nine: How can a country like Brazil face the problem of finance and cost effectiveness in vocational-technical education and training?

It was concluded from the study that there was no single formula either to finance or to make vocational-technical education and training a cost effective type of education. The best way to cope with these problems were: (1) all those who benefit and profit from vocational-technical education and training should pay for it; and (2) good and efficient management of the system as well as right orientation toward the real needs demanded by enterprises, individuals, society and the nation.

Research Question Ten: What can be done through international cooperation to help a developing country like Brazil to improve and develop to the fullest its existing vocational-technical education and training system?

It was concluded that there were several ways in which international cooperation could be helpful. The ways included: (a) careful use of foreign consultants, (b) careful and selected use of

fellowships at foreign institutions, (c) organized tours to selected foreign countries designed to observe, interchange ideas, information, and, study specific problems; and (d) effective use of the mechanisms for international cooperation. All instruments used for international cooperation when used effectively and combined with good access to international information systems can be said to be very helpful for improving existing vocational-technical education and training systems in developing countries.

## Discussion

As was found from the study, vocational-technical education and training are a major concern in practically all countries. It is viewed as an essential factor in the development process on two major grounds: (a) economic, including science and technology development, which presupposes the availability of skilled manpower; and (b) social terms in which vocational-technical education and training are oriented toward preparing people for employment in fields corresponding to their talents and aspirations. The goal is to ensure that every individual can have a chance to succeed and be able to adapt to changes in the employment structure. It strives for individual opportunity to achieve career goals and personal satisfaction as well as to meet the nation and society needs and, therefore, to promote the development of a cohesive and democratic society.

The goals of vocational-technical education and training as observed were true for either industrialized or developing countries. As we learn from the experience of those countries, although the historical cultural context can be said to be a matrix for all factors

related to the development of vocational-technical education and training, the economic and social factors are the most important to be considered in developing vocational-technical education training systems.

## Major Implications and Recommendations for Brazil

Based upon the major conclusions derived from the findings, the most relevant implications for Brazil were:

1. Brazil should develop a national concern and commitment toward the development of its vocational-technical education and training systems through support of government and the entire society.

2. Brazil should restructure and reorganize its vocational-technical education and training system to reach the following objectives: (a) identify in the educational system the schools, centers and other institutions or agencies which are concerned and committed to vocational-technical education and training; (b) organize these schools, centers, institutions or agencies as a national vocational-technical education and training system; and (c) administer these systems under the responsibility of a federal agency designed exclusively to the development of vocational-technical education and training including both the administration of the delivery educational system and policy formulation and planning.

3. Brazil should develop a national manpower plan which includes both the nation's manpower needs in the long and short ranges and the human resources needed for the newly restructured vocational-technical education and training system.

## Recommendations for Further Study

It is strongly recommended that other comparative studies involving specific aspects such as: teacher training methods; micro-level studies in classroom situation for comparative data; curriculum development; and administration of vocational-technical education and manpower planning be conducted to provide a better understanding of vocational-technical education systems. Also, comparative studies on the same aspects related to this study involving other countries are recommended.

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# APPENDIXES

# APPENDIX A

## COVER LETTERS AND INTERVIEW GUIDE

Oklahoma State University
SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION

STILLWATER, OKLAHOMA 74078
CLASSROOM BUILDING 406
(405) 624-6275

November 17, 1987

Dear

Mr. Osvaldo do Nascimento is completing a doctoral program of study here at Oklahoma State University. His dissertation focuses on a comparative study of vocational-technical education planning and policy development in selected countries.

It is our understanding that Dr. Lloyd Briggs of the World Bank in Washington has made tentative arrangements for conducting interviews with selected people.

The enclosed materials include his proposed schedule for those interviews.

I am sure Mr. Nascimento will be grateful for your cooperation and assistance.

Sincerely,

Garry R. Bice
Associate Professor

GRB/wr

Oklahoma State University

SCHOOL OF OCCUPATIONAL AND ADULT EDUCATION

STILLWATER, OKLAHOMA 74078
CLASSROOM BUILDING 406
(405) 624-6275

November 17, 1987

Dear

This is to communicate to you my personal appreciation for having agreed to participate in the interview for my study. I am sure your contribution will significantly add to my study.

I am enclosing the interview guide and the interviewee's questionnaire in order to give you enough time to answer it. The questionnaire provides an appropriate space for a response to each question. However, if the space provided for the responses is not enough, I would encourage you to use the space on the back of each sheet.

I am also enclosing a suggestion of a time schedule for my personal interview with you. Since my opportunity to be in Washington for this interview is only three (3) work days (from Wednesday, January 6 to Friday, January 8), I hope you are available on the time suggested in the enclosed schedule. Otherwise the date of January 8 (Friday) may be used to rearrange a possible alternate time schedule for the interview.

I would like to ask you to confirm in advance the time schedule suggested, or any other possible time, within the period of time that I plan on being in Washington, D.C. for these interviews. You can contact me at 36-9 South University Place, Stillwater, Oklahoma 74075 or by telephone (405) 624-1594).

Again I would like to thank you for your cooperation, and I am looking forward to the interview and expressing to you personally my appreciation for your help.

Sincerely,

Osvaldo Vieira do Nascimento
Graduate Research Student

OVN/wr

Enclosure

# THE INTERVIEW GUIDE

## I - PURPOSE

This survey is intended to provide information needed to determine how a country like Brazil can fully utilize the know - ledge and experience of developed countries, as they develop a technical and vocational education system. The main problem is that Brazil does not have a body of knowledge or pool of information avaiable to public policy makers in order to utilize knowledge and experience from the developed countries.

## II - THE STUDY

This survey is needed to complete a comparative study of selected aspects of vocational and technical education in the se - lected countries of France, West Germany and the United States, with implication for policy and program development in Brazil. It is to be used in a dissertation for a doctorate program in education in the School of Occupational and Adult Education at Oklahoma State University - U.S.A..

The study was divided into two stages. The first stage consisted of a tematic library study of technical - vocational education and training in the countries of France, West Germany and the United States. It is related to the following aspects:

- **The structure of organization and administration of programs in the delivery system:**
- the basic framework for policy development and planning for technical and vocational education;
- financial support for technical and vocational education;
- trends and issues in technical and vocational education for the future.

This first stage of the study was developed around a li - brary and case - study design on the basis of the litera- ture available.

III - THE REASON FOR THE INTERVIEW

The interview are the second stage of the study. By interviewing people with recognized knowledge and experience as policy makers and decision makers and international education specialists in vocational and technical education, useful information and data can be combined with the data and information drawn from the first stage of the study. This will enable the researcher to draw relevant implication and to develop sound recommendations that can be successfully applied to the development of policy toward improvement of the existing technical and vocational education system in Brazil.

IV - DIRECTIONS

1. This interview will adress technical and vocational education as it relates to the following aspects:

I - The role of technical and vocational education in the country.

II - The organization and administration of technical and vocational education.

III - Basic policy determinants to be considered in the organization and development of a technical and vocational education system.

IV - Planning and policy development for technical and vocational education.

V - Financing technical and vocational education.

2. At the begining of the interview, there is a space provided for identification of the interviewee, the agency and the current working position. There is also space for the interviewee to authorize his / her public identification. Only authorized public identification can be published, otherwise, only the professional title, agency and working position of the interviewee will be used publicly. Please complete this questionaire.

3. There are both structured and unstructured questions. Structured questions ask the interviewee to select among different **alternatives one which he / she considers the most appropriate. The unstructured questions allow absolute freedom of answer.**

4. It is very important that you have a clear understanding of each question formulated. So, be free to ask for clarification. Add any comment that you choose to any question. Although you are encouraged to answer all questions, please fell free to omit questions you prefer not to answer.

## THE INTERVIEW

### I - IDENTIFICATION

1. Name of the interviewee: _____

_____

2. Working agency : _____

_____

3. Current working position: _____

_____

### II - PUBLIC AUTHORIZATION

Do you authorize your name and the informations you gave in this interview to be published, if necessary, for the study ?

Yes: ____ No: ____

_____

Signature

City: _____ State: _____

Country: _____ Year: _____

## QUESTIONS

### I - THE ROLE OF TECHNICAL - VOCATIONAL EDUCATION AND TRAINING IN BRASIL

1. In your opinion, what role should technical - vocational education play in a developing country like Brasil ?

(1) ____ a very important role for its social and economic development.

(2) ____ only an important role for its social and economic development.

(3) ____ the same role as academic or general education does for its social and economic development.

(4) ____ only an economic role but not a social role in its economic development.

2. Who should be served by technical - vocational education in a developing country like Brazil ?

(1) ____ the individuals

(2) ____ Businesses and industries

(3) ____ The government

(4) ____ The individuals, businesses and industries government and the society.

Synthesize in a single statemen, the major implication of your selection:

3. What group (s) in the society should be served by technical - vocational education in a developing country like Brazil ?

(1) ____ all those who desire the programs ?

(2) ____ those who can afford a career in academic or general education ?

(3) ____ those groups who have recognized social and economic needs.

Explain, in a single statement, the major implication of your selection.

**4. In a developing country, technical - vocational education** should be considered:

(1) ____ a type of education which holds the same values as academic or general education does

(2) ____ a special type of education designed to meet specific group's needs

(3) ____ a special type of education designed to meet the manpower needs of businesses and industries

(4) ____ a type of education holding the same values as academic or general education but strongly oriented toward the manpower needs of the society

Explain in a single statement, the major implication of your selection:

## II - THE STRUCTURE AND ORGANIZATION OF TECHNICAL - VOCATIONAL EDUCATION

5. How should technical - vocational education in a developing country be structured and organized:

(1) ____ organized in the public system of general or academic education

(2) ____ organized as a public system, separated from the general or academic system

(3) ____ organized as a separate public system but closely articulated with the general or academic system and with businesses and industries and under the government supervision

List at least two major advantages from your selection:

6. In a developing country, a delivery system of technical - vocational education should deliver:

(1) ____ formal general education and training at any level.
(2) ____ formal general education and training only at the secondary level.
(3) ____ formal general education and training only at the post secondary level.
(4) ____ formal general education and training at both secondary and post - secondary levels.
(5) ____ only technical training at any level.

List at least two major advantage from your selection.

## III - POLICY DETERMINANTS OF BE CONSIDERED IN DEVELOPING A TECHNICAL - VOCATIONAL EDUCATION SYSTEM

7. Among the factors listed below, put a "P" or "N" mark on those which you feel have a positive or negative influence respectively, in planning and developing a technical - vocational education systems in a developing country.

(a) ____ high rate of illiteracy
(b) ____ high rate of employment
(c) ____low rate of qualified workers
(d) ____ high socio - economic class division
(e) ____high society value toward academic education and intellectual work
(f) ____ low society value toward vocational education and manual work
(g) ____ high rate of business industry and agricultural growth
(h) ____ lack of public funds available for investment in the social area, including education
(i) ____ poor level of leadership in political parties, education a business
(j) ____ high level of economic, technological and cultural dependency upon the developed countries.

8. From the negative factors that you selected above, what is the most critical one ? and what approach or strategy do you suggest to overcome it ?

( ) is the most critical factor

Statement of approach or strategy to overcome it:

9. From you experience, state at least two major policies related to two of the negative factors you indicated in question number seven above that were successfully implemented in a developed country to overcome the negativeness of such factores.

( ) negative factor
policy applied to overcome it:

( ) negative factor
policy applied to overcome it:

10. From your experience, name three major factores or policies that could be considered the main reasons for a successful delivery system of technical - vocational education and training.

## IV - PLANNING TECHNICAL - VOCATIONAL EDUCATION IN A DEVE - LOPING COUNTRY

11. In a developing country, technical - vocational education should use:

(1) ____ strategic or long - range planning
(2) ____ short - range planning taking no more than five years long
(4) ____ short - range planning taking no more than three years long
(4) ____ no planning at all

12. Name at least three advantage for using any type of planning you selected ( if any )

13. From your experience, name two measures or policies that might be successfully applied in coordinating or articulating the technical - vocational education system with the emplyment system.

14. From your experience, identify three major indicators from the employment system useful for planning structural occupational changes in the educational system

## V - FINANCING TECHNICAL - VOCATIONAL EDUCATION

15. From the list below, selected those who, in your point of view should participate in the process of financing technical - vocational education and training in a developing country.

(1) ____ the individual ( client or student )
(2) ____ the federal government
(3) ____ the federal, state and municipal government
(4) ____ the federal and the state government
(5) ____ businesses and industries
(6) ____ federal government and businesses and industries
(7) ____ state government and businesses and industries
(8) ____ federal, state and municipal government and businesses and industries
(9) ____ government at the three levels businesses and industries and the individual ( client or student )

16. Briefly clarifying the reasons for what you have selected from the list above.

17. From your experience, identify at least three different forms of financing technical - vocational education and training successfully applied in developed countries that might be useful in developing countries for the same purpose.

18. Based on your experience, identify at least three major areas, measures or policies from international cooperation that can help a developing country to improve its technical - vocational education system.

19. In a developing country, due to the lack of public funds, one of the major problems is to select priorities for public investments, specially in the area of education. Assume you are one who is in a position to select such educational priorities. Name your first three priorities for that area.

20. Explain in a single statement what should be a successful system of technical - vocational education for any country regardless its stage of development.

# APPENDIX B

## DESCRIPTION OF THE EDUCATIONAL SYSTEMS IN THE COUNTRIES OF FRANCE, WEST GERMANY AND THE UNITED STATES

The following sources were used in the description of the educational systems in the countries of France, West Germany and the United States as related in the pages summarized in Appendix B.

Mallison, Vernon. An Introduction to the Study of Comparative Education. London and Edinburgh: Morrison and Grigg Ltd., 1987.

Miller, M. D. Principles and Philosophy for Vocational Education. National Center for Research in Vocational Education, U.S.A., 1984.

"The Associate in Applied Science Degree-Policy Statement," Washington, D. C.: American Association of Community and Junior Colleges, National Center for Higher Education, 1984.

Vocational Training Systems in the Member States of the European Community-Comparative Study: CEDEEFOP Guide. Published by the European Centre for the Development of Vocational Training (CEDEFOP), Bundesalle 22, D-1000 Berlin 15, 1984.

Wirth, Arthur G. Education in the Technological Society: the Vocational Liberal Controversy in the Early Twentieth Century. San Francisco, CA: Intest Educational Publishers, 1972.

Though France is mainly an agricultural country, it is a land of small peasant proprietors who own farms that are easily cultivated on a family basis. Pride of ownership is, therefore, a widespread method of cultivation which by most modern standards is outmoded. Industrious, thrifty and hardworking, the French peasant is the real stabilizing force behind French economy. The idea of "une culture generale" dominates all primary school teaching and the text books used instill into the pupils a real love, knowledge and appreciation of French things.

The major industries have developed around the coal fields in northern France, but industrialization has not had the tremendous overall effect in a country the size of France that one might be led to expect. There is no highly developed or highly organized factory system, but rather groupings or family concerns where families still are much more evident and workers are conscious of their peasant origins--still highly individualistic and still very proud of the soil of France. In other words, the individualist nature of the Frenchman rebels against any depersonalization through a vast machine like organization.

France is a nation that stands for its belief in the value of the great humanistic traditions of French culture. Then, the existence of a dual system of education in France is not surprising; a primary stream and a secondary stream that never meet. That in large measure persists down to the proposed Longervison Reforms of 1945. Vocational-technical education only became a reality for the mass of the people by the Loi Astier of 1919; that is to say, when it became obvious after the first World War that highly trained and highly skilled workers were going to be increasingly needed in industry along with skilled technical experts.

At present, post-war reforms reveal that increasingly it has become easier to bridge the gap between primary and secondary education and even higher education. The creation of the technical and commercial baccalaureate, the college d'Enseignment Secondaire and of the Institute Universitaire de Technologie (IUT), is aimed at topping to the full all available technical and scientific ability from all sources.

## Historical Development

### From the French Revolution Up to the Beginning of the Twentieth Century

From the end of the old regime in 1792 up to the beginning of the industrial revolution (about 1860), most workers began their working lives without any kind of vocational training. Only top executives had any training. They received this training in the "grandes Ecoles" which are still called by the same name today. These elite colleges,

which were founded after the end of the seventeenth century and expanded to include colleges of engineering in the first half of the nineteenth century, still function today as a system for high level professional qualifications. The training of workers, on the other hand, took place mostly in the company. The abolition of the guilds following the French revolution led to a decay in the apprenticeship system, the only way in which skilled workers were trained under the old system. Industrialists found the training of apprentices too lengthy and expensive, especially as they had no real need for workers with special qualifications. So the apprentice system was only able to survive in a few sectors where mass production was not possible.

The industrial age really came to France with the Second Empire in about 1860 and altered the requirements for workers. The need was for large numbers of engineers, skilled workers, and above all, foremen to supervise and instruct the manual workers. The numbers of public servants and clerical workers also increased with the growth in administrative work.

Apart from a few large enterprises in which company training centers were established, it was clearly not industry but the "State" which met this new need for vocational training by introducing new training programs at more advanced levels--quite distinct from the apprenticeship system. In this way the basis for a vocational training school system was established. This idea had, however, taken root outside the school system administered by the Ministry of Education, and soon degenerated into the poor relation within the whole educational system. On the fringe of the public educational system, adult courses had been conducted since the end of the First

Empire in 1815, initiated by a few humanitarian or socially motivated school teachers. These courses enabled workers to make up for deficiencies in their education by attending classes at the end of the working day. These courses aroused great enthusiasm and in 1869, there were up to 800,000 registered students. Gradually the state began to take an interest in these courses and even found a place for them within the public system of education. Also at the turn of the century, there were other attempts at adult education. These initiatives, for example the People's University (Universite' populaire) were promoted by the socialist movements. The most important steps were taken in the nineteenth and early twentieth century with the introduction of a system of teaching in schools, the gradual growth of vocational training and the first attempts at further education for adults.

It was not until near end of the nineteenth century, under the influence of Jules Ferry, that the existing school system was reconstructed. This reconstruction remained unchanged until after the Second World War. Schools which were free from 1881 onward were intended to provide a minimum standard for all children. In 1882, general compulsory schooling for six to 11 year old children was introduced, and a year later the schools became independent of the church. In 1882 the organization of a free, secular primary education, which was compulsory until the age of 13 years, was begun. The higher schools charged fees, and attendance was voluntary. This type of school carried on from the basic schools and led up to university entrance.

## From the First to the Second World War

In the period from 1918 to 1939, the movement towards vocational training took a big leap forward under the pressure of economic developments. The concept of education for everyone was broadened and expanded after 1936, when the "people's front" came to power. After the end of the First World War, there was a world economic crisis and unemployment was rife. A great dearth of skilled workers became apparent and industrial reorganization took place. The State tried to master the situation, at least in part, with the Astier Law of July 25, 1919. This law made permanent provision for building up a vocational training school system and, after July 1936, when paid holidays and the 40-hour week were introduced, sport and outdoor free time activities were promoted by the influence of Leo Langranges. The People's Theatre and the Arts Centres originated from this. The trade unions from their side started to conduct educational courses which aroused great interest.

## From the Liberation Up to the End of the Fourth Republic

It was natural that the reconstruction of the country and its economy would be the first objective in the years following 1945. At the same time there were political and social innovations with far reaching consequences. The pre-war institutions for vocational training were reinstated under the urgent pressures of manufacturing industry and adapted to the needs of the new situation. Centers for short courses, which existed before the Second World War, were reorganized by the Ministry of Labor so that workers could study for

an occupation or attain a qualification within six months. These centers were sponsored by trade associations, employers and other associations.

The State recognized them and paid the trainee's wages. Later, nearly all the centers for adult education were united into an association which was placed under the Ministry of Labor. Today these centers still provide courses for many of the unemployed.

At the same time, education for everyone took a decisive step forward, through the various initiatives from the local government authorities, trade unions, universities, and artistic groups. So educational clubs, traveling libraries and other institutions came into being. Training provided by trade unions became a permanent feature of the educational system with the Law of July 23, 1957, which provided for leave to be granted for attendance at trade union training sessions (Conge' d'education Ouvriere). The intention of this law was to make it easier for active trade unionists' and workers' representatives to fulfill their new functions, or other national institutions.

## The Construction of a General Education System

1958 - 1980 - The time of economic and industrial growth after 1958 favored the development of vocational training. Industry had to cope with international competition, industrial reorganizations as well as the constantly increasing pace of scientific and technical developments. The State pursued an active employment policy during the 1960's. It attempted to modernize the system of education; and to

give new ideas in the fields of education and training emerged, predominantly concerned with development and further education.

In time the necessity for a new school system, which could take all of these requirements into consideration, became clear. The system of basic training was reformed several times, and an organization was set up to further vocational education. The age of compulsory schooling for all children born after 1953 was increased from 14 to 16 years of age by the school reforms of 1959. Also, regular vocational preparation streams were inaugurated in the secondary schools. With these measures the Minister for Education could fully justify his responsibility for the vocational training of young people.

Technical colleges (Lycee Technique) were created (in addition to general educational middle and secondary II schools) which produce technicians and advanced technicians, while skilled craftsmen and ordinary employees were trained in the vocational middle schools.

In the same year, the purpose of the Law of July 31, 1959, for the advancement of workers (promotion sociale) was to give to workers and employees opportunities of individual social advancement. Two spheres of action were defined, "vocational advancement" and "further advancement of work". The first was aimed at giving a qualification to workers, while the second allowed them to gain a skilled training. The courses were organized mainly by the national education system and by public establishments of higher education.

The same law created the first example of consultation between State, employers, and unions in the field of adult training: the committee for the coordination of social promotion. Nevertheless, it

was still necessary to provide a law at the same time covering vocational training--a national commitment. The coordinating committee for vocational measures was replaced by new bodies to coordinate between the various authorities, the State and both sides of industry. These new bodies are the Interministerial Committee for Educational Affairs (Comite' Interministeriel de la formacion) the permanent working groups of senior officials (groupe permanent des haut fonctionnnaires) and the national council for vocational training (counseil national de la formation professionnelle). The financial arrangements were reorganized, and funds for training, which had hitherto been divided between various Ministries, were now included in the Prime Minister's budget.

Furthermore, it was decided that the State would provide financial subsidies to training establishments and firms, and contracts were concluded on this basis. Finally, educational leave became a fundamental right for all working people. These attempts at a systematic and cohesive system of adult education were still insufficient. The Law of 1968 was passed on the subject of payment to trainees. The social unrest and political crisis of May, 1968, were followed by new social policies from the State. The present day system of further education has, therefore, emerged out of these developments, and it has a two-fold basis in both national agreement and legislation. The organization of vocational basic training was extended in 1966 by the creation of further education technical colleges (Institute universitaire) for the training of advanced technicians. These can also provide specialized, short vocational training courses. In 1970 through 1971, a legislative measure for the

regulation of vocational training came into effect. The employers' and employees' organizations took over the responsibility for vocational training with the National Intertrade Agreements of July 9, 1970 concerning vocational training for young workers and apprentices; secondly, paid training by firms, for workers threatened by redundancy; third, the granting of leave to employees to attend a course of their own choice, with full wages, provided the training is recognized by the relevant professional bodies. In signing the agreement, however, both parties demanded assistance from the State to help them carry out approved programs, and especially to help them with financing them. In a response on July 16, 1971, the State passed a set of four laws, which established three different kinds of training (1) preparatory technical training (l'enseignement technologique), (2) the apprenticeship (apprentissage) and (3) continuing vocational training (formation professionnelle continue). The law concerning technical training distinguished different routes for vocational training. It established a system of equating formal qualification system with those of the technical training system. The law contained regulations concerning improved training for teaching staff. The law concerning apprenticeship sought to bring this form of training up to date. The law laid down requirements for better instruction, for regulation of the apprentice contracts and the supervision of apprentice training centers, and in company training.

The law for employer payments towards the financing of vocational basic training reckoned on a tax to be paid by the employer (taxe d'apprentissage) at 0.5 percent of the total wages bill. This rose to 0.6 percent in 1981. The proceeds of the tax were to contribute to

the costs of the initial training system.

Based on the National Intertrade Agreement of July 9, 1970, the State passed a law which put the finishing touches to the reorganization of continuing training for adults with the law continuing training during their full working lives. This agreement gave the right of training leave to all wage earners. It instituted for the employer a compulsory contribution to the financing of further vocational training; it defined the role, in matters concerning training, of the representatives of the wage earners on the works councils (business committee); and finally, it reorganized State aid for the remuneration of trainees and provided special arrangements for the self employed. The most recent regulations can be summarized as follows:

1975 - Reform by the Ministry of Education (Haby Reform). This reform which was passed on July 11, 1975, instituted a general education, identical for all pupils ages 12 to 16 years. This education included an introduction to manual technical subjects.

1975 - A law instituting control of the financial management of organizations providing further training.

1978 - Modification of the law on further education of July 16, 1971, with special attention to the paid training leave.

1977 to 1981 - Renewal of specific measures intended to promote the integration of young people into the job market - the Employment Pacts.

1980 - law and alternating training (did not come into force due to lack of applications).

1982 - Governmental measures for the vocational training and

social integration of young unemployed people from 16 to 18 years of age.

## The General System of Education

### The System of Initial Education

The education system is arranged in a number of teaching levels within which vocational training is undertaken in set stages.

### Nursery and Primary Education

Nursery education covers the voluntary nursery school from three to six years. Primary education covers five years and provides all children with general and basic knowledge.

### Secondary Education

Secondary Education Stage I (11-16 years). Since the Haby Reform of 1975, the four years of the first phase of secondary education has provided a basic education for all young people. It is essentially a general education including a gentle introduction to technological subjects. The reform abolished the different teaching programs which had existed until then, in particular, the vocational streams in which pupils could be placed from a very early age. The pupils are taught in a unique type of establishment (Le college).

Occasionally, certain pupils with academic problems have the opportunity after the fifth and fourth form to take either occupation related subjects of CPPN (classes pre-professionnelles de niveau) standard, or pre-apprenticeship classes (CPA - classes preparatoires a l'apprentissage), until they reach the end of compulsory education at

16 years of age. Thus, they can sign a contract of apprenticeship or enter employment without any qualifications.

In the course of the 1977-78 academic year, there were nearly 2.9 million pupils in the four years of the first phase of secondary education. Of these, approximately 120,000 were on a CPPN or a CPA course.

Secondary Education, Stage II (16-19 years). Attendance at Stage II of secondary education is not compulsory since it generally occurs after the completion of compulsory education at 16 years of age. Pupils can, therefore, choose between starting employment, beginning an apprenticeship or continuing their studies. Today, the majority continue school until they are at least 18 years old.

Those who continue at school, opt either for general education leading to higher education, or else they opt for technical or technological studies. These vocational studies prepare young people for entry into employment at various levels of qualification depending on the duration of the course, and occasionally they give access to higher education.

General education, taught at secondary schools over a period of three years, leads to the baccalaureate examination. Of all the subjects taught, mathematics is at present the most important and is becoming increasingly important.

Short Technical Education

Approximately 750,000 pupils are involved in the short vocational education, where they prepare for a vocational training certificate (CAP) or a vocational studies certificate (BEP), which are both at

Level V for skilled or unskilled workers.

The CAP is prepared in three years after the fifth form, and in some cases in two years after the third form. There are 300 varieties of national CAP, and 43 of departmental CAP. The courses which concern the industrial sector or the services sector often have some difficulty in adapting to the evolution of the technology.

The BEP is prepared in two years after the third form, and, covering 61 different fields, primarily in the tertiary sector, it provides a more versatile vocational training. The CAP and BEP are prepared in vocational education schools (LEP), which are often less equipped than the secondary schools. Twenty-two percent of the pupils are in private schools, of which some are profit-making and spend too little time preparing students for entry into the job market.

Long Technical Education

Less than ten percent of the pupils from the short programs of technical education manage to return to the long technical education, taught in technical education schools over a period of three years. The technician certificate, the qualification at the end of the long vocational phase included 58 fields. It is at present in decline (7,400 certificates awarded in 1970; 4,200 in 1980), whereas the technical baccalaureate, which is gained at the same level of vocational studies, is progressing rapidly (28,000 in 1970; 62,000 in 1980). It corresponds to technical series of the baccalaureate (series F, G and H). This training at technician Level IV is generally, and increasingly, training the tertiary sector of industry (mainly distribution).

## Higher Technological Education

Access to higher education is usually reserved for holders of the baccalaureate, but methods of access through equivalent qualifications are on the increase. Universities, moreover, are tending to adopt a selective system of recruitment, which until now had only been used by the high colleges (grandes ecoles).

The French system of higher education is characterized by the co-existence of universities and "grandes ecoles". For a long time, the universities have preferred to devote themselves to general education, research and teacher training. The "grandes ecoles" have been set up since the nineteenth century to train the engineers and management staff on whom the development of industry, commerce and administration depends so much.

For a decade the universities have been increasingly developing their vocational training, and at various levels: bac + 2 (Level III: higher technician) = university diploma of technology (DUT). bac + 4 (levels II and I: managerial staff, engineers) = master of science and techniques (MST), diploma of higher specialized studies (DESS).

In the secondary schools, moreover, the specialized sections provide higher vocational training in two years (bac + 2) at Level III (higher technician), at the end of which is gained the certificate of higher technician (BTS).

Efforts of reforming the secondary schools have been carried out for several years in order to improve on one hand, the quality of alternating training in school and in-company and the protection of the apprentices, and on the other, their financial advantages agreed by the State for the employers who receive apprentices. The efforts

have brought about a revival of apprenticeship, which today involves more than 100,000 young people from a potential 750,000.

Too often, however, it remains an option intended for those excluded from the full time academic system. It is devalued in the eyes of society, and its effectiveness varies considerably according to occupation, type of business and the apprentice teachers who have not usually received any training in how to instruct their pupils.

Although it is a means of training frequently used in subjects relating to arts and crafts, and to the retail and catering trade, apprenticeship has only really developed in two industrial fields; building and mechanical engineering.

## Those Leaving the System of Initial Training

Statistics from the Ministry of Education reveal that most young people today continue their studies beyond compulsory education and thus acquire increasingly higher levels of training.

In the period from 1973 to 1978, three major phenomena have been noticed: (1) the number of young people who leave school without finishing a training program has declined steadily; (2) this decline is almost compensated for by the increase in the number of young people having received training as skilled or unskilled workers (Level V); and (3) the number of trained higher technicians (bac + 2 = Level III) is increasing more rapidly than that of managerial staff and engineers (Levels II and I).

## General Principles of the School and University System

The initial education system is founded on principles enshrined in the constitution or in the Law of July 11, 1975, relating to education. The State is responsible for the organization and the financing of a public system of compulsory education, both free and secular, until the age of 16. The State alone has the right to issue diplomas. The administration of the courses and the teaching staff is centralized on a national level by the Ministry of National Education who controls all levels of initial education and apprenticeship. Private education is under the educational control of the State, which may often provide subsidies ("establishments under contract").

### Apprenticeship

Apprenticeship is a traditional form of preparing pupils for the qualification of skilled or unskilled workman, and at the end of it the pupil gains a Vocational Training Certificate (CAP).

It is undertaken by means of specific work contract which is binding for both parties. The pupil is under contract for a duration of two to three years, and the firm is obliged to pay the apprentice and to allow him at least 360 hours per year during working hours to follow a training course.

The training is given in apprentice training centers (CFA). These are public or private establishments controlled by the Ministry of National Education and financed by apprenticeship taxes from business and by public authorities. The apprenticeship tax (0.6 percent of the total wage bill of each business) serves to finance

the apprenticeship (payments to the CFA), but also helps provide full time technological education at secondary or at a higher level.

## The Current System of Continuing Education and Training

During the Nineteenth and Twentieth centuries, different purposes and practices developed in adult education: vocational training, adult education, trade union education, education to improve the position of working people (promotion sociale) and so on. In the present system of continuing education and training, many past experiences have been taken into account, characterized by the cooperation between the State and "social partners" (employers and employees), as well as the collective bargaining developed under the 1960's policy. The system of vocational continuing education and training appeared at first sight to be over regimented and institutionalized. In actual fact, however, it had a flexible and decentralized organization. As it was developed during a period of economic growth, there are some parts of the system, for example the right to educational leave, which could not progress as far as originally anticipated during the current period of economic crisis. These aspects have had to be modified to suit the changed situation.

### Vocational Continuing Education and Training

Vocational continuing education and training rests on two legal instruments: the national Intertrade Agreement for vocational training and continuing training, which was signed by the employers and

employees organization on July 9, 1970, and the Law of July 16, 1971, for continuing vocational training. In the part that deals with continuing education, it is mainly manual and clerical employees who are covered and it prescribes the rights and opportunities for each group according to their position in the working community. For example, workers in the private sector or public services, employees threatened with unemployment, those looking for employment, those waiting to be taken on; young people, women and the disabled.

Although the system of continuing education is mainly directed to measures for occupational advancement, it leaves room, within the framework of educational leave, for taking part in socially or culturally oriented courses. Paralleled with the forms of training established in 1970 through 1971, there continues to be other opportunities for training.

## Training for Employees in the Private Sector

Firms can arrange further training courses themselves or use the facilities of other training establishments. The Law of 1971 obliges employers with ten or more employees to finance training for their personnel - a regulation that was introduced to stimulate more training within firms. Most company training courses are directly linked with the activities or general in nature.

Employers must consult their works council about all courses of education and training. The firm is responsible for the cost of courses and for the continued payment of wages. In order to prompt those employers with ten or more wage earners to develop the training

of their employees, a system of compulsory expenditure was created in 1971. It operated by means of a minimum level of expense, fixed today at 1.1 percent, which has caused problems for the small business concerns, but the large ones have already been devoting much larger sums to their training policy for a long time. Thus, in 1980, business concerns devoted on an average of 1.8 percent of their total wage bill to training expenses.

Depending on the size and means of the business, the wage earners can follow training schemes organized by the business itself or by specialist outside organizations, both public and private. In fact, it is mostly the employees of the medium and large sized businesses who benefit from internal training schemes.

Training Leave

Apart from attending the courses on internal training schemes, all wage earners (even those working in businesses with less than ten employees) are entitled to training leave. This legal right allows a wage earner to take time off during working hours in order to allow a training course of his choice.

During a training leave, the work contract is not broken, and certain rights are maintained (his right to paid holidays, his rights linked to seniority). The Law of July 17, 1978, extended the possibilities of maintaining pay during training leave, which were very limited until then. This law institutes for the business (handed over by the State after a certain length of time) the obligation to maintain the salary of a worker on training leave, according to a rate agreed on by the State (an annual list).

Employees in the Public Service

Employees in the public service have the opportunities for training and further education arranged by their employer or recognized by them. However, they can also apply for temporary leave allowing them to take up training outside the area of their own authorities. There are special regulations for other groups of the public services such as hospital staff, teachers, et cetera. In fact, there are few training possibilities outside those which prepare for exams in the public service.

Self-Employed Workers

Self-employed workers can, in accordance with the law, take part in further education in two ways: (1) they can be invited to subscribe to a training insurance fund (fond d'assurance formation, FAF) for the self-employed in their particular trade. Trade associations or chambers of manual crafts estimate the amounts to be paid, and the State may contribute subsidies. The self-employed may also attend State recognized courses, in which case they are entitled to a lump sum as long as they have been working in their trade for one year before starting the course.

Training for Those Seeking Employment

For those people who have exceptional difficulty in fitting in or in settling back into working life, there is the possibility of following courses recognized by the State which allows them to improve their chances of finding employment. These courses can be taught at a

public establishment, usually the Association for Adult Vocational Training (AFPA), but also by a private organization whose training program has been recognized by the State. The trainees receive remuneration, the amount of which varies according to their level of employment and former salary. In the course of the last few years, the quantitative effort to train adult job seekers has not been in proportion to the increase in unemployment. Between 1974 to 1979, the total number of unemployed trained adults varied (approximately 100,000, of which 52,000 belong to the AFPA).

Training for Farmers

The Ministry of Agriculture, which is responsible for further vocational education for farmers, provides a number of training programs out of its budget to deal with the complex employment situation, and to meet training needs. For example, one-year or two-year training courses leading to a final examination in agriculture; these are courses in which young people, who want to live in the country, can receive basic training in agriculture. Furthermore, continuing education and training activities are arranged and funded for their members by two training insurance funds.

Disabled People

Disabled people have, according to the Law of July 3, 1975, the right to rehabilitation or vocational training. For this purpose, special training courses have been arranged in State-recognized private institutions.

## Educational Leave

Independently from participation in courses within the framework of employers' continuing education programs, all employees have a personal right to educational leave. This can be used either for continuing vocational training or for general education and culturally-oriented courses. Apart from this, employees can request leave to prepare for examinations. During educational leave the contract of employment is not broken, and rights stemming from it such as paid leave and advantages linked to seniority, remain untouched. Nevertheless, educational leave was only seldom requested until 1978, it was left to the company to decide whether to finance it. Only since the Law of July 17, 1978, do all those who take educational leave receive an income. This income is paid either jointly by the employer and the State or solely by the employer, but in any case, only if the course chosen is recognized by the State. Educational leave for untrained young workers, leave for teaching purposes and educational leave when redundancy is threatened, have the same financial provisions. In addition, courses outside working hours such as evening courses and distance education obtain an enthusiastic interest from many employees.

## The Training of Teachers

France supports the idea that the academic training which the future secondary school teacher receives in studying his subject in depth is sufficient to enable him to teach the nation's elite, who will be drawn off the academic type of secondary school. A weakening of this attitude has come about, resulting in several important

post-war changes, mainly through the necessity of creating new types of secondary schools designed to have less of an academic and more of a scientific or technical bias. In France these are the former College Modern (now modern section Licee) and the College Technique.

In the College Technique, the teacher has a part to play equally as important as and no different from that played by his opposite number in the Licee or College Modern, and the same general requirements as to training and recruitment are, therefore, expected of him. As a general rule technical secondary teachers are trained in a special Ecole Normale Superieure de l'Enseignement Technique, first opened in 1912. It has six different sections: industrial design (boys); drawing and applied arts (boys and girls); commercial studies (boys and girls); and a faculty of letters and modern language studies (boys and girls).

The higher grade schools offering courses at a university level are too numerous and too diversified to be treated adequately in anything but close detail. One particular group, the Ecoles Nationales d'Ingenieurs Art et metiers, has enjoyed an excellent reputation for more than a century. Many of the technical teachers come from that traditional professional school. General technical subjects in the technical courses are taught by secondary teachers prepared in the system of teacher training both at the ecole normale superieure and at the university.

The wider post-war extension of secondary educational facilities has also given rise to a new kind of certification of secondary school teachers that at present is held mainly (though not exclusively) by teachers in the former college modern. This is known as Certificate

d'Aptitude au Professorat de l' enseignement Public de Second Degree (C.A.P.E.S.). Candidates for this preparation must be in possession of the appropriate university degree. In 1974, a revision of the whole system of teacher education was started, with the objective to bring it more closely within the university framework. Many technical subjects in vocational-technical education at both secondary and post-secondary levels were recruited from the work market. However, it seems that the situation should change progressively for the better because of a reformed method of initial training for primary school teachers in force since 1979 and due to be followed by a reformed pattern for general secondary school teachers (Professeurs d' Ensegnement General des Colleges, PEGC) and later for higher specialists (Professeurs Certifies). Attention is beginning to be paid to in-service training, too.

## The Teaching Profession

Teachers, without exception, exercise great influence on the school system, so vocational-technical teachers have a great deal of influence on the system, because of their daily contact with their pupils, the values that they espouse, and the standpoints of the teachers' unions with which they are affiliated. They train the young and it is well known that no reform can succeed which does not win their approval or at least their benevolent neutrality.

## General Framework for Planning and Policy Development

The Law of July 11, 1975, relating to education stressed the

responsibility of the State in cultural and vocational preparation of young French people for a future working life. The State had actual responsibility for the organization for the contents of tuition and for the issue of diplomas. State schools, whether they provide a general or vocational education, are free of charge and independent of religion. Private schools, which make up about 20 percent of the school population, strictly receive subsidies by means of contracts with the government.

In practice the local municipalities have no authority over the initial education system, which is administered at a national level by the Ministry of National Education. The administration of education is therefore centralized; all decisions concerning tuition, diplomas and the teaching staff are valid throughout the whole country. In order to do this, the Ministry has at its disposal representatives and directors of all 26 academies in France. The teaching staff have the status of civil servants.

As far as initial vocational training is concerned, the responsibility which lay with business concerns during the nineteenth century and during the first one half of the twentieth century has been gradually taken over by the State in 1945. Today, in fact, within the framework of full time education this training program involves nearly 90 percent of pupils who are preparing for a vocational diploma. However, the business enterprise remains the main place for an introduction to the world of work and has become all the more necessary now that the economic crisis has made the integration of young people into industry so difficult.

The awareness by the public authorities of the interest in a

training system alternating between school and in-company, has led to a reform of apprentice training and to the development of company based training courses which are open to both pupils and teachers of technological education. Moreover, in practice all industries participate in the financing of initial vocational training by means of a tax called the "apprenticeship tax", which is equivalent to 0.5 percent of the total wage bill. The proceeds of this tax are shared, according to a quota system between the secondary or higher level of technological education and the apprenticeship itself.

## Cooperation at the Various Fields

Cooperation between the various vocational fields is assured for vocational education at many levels: (a) at the national level: advisory trade committees, organized by occupational groups, make recommendations to the Ministries of Education and of the Universities concerning the definition of training the content of tuition and arrangements for supervision. They also advise on the needs and opportunities of training; (b) at the local level: the regional or departmental committees for vocational training, social advancement and employment have the task of matching the vocational training programs with employment prospects; and (c) at the training school level: representatives of the various trades participate by right, in the management boards of technological training schools, in the advisory councils for apprentice training centers and in the examination boards for technical training.

## Responsibilities in Further Training

Although the State has overall control of initial education and ensures the basic financing and tuition, the situation is very different in regards to further training. The system of further training for adults has been conceived to link the socio economic partners with education and with the implementation of the system within the framework of regulations developed by the social partners, and then by the State. The responsibilities lie with State authorities, business concerns, employers and employees' organizations, personnel representatives, associations, public and private training establishments.

## Responsibilities of the State

The role of the State is to provide general guidance for the system. It makes use of its power of legislation and of regulation by decree and circular; it is responsible for the training of the unemployed and wage earners whose training is not undertaken by their firm, and it has the power to control the training expenses of businesses and training organizations. In order to carry out this role, the State uses a set of national and regional institutions whose apparent complexity is intended to guarantee three principles of operation: (1) interministerial structure; (2) cooperation; and (3) regionalization.

## Decision Making and Administrative Authorities

The interministerial structure has materialized since 1959 through

the existence of a decision making authority--the "Interdepartmental Committee for Vocational Training Social Advancement and Employment", which is chaired by the Prime Minister. The principal ministers are concerned with vocational training sit on this committee. In fact, this committee only meets rarely, but its work is prepared by a group of senior civil servants representing the ministers concerned, and chaired by the Minister for Vocational Training.

However, since 1976, a member of the government has also been instructed by the Prime Minister to follow the affairs concerning vocational training. Having been carried out by a secretary of state. This duty was entrusted to a minister in June, 1981. The minister set up a permanent authority to inform the secretary of the various national committees and councils, relations with the regional services, administration of budgets, and the implementation of decisions taken at a political level. This authority was known as the "Delegation for Vocational Training", and, in 1981, it became the general office for vocational training. The Delegation for Vocational Training is one of the Prime Minister's services.

The distribution of the budget from the Ministry of Vocational Training is decided each year by a "Council for the Administration of Funds for Vocational Training, Social Advancement and Employment" which is composed of administrative representatives and qualified people chosen from the social partners. Control of business training expenses and the utilization of these funds by training organizations is controlled by a "National Control Group" attached to the Delegation of Vocational Training.

On a regional level, one finds the same organization linking

together the representatives of the various ministries concerned--national education, work, industry, agriculture--with the guidance of the policy for vocational training and with the distribution of public funds. This organization is formed from a "Permanent Regional Group" of civil servants led by a "Regional Delegation for Vocational Training. This interministerial organization does not exclude the important role played by the other ministries of employment; national education, agriculture, and industry in particular are developing measures linked to their sphere of interest by means of significant budgets.

Advisory Authorities

The social partners (organizations of employers and workers) sit at a national, a regional level on advisory councils which have to be referred to the interministerial authorities; the National Council for vocational training; the Regional Committee; and the Departmental Committee.

Regionalization is a recent tendency. Although centralized to begin with, political and financial decision making has gradually become regionalized. At the start the budgets were dispersed between regional prefects named by the Government, and carrying out its policy. After 1983, following the Law of March 1, 1982, relating to decentralization, each local community should have at its disposal a vocational training fund supplied by the State, the fiscal resources of the area, and certain payments from business concerns.

## Responsibilities Within the Industry

The originators of the Law passed in 1970-1971 regarded companies as the most suitable place for vocational continuing training. Industry is one of the major sources of finance for training and is where the requirements of the employee for training are met. Long before it was compulsory by law, some industries carried out training programs. Since 1971 until the present, a "training function" (function de formation) was developed in many enterprises to fulfill a number of purposes: to monitor technical changes, to promote the modernization of production methods, to assist personnel management and to improve the working environment. To achieve these aims, larger and medium-sized firms with more than 500 employees set up training divisions with the responsibility for providing a general assessment of need, and setting up and administering a training schedule. Smaller concerns usually make use of communal institutions such as the ASFO (National Training Association) or the Jointly Managed Training Insurance Funds. Regulations based on laws and agreements provide those representing the worker's interests (i.e. on the works council or personnel council) with special powers in the field of training. Both bodies must be informed and consulted about all questions and problems which concern the general training policy of the firm, as well as those concerning educational leave. The works council also gives advice about the program in in-company training. According to the agreement, two meetings a year must be held to discuss these matters.

## The National Chambers

These national professional federations, whose aim was to defend

the interests of their members at branch or national level, made a start some time ago with the establishment of their own training facilities, which have two mutually complementary functions: advice and assistance, especially for the smaller concerns in setting and developing, conducting or assisting with their training schedules, on behalf of their member companies. The text of the law gives the trade and trade group associations the right to conclude multilateral agreements with the employer and to use the funds collected for the benefit of all workers in companies who subscribe to the scheme, by means of mutual funds. The chambers play a representative role within the governing bodies of vocational training institutions and contribute to the funds of the training insurance system.

Jointly Managed Institutions

Employer and employee organizations cooperate in continuing vocational training measures. Properly negotiated agreements are drawn up by the institutions of the social partners when required for jointly managed employment commissions, and training insurance funds.

Joint committee for employment (commission paritaire de l'emploi) based on the Intertrade Agreement for Security of Employment in 1969 are convened at the national level for each sector in trade groups.

The Training Insurance Funds (fonds d'assurance formation, FAF) are administered jointly in the same way. They are based on the Law of 1971. This had three objectives: (1) to give employers an additional means of fulfilling their obligation for training; (2) to provide a source of finance apart from the State and industry to meet the costs of educational leave; and (3) to promote the principle of joint

management in training administration.

In order to receive money from employers' obligatory contributions, these funds must first be licensed by the State. Their main task is to finance training activities and, in some cases, educational leave for employees.

## Finance

The financing of school and university education is, for the most part, carried out by the State whereas technological education also receives part of the apprenticeship tax imposed on employers. At present, all employers have to pay this tax, which is equivalent to 0.6 percent of their total wage bill and which they allocate to the establishments of their choice on the condition that a quota system is used, which fixes the distribution of funds according to the level of vocational training. The financing of apprenticehips is carried out by employers (apprenticeship tax) and by the State. Financing of continuing vocational training is carried out principally by firms and by the State and, to a lesser extent, possibly by the contributions of trainees or joint funds for unemployment insurance.

Employees contribute to financing continuing vocational training. The Law of 1971 obliged all firms employing ten or more wage earners to spend a minimum sum each year on the training of their employees, the amount being calculated as a percentage of their total wage bill (1.1 percent at present).

This "employers" contribution is quite separate in amount and in nature from the apprenticeship tax intended for the financing of initial training, as described above. It is, in fact, a compulsory

expenditure calculated from the total wage bill of each business, according to a percentage which is fixed annually by the State within the framework of the finance law (0.8 percent in 1972 and 1973; one percent from 1974 to 1977; and 1.1 percent since 1978). A minimum level of expense is set, but this may be exceeded by employers who wish to do so.

The contribution is not a tax, but a system prompting the employer to spend at least the fixed amount. Payment to the Public Treasury is required, as a penalty, if the employer cannot prove that he has reached the minimum level at the end of the year. The following expenses are considered "chargeable": payment, transport and lodging of trainees; expenses linked to the organization of internal training programs; training contracts (agreements) made with external organizations for training; payments to training insurance funds; payments to training organizations, providing State agreed courses for job seekers; payments to organizations for studies, research and information, which contribute to the development of further training (within a limit of ten percent of the contribution).

There is an important exception to the principle of the expenditure in favor of the firm's employees. Since 1978, employers have been obliged to pay part of their contribution (0.2 percent of the total wage bill) directly to the State in order to contribute to the community's efforts to financing training for job seekers. This reduces the minimum training budget of a firm to 0.9 percent of the total wage bill. There is a further expenditure imposed on the employer. In the case of agreed courses, there is the payment and administration of the training expenses for their employees who are

granted training leave.

In fact, expenditure by business enterprises (those with ten or more wage earners) exceed the minimum. In 1980, companies (118,000) devoted on the average of 1.79 percent of their total wage to further training--10,300 million francs. In the same year, 16,669,000 trainees attended 91 million hours of training, which gave an average of 54 hours per trainee. This last figure underlines the shortness of these internal training programs which are usually for retraining or updating knowledge. In 1980, only 37,000 employees were involved in training leave since all others were given internal training by their firms.

These general figures revealed a great variety of situations which depended mainly on the size of the business and on the industrial sector in which it operates, but which was also linked to socio-occupational categories and to the sex of the trainee. Control of the employer's contribution is ensured by a special group of civil servants placed under the authority of the Ministry of Vocational Training. Control is kept by a special tax declaration, which is filled out each year by the employer. On the basis of these declarations, it can be established that in 1980, the employers allotted their real expenses as follows: 40 percent, payment to trainees; 19 percent, financing external courses; 16 percent, financing internal courses; 10 percent, compulsory payment to the State for training young job seekers; eight percent, payment to training insurance funds; three percent, transport and lodging for trainees; one percent, equipment; and three percent, other levies, payments to agreed organizations and to advisory chambers, for a total of 100 percent. Due to insufficient

expenditures, payments to the Treasury tended to decline (205 million francs in 1980).

The State constitutes the second most important source of finance for further training. Seven million francs were spent on further training in 1980; 3,300 million francs. state payment to trainee job seekers or those on training leave; 3,500 million francs, operating the courses; and 200 million francs, equipment for further training centers.

This total "financial package" was passed each year by Parliament. The package was composed of budgets relating to different Ministries. In general, the funds for vocational training and social advancement (nearly 5,000 million francs in 1980), which is run by the Ministry of Vocational Training. This fund ensures the remuneration of trainees and the financing of equipment expenses and operating the training centers. Most of the fund is transferred to the regional areas or to technical Ministries in the form of bulk allocations. Some Ministries keep their own budget, in particular the Ministry of Labour (operation of the AFPA Association pour la formacion professionelle des adultes plus national action funds for employment plus training employment contracts equal almost 3,000 million francs), and the Ministry of National Education (approximately 200 million francs for specific further training action).

The distribution of financial aid by the State is supervised very carefully by legal rules which consists of "a training agreement"--a contractual agreement by which the State finances the operation of courses, corresponding to the priorities of its policy; "assurance of payment to trainees"--a recognition of courses giving assurance to

those attending that receive a salary from the State or from their firm.

In practice, the intervention of the State has been concentrated for the last few years on helping the vocational integration of young people between the ages of 16 and 25 and of certain disadvantaged sections of the population (women, the unemployed, those who are over 45 years of age). Social advancement (evening classes) and training for adult job seekers have not been developed so extensively.

The State supports training activities in both public and private institutions. The public sector receives 60 percent of the subsidy. Funds are granted through a system of training contracts with the State. In a sense, the State buys vocational training from certain institutions for the benefit of financially weak groups, within the bounds of its policy for vocational promotion. Courses must also be approved as suitable by a special procedure before participants can claim remuneration form the State. Most of these procedures, including the approval of courses, are by the prefect of the region. Finally, it is worth noting that State funds are at present being concentrated mainly on measures for vocational training for young people and the unemployed, and that public training facilities are supported more generously than private establishments.

In 1979, one million forty-one thousand working people took part in State-financed training programs in about 242 million hours of instruction. One hundred sixty thousand took correspondence courses and 881,000 attended class work. The latter group can be subdivided as follows: 37 percent were looking for employment which accounted for 55 percent of the class work and 65 percent of the budget for running

costs; 43 percent took part in evening courses for 32 percent of the class work and 17 percent of the budget costs; ten percent took retraining courses and further training. Women made up 34 percent and young persons under the age of 25 or 53 percent of the total attended the courses. The time taken by the State-financed training courses was an average of 470 hours which was ten times higher than that for in-company training programs. More than one half of the participants in courses up to the level of a skilled worker.

## Trends and Issues in Vocational Technical Education

From the 1970's, vocational training policy has consisted essentially of applying the joint agreements of 1970 and the Laws of July, 1971. The system, conceived in a period of economic expansion and skilled labor shortage, has been forced to adapt to the economic crisis of the decrease in unemployment and the demands of new technology.

Compared with the ambitious social and economic objectives which had prevailed at its birth, the results of the system appear deceiving today. In spite of large increases, the sums spent by the State and by industry are not sufficient to cover all the needs for training (qualification of the labor force, integration of young people and women, individual advancement aid for the unemployed, the social life and trade union activities of the workers). Moreover, the effects of training are difficult to evaluate and to control. Most courses financed by business are very short (50 hours on the average) and deal with retraining only. Training leave, which should help employees in their vocational development, has hardly progressed at all. State

financed courses, longer on the average (500 hours) than those financed by business, have remained more or less stable in number (approximately 120,000 if one excludes the courses reserved for young people), whereas the population of adult unemployed is growing rapidly. Training for the vocational integration of young people has aroused interest among businesses which benefit financially, but until now, few unqualified young people have been successful in this field.

The financial regulations have usually put a burden of administrative work on businesses and training organizations, acting as a deterrent, especially among the small and medium sized firms.

All of these factors explain the position taken by the Interim Plan (1982-83) which was established by the new Socialist Government as cited in Vocational Education in France-CED EFOR Guide (1984, p. 244):

> A vigorous reform is required to simplify the financial system, to improve the content and organization of training schemes, in particular to adapt them to the conditions of small and medium sized firms, to provide real opportunities for training leave, to give a new impetus to initial and further training programs in schools and universities dependent on national policy.

The Interin Plan fixed three areas which were to have priority:

1. The Development of Full Time Initial Vocational Education. As regards to initial training, the aim for the next year is to reduce to the minimum the number of young people who leave school without a vocational diploma. The number of places offered by the Ministry of National Education will be increased, especially in the vocational education schools which prepare for the vocational training certificate (CAP).

2. The Social and Vocational Integration of Disadvantaged Young

People. In order to facilitate the social integration of 16-18 year young people who had already left school without any qualifications, the Ministry of Vocational Training put together, after September 1982, a series of measures inspired partly by the report submitted to the government by Professor Bertrand Schwartz in 1981.

These measures were aimed at the most disadvantaged sections of the population and play an important part in guiding a young person through an individual training program taking into consideration his experience and the gaps in his education. These measures will be an important responsibility for local community organizations.

3. The Reform of the System of Continuing Education and Training. This reform is at present being negotiated. In October of 1981, three tripartite working groups submitted their conclusions on the necessity of stimulating vocational training, regionalization and the management of finance. This work brought together the social partners and state and regional administrative authorities. The former are now renegotiating the National Intertrade Agreement of 1970 and its endorsements of 1978. The latter are preparing a legal plan which is to be presented to the Parliament to be implemented in the coming years.

There is a trend toward decentralization of school institutions, thus giving more freedom to local and personal initiatives. Since 1980 the academies, which are the regional areas for educational administration, have the responsibility for deciding their own needs for vocational education in school centers in contact with industrial enterprises. The autonomy of individual establishments would not hinder the pursuit of common objectives on the national scale but would put an end to "slavish implementation of programs", thanks to the

introduction of themes specific to each establishment. Within this framework, school life is expected to be more closely concerned in educational activity, in accordance with their claims; at present, students' parents are taking a stand on all kinds of problems, and exercise much influence.

Gradually, as communication sciences made its way within their walls, educational institutions would need to become familiar with micro-processors. A plan to introduce 10,000 microprocessors into licees to allow students to master the development of new techniques in information science was carried out recently. Certainly this experience will have an impact on the teaching conditions at the school level. It is expected that the development of vocational and technical education and training should march in step with opportunity for resuming educational (even of a "general" kind) during the course of employment ("sandwich" or recurrent education). Educational institutions would be open to adults as is now beginning to happen in France. During recent years, due to unemployment, vocational education has been experiencing a narrow development, but it is expected that such a view of recurrent education will not continue to prevail. It is to be feared that constraints imposed by the economic crises may guide the development of recurrent training in the slow motion direction for several years more, whereas it ought by contrast to help all workers to prepare for necessary readjustments by means of general, scientific and technological education.

As it started in the 1980's, thousands of students in vocational oriented upper secondary schools (lycees d'enseignment professional or LEP) are embarking on work experience courses which enable them to work

with modern equipment and see working life for themselves. This movement is intended gradually to involve all students in this type of school. Eventually, periods in industry as an educational experience are intended to become more widespread. It could even be advised that students in the "third class" who are "fed up" with lower secondary school should undertake short periods of vocational instruction. Correspondingly, vocational education teachers could come to give courses in technology in the lower secondary school. A flow of continuous interaction could thus develop between the two types of establishment while teachers could maintain control over their programs through simultaneously making it more realistic. There seems to be also a trend that a modern and attractive approach to general education could be suitably introduced into vocational education. It could challenge the learner's initiative and lead him to train himself experimentally. Manual and technical instruction could enjoy the same status as other kinds of learning. Manual, technical and technological courses would be reformed so as to permit a return to general education Likewise, after several years in employment, a young person would have the opportunity of resuming courses of further study. Students who have the baccalaureate technique can already submit themselves for the admission competition for the grandes ecoles. Examinations such as those for the craftsman's certificate (Certificat d' aptitude Professionnelle or CAP) could be made up of "credit units" (unites capitalisables). Moreover, material incentives could be accorded to those undertaking apprenticeship. If such measures were applied, could markedly transform education in the lower secondary school. They could make young people and society at large more aware of technological

civilization. Released from its ghetto, vocational education would become more attractive; young people guided towards it would undertake it much more by free choice than because of failure at school. To match this, the value system transmitted by general education would change, too. In the long term, young people could be tempted to enter employment earlier than now because such a step would no longer be irrevocable.

The greater the part played by industry in the training process, the more industry could gain from it. Young people would be developed to suit it. Undoubtedly there would be a better match between occupational supply and demand. Nevertheless, it would be necessary for the State and trade union organization to be vigilant in protecting young people's rights (for example, by ensuring good training conditions in industry). The State should also encourage the acquisition of a general education, enabling trainees to cope better with any situation, to guard against unemployment, and to undertake training. The trend toward a reorganization of secondary education, both at the lower and at the upper level, seems to be great.

There is also a trend toward the increasing development of post-secondary education through the "Institute Universitaire de Technologie, IUT". This type of technical education is gaining more and more prestige within the educational system and is strongly supported by business and industry. This trend toward the increase of advanced vocational training will also be affected by the increasing demanded on new technologies that call for more advanced technical and scientific knowledge. The courses carried out in the IUTs are designed to meet these needs. In general terms, the trend in

vocational and technological education in France at both the secondary and post-secondary level is toward a growing increase in the provision for that kind of education if France is going to cope with the technological development and the international competition in the world market

## Vocational-Technical Education in West Germany

Of all the main Western European countries, the one that does not follow the general pattern of development is Germany. The effects of industrial revolution came late to Germany in the same way as she came late in the rush of acquired colonial possessions for exploitation. Almost overnight, she found herself switching from a predominantly agrarian economy to become a highly industrialized state. Overnight values changed. Old peasant life which had been centered on the church and the family suddenly disrupted as the new industrialists threw themselves into catching up on lost time and eagerly built and expanded sprawling and ugly industrial cities, reared their children, and sent them to the classical gymnasium (grammar school) to imbibe a culture they felt that should have, though such a culture bore no resemblance to the changing conditions of life. These industrialists were the "nouveax riches", the new aristocracy.

In the meantime, the new workers in industry were being put through an intensive necessary "Grandshule" training to pass on as apprentices into work. In the attempt to achieve national unity, education in Germany has constantly been considered as a means of overcoming the individualistic stubborn tendencies of the people, of

the various Lander to weld as valuable forces for good their present individualistic characteristics.

## Historical Development

### History of Vocational Training in Schools and Companies

School and company based vocational training have different roots and were only first brought together into a vocational training system during this century.

The occupational training schools originated from the religious and craft Sunday Schools of the sixteenth and seventeenth centuries. During the nineteenth century, general and further educational schools were established as the direct forerunners of today's occupational training school. A general compulsory occupational training school system, however, first came into being with the implementation of the Reich's Law for Compulsory Education of July 6, 1938.

Trade schools started in the eighteenth century. There were numerous craft training schools called by various names and they received their present titles through an edict of the Reich's Minister for Education of October 29, 1937. This differentiated between occupational training schools, craft training schools and trade schools. Vocational further education colleges are principally a creation of the post-war era. Trade high schools were founded as feeder schools for the trade colleges to which, from 1969, the colleges

of engineering and commercial college were added. Trade schools at secondary level II, occupational schools and similar schools were founded and developed after the Second World War.

Company-based vocational training goes back to the Middle Ages and was, up to the first one half of the twentieth century, mainly for manual crafts. Although in individual cases, industry was training its own new workers by the beginning of the nineteenth century, systematic training of apprentices was not extensive until the twentieth century. For a long period, skilled workers were recruited from the manual crafts. Apart from this, there were no legal regulations for the training of apprentices in industry until the Law for Vocational Training (BBIG) was passed in 1969. Nevertheless, "regulations" for some professions had existed since 1925. These were issued by the German Committee for Technical Schools (DATSCH), an employer's organization. From the late 1920's, examinations have been held by Chambers of Commerce and Industry for Commercial apprentices and, in 1930, examinations were started for industrial apprentices.

There were some differences in the way developments recurred in the business sector. In the middle ages, schools for writing and arithmetic had, even at that time, the supplementary function of training for work in the counting house. Full time commercial schools of varying types were already playing a relatively significant role in the eighteenth and nineteenth centuries.

Training workshops (in factories and separate establishments) were set up during the nineteenth century, but only by a few relatively large firms, and particularly by the management of the Prussian railways.

It was not until 1935 that a rapid increase in the numbers of training workshops took place. Presently there are, including the workshops for the manual crafts which are for the most part separate, as well as the business training centers, about 5,000 training workshops.

## The Dual System

The Dual System has existed in practice since the foundation of schools for occupational advancement. This most important part of the system of vocational training was first introduced by the German Committee for Education and Training (1953-1965).

### History of Legislation in Vocational Education and Training

The development of legislation for a system of vocational training began with the Regulations for Trade of 1869, which was based on the principle of free trade. For the first time, important regulations for the training of apprentices were contained in the supplementary laws of the Regulations for Trade of 1897 and 1908. In these "general" regulations for the employment of apprentices in commerce and industry, and "special" regulations for the employment of apprentices in the manual crafts were laid down, and a certificate of competence (master's certificate) was mandatory for training in manual crafts. It was not until the end of the nineteenth century that regulations began to appear for training in industrial occupations, with a clear distinction between individual occupations and uniform training procedures.

In 1925 regulation for training in certain individual occupations

were developed by the German Committee for Technical Schools (DATSCH), which was an employer's organization. In 1930 examinations were held for skilled workers by the Chamber for Industry for the first time. In 1939 it was necessary for regulations on training to be approved by the Reich's Minister for Commerce. In the same year, DATSCH was made into a State "Institute for Occupational Training in Trade and Commerce". Regulations were worked out by this body for nearly 1,000 recognized occupations requiring education and training up to the end of the war. This task was partly continued after the Second World War. The Federal Minister for the Economy recognized occupations requiring training and training procedures; but these did not have a legal character of the present day training procedures issued by the BBIG.

The preliminary work for this was undertaken for industry and commerce by the institute for in-company vocational training (ABB), an organization of top employers' associations. Within the scope of ABB activities experts from trade unions were increasingly involved in the preparatory work for training regulations and in the initial phase of all training regulations of the ABB had received the approval of both sides of industry.

There were different arrangements for the manual crafts. Here, the preparatory work for the training regulations was undertaken by trade associations. Due to the Law for Vocational Training of 1969, the tasks of the ABB were transferred to the Federal Institute for Research into Vocational Training (now the Federal Institute fo Vocational Training). Responsibilities for the out-of-school vocational training, which was formally distributed among various ministries, were combined within the Federal Ministry of Education and

Science (BMBW) at the beginning of 1973. Training regulations are now issued through the Minister for the appropriate trade in cooperation with the BMBW.

Vocational Training Legislation

Vocational legislation is based on two facets of the law: The BBIG is valid for in-company training based on a private contract for training, whereas, in the case of trade schools, the laws governing schools in individual States apply. Most importantly is the Law for Vocational Training (BBIG) of August 14, 1969, but parts of the Law for the regulation of the Manual Crafts (HWO) of December 28, 1965 as modified by the BBIG on August 14, 1969, also dealt with vocational training in manual crafts. The BBIG not only regulates the vocational training of apprentices, but some parts of the vocational adult education, vocational further education and retraining (Section 1, paragraph 1, BBIG).

In accordance with the BBIG, firms are entitled but not obliged, to carry out vocational training. Sixteen percent of all firms attached to the Chamber of Commerce and Industry make use of this right; that is about 320,000 "training" firms (1972). It is estimated that between these firms they employ about 60 to 80 percent of all employed persons. Other important laws for in-company training are for the promotion of training places, for the protection of youth at work, and for business constitutions.

The law relating to the availability of vocational training places (APIFG) of September 7, 1976 was designed to ensure provision of sufficient apprenticeship of the right quality. This law provides for

the imposition of a levy for vocational training (Finance of Vocational Training), but this levy was never raised. The law also laid down procedures for planning and statistics and redefine the constitution and tasks of the Federal Institute for Vocational Training which has its headquarters in Berlin.

The Law for the Protection of Youth Workers of August 9, 1960 (revised April 12, 1976) contained special regulations for the protection of young trainees and employees (e.g., working hours, breaks, night work, rest periods, holidays, et cetera). This law covers employers' obligations to allow young people time off to attend compulsory vocational schools. An important regulation in this law specified that the young employee or apprentice must not incur any loss of earning through attendance at an occupational training school.

The Law on the Constitution of Companies of January 15, 1972, also included provisions concerning in-company vocational training (including the training of apprentices) and the right of a works council to be consulted about the development and conduct of training. An employer, if asked, has to discuss with the council questions concerning the training of the company employees. The works council can put forward its own suggestions. Furthermore, an employer is obliged to discuss with the works council, the building and equipping of company facilities for vocational training and the introduction of vocational training measures whether they are in-company or external.

The works council has the right to participate in all decisions concerning vocational training. The council can also object to the appointment of any person to carry out vocational training in the works or insist on his removal, if that person does not possess the necessary

personal or technical ability and especially the right knowledge or experience prescribed by the law or is neglectful of his duties.

The "youth representative" can, in accordance with the Law for the Constitution of Business, ask the works council for provision to be made for young employees, especially regarding vocational training. The representative must investigate suggestions from colleagues, especially those concerning vocational training and if these appear to be justified, to press for their consideration by the works council. These regulations and procedures which are applicable throughout the whole of the Federal Republic, provide the basis for good training.

The vocational training relationship is founded on the training contract, the partners to which are the trainee (apprentice) and the trainer. A contract for vocational training must comply with the BBIG standards. The training procedures laid down in the regulations (a job description and outline training plans) are mandatory and have to be provided as a minimum standard for company training. Exceptions to the above apply to the training of the physically or mental handicapped, for whom special regulations may be issued by the competent authority.

## The General System of Education

The Federal Republic of Germany has a general public educational system which is free. Over and above this in most of the Federal States, school books, et cetera are also provided without cost.

The responsibility for education lies with the individual Federal States (Lander). The central government of the Federal Republic exercises control only in a few matters of general principle, for example, the supervision of schools, religious instruction as a

standard subject, and the right to establish private schools. All further controls are a matter for the individual Federal States (cultural Sovereignty of the States). Although comprehensive efforts at reforms during the last 15 years have led to varying individual arrangements in the different Federal States, in general the following basic structure applies:

The general legal obligation to attend school for all children in the Federal Republic begins with the completion of their sixth year. The full time compulsory education lasts for nine years with the exception of Berlin, Hamburg and North Rhine Westphalia (since 1981) which lasts for ten years.

Nursery Education and Primary Level

There is a voluntary preparatory education from three to six years (kindergarten, partly schools entry level for five year olds). Primary level is from the first to the fourth school year.

Secondary Level I

The secondary level I is from the fifth to the tenth school year. This comprises the main school (fifth to ninth school year) and the secondary modern school (fifth to tenth school year).

Secondary Level II

Secondary level II is from the 11th to the 13th school year and can be taken only in a grammar school (gymnasium) which accepts pupils from their fifth to the 13th school years.

In Berlin, Hamburg and North Rhine Westphalia and Bremen (since

1981) where the transition to the secondary educational system does not occur until the sixth school year, and the full time compulsory education covers ten years, the main school, the same as the secondary school I, covers the seventh to the tenth school years and the secondary school II (gymnasium) covers the seventh to the 13th school years. The grammar school (gymnasium) is also locally run for the school years of 11 to 13, as an independent reformed higher level school (Kurs system).

At the conclusion of the main school period, the main school final examination is taken. The so called "Middle School Certificate" comes at the end of secondary school I. The grammar school final examination - the so called "Abitur" is the qualification for university, teacher training, technical, or entry to any other higher education course.

At the end of the basic school period, parents usually in consultation with teachers decide in which school their child shall carry on his or her education. This decision need not be final as it is in principle possible to change over later from one kind of school to another, even if this creates problems because of the different subjects taught. The importance of all day schooling has been underlined in the latest public debates in some of the Federal States.

## The Vocational-Technical and Training System

In a wide sense the vocational-technical and training system embraces all the public and private establishments providing educational services which directly or indirectly lead to the attainment of occupational qualifications.

The expression "vocational education system" excludes the areas of the university and higher education in language of educational politics as well as in the language of occupational and commercial teaching. On the other hand, the vocational education system embraces not only the (public and private) vocational schools and colleges, but also industry, industrial training workshops, re-education centers, rehabilitation centers, chambers of commerce and industry, commercial associations, trade unions, et cetera as the system provides many activities towards the attainment of qualifications.

In contrast to the general education system, there is no single authority governing the vocational education and training system. Vocational training takes place mainly in the so called dual system - a combination of the in-company and academic training (BBIG) of August 14, 1969 which regulates the vocational training (basic training), further vocational education and vocational retraining in the same way for the whole of the Federal Republic. Where, however, vocational education colleges have full responsibility for conducting vocational programs, they are governed by the Cultural Ministries of the Federal States.

## Vocational Education and Training Schools and Colleges

Tuition is also free of charge in vocational education and training schools and colleges. These institutions comprise individual types of educational institutions such as: occupational training school (berufsschule), craft training school (Berufsfachschule), trade school (Fachschule), vocational further education college

(Berufsaufbauschule), trade high school (Fachoberschule) and vocational secondary school.

Occupational Training Schools

Occupational training schools are compulsory for young persons who, after completing secondary I level are engaged in their apprentice training or have signed an agreement as assistant workers. The obligation to attend an occupational training school exists also for the young unemployed. Generally, attendance at an occupational training school is for three years in each case but can be extended to the end of the training for an occupation. Occupational training schools are part-time schools which are generally attended one day a week. There is, however, an increasing tendency to arrange for two days attendance each week. At the same time, the "block release" method of instruction is condensed into "block" tuition lasting several weeks at times agreed with the employer.

Craft Training Schools

Craft training schools can in part or completely replace the in-company training. Requirements for entry are completion of main school and for those from the fewer occupational higher education colleges--the middle school certificates. Pupils can in this way achieve a status equal to the secondary school I finishing qualification. As in-company training is replaced in craft training schools, young people will be given a skilled worker's certificate, or an assistant's certificate when they pass their final examination of the Chamber of Industry and Commerce. This examination may have been

granted by a special order. It is possible to proceed directly on to a trade high school according to the length of time spent at the craft training school.

Trade School

A trade school such as a master craftsman's school or a technical school provide vocational specialization and further qualifications. Requirements for entry are an elementary occupational qualification (craftsman level certificate, skilled worker's certificate, et cetera) and, in general, some years of experience in the occupation. The training time in the trade schools differs from type to type between one and two years. The vocational further education colleges provide a general and vocational education which goes further than the main secondary school I level. It can be attended at the same time as the occupational training school part-time (three year course) or a full time school after completion of professional training (one year course). On completion at a vocational further education college, a qualification is attained which gives entry to a trade high school.

Trade High School

Trade high schools were founded in 1969 as a preparation for the also newly introduced trade colleges (Fachhochschulen), formerly engineering schools. Requirements for entry to the trade high schools are the middle school certificate or trade certificate. Practical and theoretical knowledge of a trade is taught for two years, which results in a trade college certificate. This qualification from the trade college can give entry a university course (second educational path).

## A Special School

Combining general and vocational education is being tried out in the Federal State of North Rhine Westphalia. This "collegiate" school replaces the higher grades of the general secondary schools, and tuition is given by secondary school teachers as well as instructors in the trades. Pupils can choose between five subject groups and can take the final general examination (Abitur) in three to four years, as well as an occupational qualification (e.g. university entrance qualifications in mathematics and natural science combined with a certificate as a technical assistant (physics), or university entrance qualifications in economics coupled with a qualification as a foreign language correspondent).

The model experiment will provide an institutional framework for the combination of general and vocational education up to university standard, as an alternative to the longer drawn out combination of vocational training and education with academic further qualifications (second educational path).

## The Dual System

Most young people are educated under the "dual system". This is the term used to describe a combination of theory and practice in vocational education and training in two separate places of learning with differing legal and organizational systems. Practical training takes place in in-company training establishments under the guidance of an instructor and the theoretical part in an occupational training school, generally attended once a week. Training within the firm is standardized and controlled for the whole of the Federal Republic by

the Law for Vocational Training (BBIG). On the other hand, occupational training schools are governed by regulations for the individual Federal States. The "conference" of the Ministers for culture (KMK) from each state is concerned with the harmonization of teaching.

The basis of the training relationship is governed by a contract (subject to civil law) between the trainee and the firm doing the training for one of the occupations officially recognized under the Act. A young person is required by the Law of the Federal States for Compulsory Schooling to attend a vocational school which is separated to the training contract.

Regulations for Training

Regulations for training exist for every "training occupation" (occupations requiring training) recognized by the State. These regulations are issued by the relevant minister for the trade concerned in agreement with the Federal Minister for Education and Science. These regulations provide a general training plan as well as criteria for the examinations, which control minimum acceptable standard. Companies which train are bound to uphold these regulations. These measures are designed to achieve maximum uniformity in the ability of trainees, and to establish a standard for what a trained skilled worker should know and be able to do. The skilled worker's or assistant's certificate therefore, has a significant meaning in the system of employment.

In the dual system for some years, especially for manual crafts, training has been carried out in workshops, which are separate from the industrial plants. This forms part of the practical training and

complements or widens the content of in-company training in a way that could not be done in individual plants. A secondary purpose of these training establishments is to encourage more firms to offer training themselves. The most usual kind of training carried out by these separate establishments is in courses of one or more weeks.

Because of a shortage of training places in industry, especially in some regions, a number of training places have been provided outside industry. These are to provide an alternative to in-company training and they do not have a direct link with production processes. They are not intended to provide extra training places, but to replace those not provided by industry. In 1969 the "vocational basic training year" (BGJ) was introduced with the intention of bringing the vocational and general educational system closer together.

Typical in the dual system is the combination of practical trade training at a company approved for training with craft instructor and practice at work bench, with theoretical instruction at a part-time school. In practice, however, the dual system is often no longer confined to only two places of training. Even at the end of the nineteenth century, a number of combinations of different sponsorship came into being. In 1971 about 25 percent of all the trainees in the Federal Republic of Germany received additional instruction within industry which complemented tuition in the occupational training schools and prepared people for examinations. Many large and small businesses have training workshops in which a large part of the training takes place away from the normal place of work (in most metal working industries). Here, involvement in the production process and with it learning at the work bench is only a step towards a

comprehensive system of training involving different institutions.

Such changes in the pattern of training institutions illustrate how the classic "dual system" is adapted to present day requirements. The reasons for restructuring the dual system are due mainly to the specialization of production processes, developing new technology and automation, which make it difficult for many companies--especially those of medium and smaller size--to fulfill the requirements of the law for vocational training which are the responsibility of the employer.

Another variant of the "training system is the group training association", where several firms combine together to provide training. On their own, each firm would be unable to provide all necessary training required by the regulations, so each takes over a part of the training.

## Vocational Continuing Education and Training

Vocational continuing education and training (which covers forms of education and training beyond the initial training stage), comprises all the organized process of teaching, which lead on from either one of the formal training methods (the dual system) or from an occupational qualification gained by many years of work experience. It is first and foremost concerned with adaptation to new industrial and occupational developments, especially of a technological nature, as well as creating the possibility for advancement by the acquisition of further qualifications and diplomas at a higher level (advance from skilled worker to technician). But occupational retraining leads to skills in

a different occupation is also considered to be an important function of vocational continuing education and training. There are many providers of vocational continuing education and training.

From 1970 to 1978 about 165,000 people took part each year in further education, and about 29,000 took part in retraining activities, of which by far the most received some financial assistance. Occupational further training to adjust to changed conditions on the one hand, and further education for advancement on the other, are carried out by a number of establishments, especially by chambers of commerce and industry, and industrial education centers and the vocational further educational organizations of the German trade union movement. All Chambers of Commerce and Industry make provision for retraining, and there are also special centers set up for this purpose.

## The Training of Teachers

In the field of vocational training, two different types of teachers are trained and employed. For theory instruction, training for the teachers takes place at the vocational training schools. This includes a period of study lasting eight semesters at a university and a one year guided course of practical work or vocational training. After the first state examination at the university, there follows a more practically oriented pedagogical training at a school lasting 18 months.

The practical instruction in the subject (the instruction in the workshop) is carried out by teachers in order to gain experience. The teacher must have the secondary level I qualification and a completed vocational training course with two years experience. In addition to

this, a master's or a technician's certificate is required. An 18 month training in teaching is then carried out in state run study seminars.

Teacher training is completely controlled and regulated by national controlling authorities. The payment, the obligatory school hours and the status of both types of teachers differ extremely and aggravate the conflict between the theoretical and the practical instruction.

Trainers

Besides certain workshop equipment and fixed work procedures, a trainer's suitability examination now forms a part of every master's examination with knowledge of the educational theory of work.

The training in the firm is controlled by the chambers, unions and state controlling authorities and is improved upon by mutual cooperation. In this way additional training centers were formed outside the firm which serve to give instruction in fields of training which can no longer be provided by specialized firms and thus to guarantee that a qualified comprehensive training in the appropriate profession is made available, according to training ordinance.

## The Teaching Profession

The teaching profession in Germany is characterized by clearly defined hierarchical divisions. There are differences in terms of salaries and status among primary, secondary, vocational (theoretical versus practical) and also in terms of the different Lander. The main characteristic is "class" differentiation between teachers. In 1970,

the Minister for Education of the various Lander agreed on proposals for the harmonization of teacher training and of teacher salaries. The objective is that teachers no longer be distinguished by the type of school in which they are trained to serve, but by the age or grade level for which they are recognized as competent to teach. At the present time, this task is not yet accomplished.

## General Framework for Planning and Policy Development

### Responsible Authorities for the Training of Apprentices

In accordance with the Basic Law, the Federal States are responsible for schools, and therefore for the occupational training schools. Every Federal State has its own laws for schools and for compulsory training. In spite of the efforts of the conference of the Ministers for Culture to standardize school procedures, there are differences in the occupation training schools in each State concerning hours of study, subjects taught, school reporting and the teaching methods. On the other hand, the regulations for in-company training are uniform throughout the Federal Republic. Regulations cause problems with the coordination between curricula for occupational training schools and in-company training programs.

### Coordination Committees

Officials from the Conference of the Ministers for Culture and the Federal Republic (coordinating committee training regulations; outline

teaching plans) decided therefore on the August 8, 1974, on an "Action for the harmonization of training regulations and outline teaching plans in accordance with the joint protocol of May 30, 1972". The legal responsibilities (Federal Republic in-company training, individual states - trade schools) are not affected by this action, even though a much improved coordination between vocational in-company training and the occupational training school is expected.

The organizational, administrative and functional systems of apprentice training in the Federal Republic of Germany are very complicated. The reasons lie in the Federal and State levels as well as in the relatively close network of regulations and controls, and in the contradiction of state responsibility for the training of apprentices with the principle of self-government. The Federal Republic transfers its authority for the carrying out of vocational training within the firm to "Responsible Authorities".

The law on vocational training lays down which bodies are responsible for the training in certain occupations or groups of occupations. Responsibilities for vocational training, in-house, rests with the Chamber of Industry and Commerce, the Chamber for Manual Crafts and the Chamber for Agriculture for their respective undertakings. The Federal Ministry of Labor and Social Affairs appoints through a regulation the body responsible for vocational training in domestic science. Thereafter, responsible authorities vary according to the state concerned - in the Saar it is the Minister for Culture, Teaching and Education; in Schleswig Holstein, it is the state office for schools. The various Federal and state authorities are responsible for vocational training in the public services. The

corresponding Chambers are the competent authorities for the training of solicitors, patent agents, notaries, commercial and tax consultants, and for doctors, dentists and pharmacists. The offices responsible for public law and order are directly subordinate to the highest state authority. This is, as a rule, the Ministry of Economic Affairs or the Ministry of Labour. There is no professional supervision of these various authorities.

## The Most Important Duties of the Responsible Authorities

The most important duties of the responsible authorities are: supervision and counseling for carrying out vocational training; the issuing of information about examinations. The establishment of an examination board and the holding of intermediate and final examinations; admissions to final examinations; the promotion of vocational training by counseling trainees and apprentices; the establishment of a conciliation board for setting differences between instructors and apprentices in matters arising from the existing vocational training relationship.

The Committee for Vocational Training has to be kept informed and has to be heard on all important matters concerning vocational training. Important matters about which the committee has to be informed are, for example: planning by the relevant authorities for the content and expansion of vocational training; the number and types of vocational training relationships; trends on the labor market which affect vocational training; new training procedures; changes procedures; results of final examinations; new methods and ways of

training; alterations to the public educational services with possible repercussions for vocational training.

The committee for vocational training has to determine which of the authorities is responsible for carrying out vocational training in accordance with the regulations. The committee has not only an advisory capacity (like the Federal State Committees) but has the authority to make decisions. Legal regulations for vocational training which are subject to decisions by the committee for vocational training include details for final examinations.

The State Committee for Vocational Training is made up of an equal number of representatives from employers, employees and the highest state authorities. Half of the representatives from the highest state authorities must be knowledgeable in educational matters. The state committees have a duty to advise the government of their states on questions of vocational training. They have above all to work towards a cooperation between the school and in-company activities to achieve a coherent vocational training in the context of the reorganization and development of the general school system. As the states are responsible for the education system, and the responsibility for in-company training rests with the Federal Government, the State committee for vocational training acts as a coordinating body at the state level.

The committee also has counseling and advisory functions. The former Federal Committee for Vocational Training was replaced with the passing of the law for the promotion of training places in 1976 by the Federal Institute for Vocational Training. This institute is a legally authorized body, directly subordinate to the Federal Government, and is supervised by the Federal Ministry for Education and Science. The

management of the Federal Institute for Vocational Training (BIBB) consists of the Main committee and the Secretary General.

The Secretary General is the legal administrative representative of the Federal Institute. He heads the administration of the Federal Institute and carries out its duties. In so far as he is not bound by instructions and general administrative regulations from the relevant Federal Minister, he carries out his duties in accordance with guidelines from the Main committee. The secretary general is appointed by the president of the Federal Republic on the recommendation of the Federal Government.

The Main Committee decides matters concerning the Federal Institute which have not been delegated to the Secretary General. It is composed of 11 employers, employees and States respectively, as well as five federal representatives. The representatives of the Federal Republic carry 11 votes, which are used as one block. One representative and one at the Federal level from the senior local associations may take part in an advisory capacity.

A committee for the States exists as a permanent subcommittee to the main committee. It has the special duty of working towards the harmonization between the training regulations and the academic teaching programs for the individual states, as far as they concern the Federal Institute. The committee for the States consists of one representative from each state as well as three deputies each from the Federal Government employers and employees. A representative from the Federal Institute for Labor may attend the meetings of the Committee for the States in an advisory capacity.

In order to provide for specialist advice when handling individual

cases, the Secretary General may set up trade committees after making corresponding adjustments to the statutes. The trade committees should be composed of persons well versed in vocational training, especially teachers. Each trade committee should include trainees as well as teachers, according to the tasks which it may have to perform. The Committee for the Handicapped consists of 16 members and has the special task of ensuring that the needs of handicapped people for vocational training are considered.

The Federal Institute for Vocational Training has the following functions:

1. To carry out research into vocational training, in accordance with a research program subject to the approval of the Ministry of Education.

2. To advise the Federal Government on all important questions concerning vocational training.

3. To prepare legal regulations for vocational training for issue by the Federal Government; training, further education, and final regulations and procedures.

4. To hold common discussions and to harmonize training programs which are, in addition, governed by an administrative agreement between the Federal and State Governments.

5. To finance vocational training

6. To plan, develop, establish, and provide support for further training establishments which are separate from industry

7. To promote model trials for new vocational training instructions

8. To monitor the content of correspondence courses for

vocational training and to maintain a list of the recognized occupations requiring training

9. To assist with the provision of statistic and prepare the annual report on vocational training

The responsibilities of the Federal Ministries are laid down in the law for the allocation of responsibilities of March 18, 1975 and the edict of the Federal Chancellor of December 15, 1973. Through these the Federal Ministry of Education and Science has overall responsibility including coordination of vocational training and also takes the lead in drafting the law.

The Federal Ministry of Education and Science is directly responsible for issuing regulations of vocational further education and for teacher training qualifications. It is responsible for the basic policy of vocational training and supervises the Federal Institute for Vocational Training. The appropriate Trade Ministries (the Federal Ministry for Economic Affairs; the Federal Ministry of Food, Agriculture and Forestry for the Commercial and Agricultural occupations and rural domestic science; the Federal Ministry of Labour and Social Affairs for domestic science in towns) are responsible for the recognition of occupations requiring training, following the issuing of training regulations as well as the finance and equalization regulations. They can issue regulations for training as well as for finance and equalization, but only in agreement with the Federal Ministry of Education and Science.

Although the legal responsibilities for apprentice training lie basically with the Federal Government. The states and their highest authorities (Ministries) carry out certain tasks in connection with

apprentice training. They take care of the legal supervision of the appropriate authorities in the private sector (Chambers of Commerce and Industry, Chambers for Manual Crafts), arrange the financial promotion of apprentice training throughout the state, take over the management of the State Committee for Vocational Training and are concerned with ensuring teaching programs for occupational training schools. The Chambers approve the examinations of the appropriate authority as part of their legal supervisory function.

The Federal Institute of Labour (Bundesanstalt fur Arbeit) also has some responsibility within the vocational training system. The Federal Institute is a public jurisdiction body with its own administration and is directly subordinate to the Federal Government. In accordance with the law for the promotion of work, it is responsible for career counseling, labor exchanges, promotion of vocational training, promotion of work for the disabled, granting of funds for job preservation and creation. Apart from these, it has to carry out research into employment and occupations. For this purpose it has its own Institute. There are, therefore, several institutions concerned with determining, conducting and controlling vocational training in the Federal Republic.

The difference is, however, that all its tasks, including the cooperation between the Federal and State Government authorities and the industrial partners are legally controlled. In particular, fundamental alterations can not be undertaken without the agreement of the social partners.

All the employers' associations have joined together throughout the Federal Republic to discuss and clarify questions of vocational

training. Their forum is the "Board of the German Economy for Vocational Training" which was founded at the beginning of the 1970's. In their forum, the Congress of the German Industry and Commerce (DIHT), the Central Association of German Manual Crafts (ZDH), the Association of German Large and Export Traders (BGA), the Federal Congress of German Employers' Association of the Self-employed are all represented.

The trade unions in the Federal Republic are organized according to sectors of the economy. The most important trade unions are: metal (including electricians), chemicals, paper, ceramics, building, public services, transport and travel, wood, commerce, banks, and insurance. Trade unions represent, within their sectors, workers and trainees' interests as a whole and have appropriate discussions concerning vocational training at local, state and federal levels. The unions are represented on committees for vocational training. The German Trade Unions Congress (DGB) coordinates all trade union activities on behalf of employees throughout the Federal Republic.

The organizations of the social partners, the "Board of the German Economy" and the "Department of Vocational Training of the German Trade Unions Congress" take part at an early stage in the formation of policy for vocational training.

## Finance

Schools for vocational-technical education and training are financed from public funds. Just as with the general system of education, finance for schools for occupational training including the occupational training schools in the dual system is a matter for the

individual states, but financial regulations differ from state to state. The costs of teaching staff are generally borne by the federal states, but towns and rural communities (school carriers) pay for the provision, maintenance, and running costs of the school buildings and installations as well as for the administrative personnel. The schools carriers, however, are as a rule, subsidized from state funds for new building and installation work.

The private vocational schools (substitute or supplementary schools), when recognized by the state, receive financial assistance in accordance with state regulations for personnel and material costs. In cases where private vocational schools are the only ones available, these, too, may receive subsidies.

Industrial undertakings finance their own training activities (financing by individual businesses). Costs differ from firm to firm according to what training is carried out, as well as the size and capabilities of the firm. The average net cost for each trainee per year amounted to DM 6692 in more than 1,000 employees and for manual craft firms to DM 2582. These figures were derived from a survey which was undertaken by a commission of inquiry outside of schools in 1971-1972, appointed by the Federal Minister for Labor and Sociology. In its report, which became known as the "Edding Study", the cost of vocational training outside of schools was for the first time not merely estimated, but precisely calculated on the basis of the results of different surveys. For the year 1972, the total gross costs for the firms in the private sector including the professions (doctors, lawyers, accountants, et cetera) and the public services was DM 8500 million. The trainee's own productive work was valued at DM 3400

million, so that after this is deducted, a net cost for training was DM 5100 million. From the official statistics for the same year, the average cost per pupil for vocational training school was calculated at DM 1110. Based on this for the whole of the Federal Republic, the cost of vocational training in s schools for 1972 amounted to just DM 1000 million. Taking into account the inflation of the 1970's and the more demanding training procedures in recent years, increasing numbers of trainees and greater public expenditure, the total costs for the year 1980 at a rough estimate could be about DM 15000 million.

Training establishments not within companies (i.e., training workshops) are mainly financed from chambers of industry's own finance and by grants from the Federal Institute, the Federal Government and from the state concerned. The running costs are partly covered by the contributions from the firms concerned. The Federal Institute for Labor (Nurnberg) provides considerable subsidies for retraining, further education and adult education.

Suggestions for reforms and development at the state level. The report of the official commission "Costs and Financing of Vocational Training Outside of Schools" makes it clear that the financing of vocational training, mainly by industry, can cause problems within the dual system. Firms are under no obligation to provide for training. If training costs are going to be higher than that of finding a skilled worker, the tendency will be to do less training or to restrict the mobility of one's own trainees by providing them with training limited to the firm's own needs. The measures taken by the state to raise the quality of training in the last ten to 15 years have led to higher training costs, and training subsidies are rising steadily, mainly

because of the wages which must be paid to trainees. To this must be added the considerable differences that exist not only in the quality of training, but also in its cost between separate occupations in the same group. The results are organizational and regional fluctuations in the availability of training places. For this reason, the official commission of the Federal Government suggested the setting up of vocational training funds to alleviate the difficulties which it recognized as being inherent in the dual system.

The funds for this proposal were to be provided by a levy for the most part, or from all employers, including those firms not actually taking part in training. The fund would then be distributed to the firms undertaking retraining according to regional, organizational, political and qualitative considerations. Such a solution has, however, for a number of reasons not yet been achieved.

Recently state support and financial help to provide more employment in problem areas has been initiated. In addition, there is an instrument of finance, the Law for Promotion of Work Places of 1976 (APIFG). This law provided for the building up of funds subscriptions wherever there was a large discrepancy between the demand and availability of training places. Firms which provided little or no training would be required to contribute to vocational training and firms that provided more training than they actually needed, would be given more assistance. The finance regulations would be invoked if the annual report on vocational training of the Federal Institute for Vocational Training (BIBB) established that, in the past year the availability of training places has not exceeded the demand by at least 12 percent and also if a considerable improvement in the situation is

not to be expected in the current year. (Note: After the Federal Constitutional Court had partly acceded to an action by the Federal State of Bavaria, and had declared the Law for the Promotion of Training Places to be unconstitutional, the old Federal Institute for Research into Vocational Training remained in existence from the beginning of 1981 until a new law was passed. At the present time, a new law is being debated in Parliament. This law corresponds largely with the Law for the Promotion of Training Places of 1976, but the part dealing with finance has been omitted).

This instrument has not been used up to now as, according to the law for the promotion of work places, sufficient facilities are not available. The employees' side has been very critical of the Federal Government's attitude. It pointed out that a sufficient margin may be shown by the statistics, but all the same, especially regionally, there is a lack of training facilities. This criticism is directed against the fact that the law does not differentiate sufficiently between regions or sectors of the economy. Industry and commerce have also objected strongly to this law, but it has probably had a positive psychological effect in as much as it has contributed towards an increase in the training opportunities. It must also be considered that most Federal States have in recent years provided increased finance for measures which help young people who have not been able to find either training or employment to prepare for an occupation. This has also provided for work experience schemes in factors in cooperation with the works management. Firms then receive a subsidy for every young person who they hire within the framework of a training program as a preparation for a career.

Such promotional inducements are in many cases higher than the sums that would normally be available under the law for the promotion of work places. It is unlikely that there would be any incentive for businesses to relinquish such financial assistance and to provide extra training facilities themselves, entirely at their own cost. The financing of these state promotional measures will probably, in the coming years, not be in accordance with the Law for the Promotion of Work Places.

## Trends and Issues in Vocational Technical Education

The dual system is a very stable and recognized one. Two reasons are mainly responsible for the high stability of the dual system and its recognition, not only by industry in the German economy, but also by training experts at home and abroad.

1. Vocational training is carried out within the framework of uniform training regulations and examination standards, which apply throughout the whole of the Federal Republic, and ensure certain minimum qualifications for each occupation.

2. Vocational training is concluded with a generally accepted final examination (skilled worker certificate or craftsman's certificate). Any business offering employment can not only be sure of a minimum qualification but also that the new employee will have gained some experience of his work during a long period and can for this reason be immediately employed on productive work.

For various reasons, however, the company as the most important place of learning in the dual system, is causing problems. The

development over the last ten years has led to changes, which make further development of the dual system necessary.

More and more firms are going over to making a proportion of in-company training independent of production process. This is for technical reasons such as the rising value of the equipment at the place of work, the unsuitability of certain work places owing to high technology and rising costs of training to cover higher standards. Demographic trends with years of high birth rates have obliged firms to offer in-company vocational training, which was no longer exclusively directed towards acquiring a skilled work force for themselves. Today, training places are often offered for social-political reasons. The close connection between in-company vocational training and the system of employment has been weakened as a result of this development. The future of those who have completed traineeship in certain occupations is uncertain because of the intensity and direction of efforts to rationalize as well as the effects on the demand for quality, which cannot always be foreseen. A policy has already been started and will increase more so in the future, to provide young people with basic qualifications in vocational training which will provide them throughout their working lives with the greatest possible protection against becoming out of date. A young person must be able to cope with the specific tasks of his occupation, but must not become tied down to his special place of work or type of work. Such a vocational training which should reach out beyond the individual's work and training avenues, will also in the future have to be based primarily on the willingness of the private and public undertakings to provide such a training. The Federal Republic and individual states will have to

rationalize training regulations and programs in order to bring academic and in-company training activities into line with each other.

Continuing education and training will gain in importance during the next ten years. This is necessary first of all because the need to intensify continuing training in companies to adapt to new technologies is increased with a more broadly based initial vocational training. Another reason is that, even today, an analysis of the distribution of occupations among newly completed training contracts shows clearly that at least a part of the basic training now being carried out for the high birth rate years will not lead to employment in the occupations studied. For both of these reasons, there will be a need for more and better vocational further education and training as a matter of commercial and educational policy.

Concerning changes in the labor market and the difficult position of young people in transition from school to work, neighboring countries where the transition from school to an occupation is more abrupt, have even greater problems. This has contributed to the dual system not being fundamentally questioned. The trade unions are demanding, however, a tenth school year of general education and the facility for all school leavers to spend a 11th year as a vocational basic training year. Apart form this, they criticize the selection procedures which firms use to decide which applicants are acceptable for training and they are demanding stricter controls over the criteria for acceptance.

The employer's side is not in favor of an extension to compulsory schooling, and is skeptical about the basic year for vocational training. It sees extension of facilities for academic training of

skilled workers or craftsmen a danger to the dual system in general, and is opposed to it, even for regions with a week industrial infrastructure or with a large need for skilled workers. Employers want to avoid creating precedences which might endanger the strong position of in-company training. In their opinion the only way of achieving a correct balance between demand and the availability of training places is within the framework of regional economic development.

In spite of these different interests and attitudes of the industrial partners, some federal states have taken steps towards the introduction of the ten year compulsory education. Berlin and North Rhine Westphalia have already introduced compulsory education. The question is whether this tenth school year should be open to choice, either as a basic vocational year or as a preparation for an occupation or as demanded by the trade unions, exclusively for general education. The Law for Basic Vocational Training should, by the mid 1980's, be so far developed that it will be available to most young people before they start their in-company training. This is intended to provide for a broadly based vocational training, and as a result, a greater occupational mobility. Two years vocational training (mainly in-company) will follow on from the vocational basic training year.

Occupational research is given great importance because of the increased need for planning training, including vocational training, for studying its problems and of giving advice to those concerned in it. This has taken an upward trend since the 1960's and is carried out by many establishments including the faculties for economics and occupational teaching at the universities.

Research into vocational training became a state responsibility for the first time with the establishment of the Federal Institute for Research into Vocational Training (BBF) and the follow-up institute, the Federal Institute for Vocational Training, as well as with the Foundation of the Institute for the Labor Market and Research into occupations.

The Federal Institute for Vocational Training works with the Federal Office for Statistics on the development of a data bank which will make it easier to carry out an analysis of available training places. Developments in the system of vocational training and the changing relationships between vocational training and the employment situation form the main point of discussion. Comprehensive information concerning the use and value of qualifications gained by vocational training in employment is to be provided for long term policy making. A further point is the work carried out by the Institute on Curriculum Development. This ranges from the preparation of teaching programs to the complex educational procedures in the higher levels of the educational system, including experimentation with new model systems to cater for changing conditions. This work is concentrated in research projects, for example, to test if theoretical aims for vocational training are met in practice.

Dealing with the development of training procedures, the Institute, as a main priority has the task of changing and where possible, improving the specifications of occupations requiring training and providing a scientific basis for the preparation and development of new training schedules.

Apart from problems resulting from changes in the organizational

technical and social nature of vocational training, others remain unsolved which are inherent in the dual system. Although there are undisputed advantages in the apprentice system, there are problems regarding equal opportunities for which special measures have to be taken. The training of young people is dependent on the state of the economy, local difficulties and a lack of mobility. Thus, the Federal Republic and the states should, first and foremost, take over this responsibility. The responsibility to society lies in the main with the state and not with industry, so the latter should not have any reason to regard any action by the state as an attack on the whole of the dual system.

Possibly a nationalization of examination boards might increase the number of trainees passing through the system and should achieve a greater recognition of the final vocational training examination certificates. However, opinions differ about nationalization of examinations in the dual system. In particular, both sides of industry are against such a solution. The rationalization of apprentice training in-company on the one hand, and in occupational training schools on the other, causes legal complications, and the solution is made even more difficult by increasing the number of training centers. Even under existing legal provisions it is possible to create an establishment in which the cooperation of all institutions responsible for training procedures and the teaching programs for the trade schools, could develop a jointly agreed and uniform system for the trades selected for training.

There are different opinions about direct cooperation between firms undertaking training and trade schools. Up to now no steps have

been taken except by authorities drafting the laws for vocational training (e.g., the Committee for Vocational Training Examination Subcommittee).

There is clearly a lack of individual initiative on the part of trainers and teachers in the occupational training schools. They feel there is discrimination against them because they are under represented on committees and councils so limiting their influence. An occupational training school makes an important contribution towards apprentice qualifications, the minor position held by teachers in the legal administrative framework of vocational training cannot be defended. Further developments in the dual system, with more training centers and greater involvement by occupational training schools (e. g. the vocational basic training year), justify solutions which allow for more participation by teachers. These developments are not entirely supported by all those concerned with vocational training.

Finally, financing of the apprentice training in the dual system by all firms could provide a better solution. It can no longer be expected that the small number of firms actually undertaking training should shoulder the cost of training for apprentice from which all firs and the economy as a whole will benefit. Trade unions believe that the long term and fundamental solution to this problem of ensuring sufficient training places and, at the same time, maintaining or improving the quality of the training can only be achieved with the help of a collective system of financing. Employers, however, have an opposite view and reject a collective system of financing, under which all firms would be obliged to pay contributions. They are afraid that with collective funding, the vocational training would become

increasingly bureaucratic and that the state would take over greater control.

## Vocational-Technical Education in the United States

According to Mallisan (1977, p. 53), the religious factor, of course, was a most important one in the early colonization of America, and in the first of the three distinct periods of growth of the American Nation, educational practice reflected the religious motives of the dominant class of the European immigrants. In 1642 and 1647 laws were passed to make education for all compulsory. The first period of colonization, that of expansion and development, was one in which the colonists expected to remain under the sovereign power of the king of England and within the companies of the English colonial system. The second period of colonial expansion culminated in the breakaway from English rule and in the first primitive attempts at welding the various states into one. When the American Revolution came, American political thought was very clear and definite about the true aims and ideals of the new democracy. Society was based on a contract agreed upon by a group in their common interest.

The nineteenth century heralded the third and, in many respects, the most important period of the new American nation. The new world was to become a capitalist force on a gigantic scale that had to be reckoned with in all world markets. The United States became an industrialized nation and the impact of all this in the educational field was enormous. The end of the American Civil War brought about a complete overthrow of the old social and industrial order and

emphasized the imperative need for compulsory education to be considered as a public obligation and therefore to be paid for by public funds. Unparalleled progress, however, was made in organization, equipment, curriculum building, and a more essentially practical turn was given to teaching, which in spirit and philosophy came to reflect more and more the ideals of materialism and industrialism. So, America has become the great laboratory for experiments in education as a result of its drive towards streamlined efficiency.

## Historical Development

In the 1880's and 1890's, the American high school began to emerge as the secondary level extension of the common schools. There was a rapid increase both in the student population and in new additions to the curriculum. It was a turbulent time, a time of rapid business and industrial growth characterized by ruthless competition and the possibility of fantastic success. Prosperity was intermittently shaken by devastating depression and social violence. The drive for success had seized American society. It was becoming clear that the need for more education was essential not only to advance but to survive in the economy. The public high school came to the forefront as it learned something of value from its predecessor and chief competitor, the academy. Academies had become popular by offering what the people wanted. One of the repeated demands was for more practical subjects. Courses in drawing and domestic science began to make an appearance. There was steady pressure for greater provision of commercial training. Commercial courses within regular high schools or separated commercial

schools began to flourish at once.

An important development that accompanied the expansion of the high school was the introduction of elective subjects. Elective offering provided an arrangement which eased the way for competitors to the dominant classical tradition. Natural sciences and modern languages became lusty contenders together with the newer practical offerings.

While the debates over manual training and other new subjects waxed eloquent, the pressure of the new economic and social realities heightened during the nineties. There was an urgent need for a vast number of workers prepared to perform the myriad functions required by ever growing industrial and business organizations. Businessmen were turning to the high school to produce the army of trained clerks, typists, stenographers, and bookkeepers they required. At the same time came the call for some kind of trade training to meet the needs of expanding industries. Just as had been the case of commercial education, some of the earliest attempts to meet these urgencies came from private schools outside the public system.

The first full fledged school to offer specific trade training was started in New York City in 1881 by Colonel Richard I. Auchmuty, an architect from a wealthy New York family. Colonel Auchmuty's New York trade school was organized to provide specific instruction in carpentry, bricklaying, plumbing, plastering, stone cutting, printing, and tailoring. Other schools were established upon the new conception of trade training education as contrasted with the ancient tradition of apprenticeship. In 1883, the Hebrew Technical Institute was founded in New York by the Jewish community to facilitate the integration into

American society of growing number of Jewish immigrants. In Philadelphia, the Williamson Free School of Mechanical Trades was established in 1881 by the philanthropist Isaiah V. Williamson. He shared the contemporary anxiety over the decline of apprenticeship. Williamson's school, free to indigent boys and approved by the board of trustees. was friendly to the manual training idea but it superimposed courses of a more vocational nature on the manual training base. In addition, a few corporations began to establish training schools for their own employees. In the eighties and nineties, the public schools were reluctant to make the move toward thorough going trade training.

## Vocational Education in the Public System

In the United States two antithetical explanations are proposed for the development of vocational education as part of the public school curriculum. The traditional mainstream explanation is that it was a response to the increasing industrialization of the economy, which created an increased need for skilled workers and the retention in high school of the kind of young people who in prior years had withdrawn (Barlow, 1976). New ways were needed to teach these young people and vocational education provided a means which simultaneously served the needs of employers and the students. The revisionist historian rejected this explanation. To him, vocational education was indeed a means of serving the needs of employers, but did so by lowering expectations and developing attitudes among young people that were conducive to industrial discipline and acceptance of low status jobs (Bowles, 1976).

Whatever explanation was accepted, vocational education did become firmly established as an integral component of public education in the United States. Federal legislation such as the Smith-Hughes Act of 1917, encouraged its adoption, but the form it took and the goals to which it was directed were left largely to local and state authorities to decide.

In the early 1960's, the role of the federal government in employment and training policy began to expand significantly. The Area Development Act of 1962 and the Vocational Education Act of 1963 were passed to achieve a variety of economic and social goals to stimulate regional economic development, to retrain adult workers displaced by automation, to meet the skill needs caused by rapid rates of technological change, and to assist the economically disadvantaged to obtain gainful employment. The 1968 and 1976 amendments to the Vocational Education Act of 1963 strengthened the social equity goals of vocational education by specifying that certain percentages of the federal grant to each state should be used to serve the disadvantaged, the handicapped and limited English speaking populations. The 1976 amendments also specified that in each state such full time personnel as needed shall be assigned to overcome sex discrimination and stereotyping in vocational programs. The degree to which these goals have been attained has been the topic of considerable research in the United States.

## Training at the Secondary Level

America's present day problem is that of any other country in which the apprenticeship system has not been extensively developed. In

a country where children tend to stay in school until the age of 18, so many of the subjects that once were classified under technical and vocational education (mainly in European countries), come easily within the province of the comprehensive high school system, while in the larger towns and certain country districts' technical and agriculture high schools are no uncommon thing. "Learning by doing" is always the keynote of American education.

At the high school level, a pupil can choose between two groups of studies, the one leading to academic university entrance or one consisting of commercial and industrial subjects. Those who choose the technical group have considerable laboratory and workshop practice.

Preparation for work was a primary motivation behind the early development of vocational education. The early proponents recognized that schools were failing youth and hoped that education based on occupational preparation would make schools more attractive and practical for adolescents. In a contemporary society, change, options and jobs are all a part of the vocational education milieu. There has been a shift from specific occupations to job clusters since the Vocational Education Act of 1963. Emphasis on narrow preparation for entry in a single occupation is being reduced to gain future flexibility and mobility. Families of occupations or occupational clusters meet several conditions confronting contemporary society. Maley (1969) described these conditions as: (1) increasing geographic mobility, (2) the need to have effective mobility potential within an industry, (3) adaptiveness to technological changes, and (4) complexities associated with selecting one's life work.

Clustering families of related occupations for instructional

programs is considered primarily as a secondary school adaptation. According to the National Advisory Council for Vocational Education:

> Occupational preparation should become more specific in the high school, though preparation should not be limited to specific occupation. Given the uncertainties of a changing economy and the limited experience upon which vocational choices must be made, instruction should not be overly narrow, but should be built around significant families of occupations or industries which promise expanding opportunities (p. 50).

Preparation for successful employment is accepted as a proper function of the public school system. The assumption is that in grades 11 and 12, students should have opportunities to acquire hard skills in a career area of their choice. This training should involve experiences in the world outside school and should equip the student with job entry skills. Therefore, preparation for work is preparation for at least job entry. Providing for the needs of industry is a central point in the development of vocational education. While there were various reasons for developing vocational education, it was the workplace with its needs and demands that held sway over program development.

While labor needs are important, human needs are also important. Recent federal legislation for vocational education stresses the importance of human needs. Mangum (1971) pointed out that according to the declaration of purposes in the Vocational Education Act of 1963, the priority objective would no longer be training for specific skill categories, but rather preparation of various labor force groups for successful employment. The significance of this change from the past was greater than was first apparent. The test of the appropriateness of training was no longer, "the skill in high and growing demand" but "did the individual get the job of his/her choice

and prosper in it? The difference was a matter of emphasis. Training for successful employment was the primary goal and meeting skill requirements was a means to that end. The emphasis of the 1963 legislation has been carried forward and made even more explicit in the 1976 Act. People are as important - really more important - than the jobs they may fill.

Leadership development is foremost among the goals of vocational student organizations. Each major area of vocational education is represented by a student organization. The areas and related organizations are: agriculture education, Future Farmers of America (FFA); business and office, Office Education Association (OEA); Future Business Leaders of America (FBLA); Distributive Education Clubs of America (DECA); home economics, Future Homemakers of America (FHA) - which includes Home Economics related occupations (HERO); Health Occupations Students Association (HOSA); industrial arts, Industrial Arts Students' Association (IASA); and industrial education, Vocational Industrial Clubs of America (VICA). Several of these have post secondary affiliates. Activities that are designed to assist student members in developing their full leadership potential are built into every vocational student organization. In fact, vocational student organizations are a critical part of vocational education in America; as well as guidance and council. The principle behind the American society is that vocational education is open to all. Thus, access if foremost in any discussion of education that is to be open to all. When access does not exist, vocational education cannot be considered as open to all. Governance and facilities access issues. The arrangements under which vocational education is administered, the type

of facilities in which it is provided, and the location of those facilities all influence access to vocational education. Community colleges have provided a model for public education to emulate. The open entry/open exit concept by many community colleges demonstrates how education can serve people. Accepting a person for enrollment and permitting, sometimes encouraging, work entry before program completion communicates a positive image about vocational education. The needs of people are placed in the first place.

Job placement is also an integral part of vocational education for students planning to enter the labor force upon leaving school. It has been recommended by the National Commission on the Reform of Secondary Education (1973) that secondary schools establish an employment office staffed by career counselors and clerical assistants. According to Miller and Brudke (1972), job placement is the logical outcome of vocational education, and schools providing this service achieve these goals: (1) meet their responsibility to all vocational students, graduates, and early leavers; (2) complete the bridge between school and work; and (3) provide initial evaluation data about programs pertinent to employer needs. The transition from school to work is facilitated by the fact that curricula in vocational education are mainly derived from requirements in the world of work.

Instructional innovation have also been spawned by federal funds. The movement toward competency-based education appears to be a direct outgrowth of innovation funds in vocational legislation. The adoption of competency-based curricula is evident through major curriculum consortiums. Maintaining the dynamics of change is central to organizational responsiveness to human and societal needs.

Another important feature of vocational education in America is that of promoting life long learning. Continuing education for the young or the adult, for the employed or unemployed is a real commitment. In this society, everyone has a chance to learn and to be a productive citizen. There is a place for everyone who wants vocational education no matter what level, age, social status or whatever one can be.

The primary goal of federal educational policy in the United States since the mid 1960's has been to increase access to educational opportunities at all levels. The community college has been one of the prime means of achieving this goal. Community colleges are, in the main a post World War II development. Most carry out three primary functions. The first two functions serve students in the traditional post-secondary ages by providing the first two years out of a four year baccalaureate program as well as technical training for those who plan to enter the labor market. The largest growth in community college enrollment in the past few years has been in the third function--adult education retraining and upgrading.

The development of the community college as an alternative setting for skill training has contributed to the long standing debate over the appropriateness of vocational education at the secondary level. The debate predates the introduction of vocational education into the public schools.

## Post-Secondary Education

In the United States, post-secondary education is a highly developed area. There are about 1,200 community, technical and junior

colleges in the nation. They are vocational education institutions and they offer two year post-secondary programs and vocational education training. The completion of their program leads to the awarding of an Associate degree. The Associate degree in applied science is a specific type of degree designed primarily to prepare students for immediate employment in a career field (as a variant) without foregoing the opportunity for further education. While the titles given these degrees vary considerably among community, technical and junior colleges, the most common title is Associate in Applied Science (AAS). Other titles used are Associate in Business, Associate in Data Processing, or other specific occupations, and Associate in Applied Arts and Sciences.

In the last two decades, the number of degrees awarded in these occupational areas has been increasing. In some instances, particularly in the health related fields, the degree is a prerequisite for taking a licensing examination. Some institutions belong to voluntary specialized accrediting agencies that set qualitative degree standards for their programs. Although the objective of the Associate degree in Applied Science is to enhance employment opportunities, some baccalaureate degree granting institutions have developed upper division programs to recognize this degree for transfer of credits. Such a trend is applauded and encouraged.

Post-secondary vocational education, including AAS degree programs, increased dramatically between 1960 and 1970. According to the National Center for Education Statistics, 43 percent of all associate degrees awarded in this decade were occupational in nature. By 1980, according to the preliminary presentation of the America

Association of Community and Junior Colleges (AAACJC) National Task Force to Redefine the Associate Degree, this figure had risen to 62.5 percent. The AAS degree or similar occupational degrees had become the choice of the majority of community, technical, and junior college graduates.

The National Council of Occupational Education identify some criteria leading toward excellence in the AAS degree so that it may become the cornerstone for a national program of human resource development. It will then become more effective as a wide employment credential. Its primary concern was with the curriculum for the AAS degree, to clarify the function of this specific associate degree, and recommended ways of strengthening it. The following criteria were identified:

(a) Associate degree programs designed primarily for immediate employment should be designed as Associate in Applied Science degree programs--considerable variation in associate degree titles exist across the United States, particularly in education. Although some states use the Associate in Science (AS) degree to designate two-year occupational programs, by far the more common usage is the AAS. The objective is to adopt a common degree terminology to improve national visibility, reduce confusion in a mobile society, increase the credibility of the AAS degree, and form the basis for a nationwide program of human resource development.

(b) It is recommended that the AAS should be identified with a specialty designation--this identification of a specialty or major, current common practice in many institutions, implies relevant preparation of employment in a specific area of work. Even though

there are advantages in labeling the degree program as specifically as possible, this should not preclude designations that cover a field of study rather than a single specialty, (e.g., Associate in Applied Science Degree in Health Occupations).

(c) AAS degree programs must be responsive to the employment needs of business, industry public agencies, the military and entrepreneurship. The single most important purpose of the AAS degree is to prepare students to enter directly into specific occupations. For the degree to achieve greater acceptance as an employment credential, effective articulation must be developed between educational institutions and the employers of AAS degree graduates. The most important facet of the linkage with employers is the maintenance of a timely and effective curriculum reflecting current practices in the work world. This relationship with employers, however, breaks with academic tradition in that the AAS degree curricula are not initiated or developed solely within the educational institution. This partnership between the institutions and the potential employer needs to be nurtured continuously.

(d) All components of the AAS degree requirements should become outcome-oriented. Common practice in higher education is to define course and program requirements in terms of subject matter topics. Instead, faculty and academic officers from all components of the program should develop and disseminate a statement of the course and program outcomes that students must achieve. While not all of the course and program outcomes can easily be measured, there remains a responsibility to define the knowledge, skills, and attitudes students are expected that this outcome orientation will apply to all components

of the degree including general education, related studies and technical specialty courses. Evaluation measures and procedures should be routinely utilized to access the adequacy of each course in meeting stated outcomes. Special attention should be given to measuring the success of graduates on the job.

(e) The AAS degree requirements should be limited to 60 to 72 semester credit hours or 90 to 108 quarter credit hours. There is a growing tendency to expand credit hour requirements for occupational programs to meet a variety of specialized accreditation and licensure agencies. Semester credit hours beyond 60 (90 quarter hours) lengthen and intensify the program beyond the normal academic load. Fifteen credit hours per term is a reasonable and challenging load for full-time students. Requirements beyond 60 semester hours (90 quarter hours) should be fully justified in terms of program outcomes. Remedial and developmental work should be in addition to the collegiate level requirements of the degree program but should, whenever possible, be pursued concurrently with skill training to enhance intent and relevance.

(f) The technical specialty component of the AAS degree should constitute 50 percent to 75 percent of the course credits. Although general education is increasingly more important in an informational society the credibility of occupational programs rests with the ability of the AAS degree graduate to function at the technical and mid-management level. The technical specialty component should emphasize an application orientation through laboratory, clinical and work experiences sufficient to qualify for entry level employment.

(g) The general education component of AAS degree programs should

constitute a minimum of 25 percent of the course credits with the combination of general education and related studies constituting up to 50 percent of the course credits. There is an increased recognition of the importance of general education and related studies as integral components of occupational education. Increasingly, the ability to think, reason, compute, communicate, and adapt to change are essential if workers at all levels are to remain employable and to cope with the expanding knowledge base. General education also includes human development in civic, consumer, environmental and social responsibilities. Related studies typically achieve a dual purpose of enhancing general human development and providing a basic foundation for the pursuit of more advanced occupational goals. General education and related studies outcomes should be identified, implemented and measured by the institution.

(h) Although open admission to the institution for all adults is a cardinal characteristic of most community, technical and junior colleges, minimum criteria for admission to AAS degree programs are essential. Admission requirements should be established on an individual program basis to assure that the entering student has a reasonable probability for success and that course and program standards are maintained. When appropriate preassessment should be included in the admission requirements for access to programs must be accompanied by maximum opportunities for access to programs by students who do not initially meet the requirements. Developmental or pre-technical certificate programs, tutoring, and/or special laboratory assistance are examples of how this may be accomplished.

(i) AAS degree programs should be supported by student services

designed systematically for the needs of career-oriented students. As a result of the vigorous growth of occupational programs, student services now play a much larger and more important, even critical role in student success than previously. Some colleges have expanded the definition of "student" to include the entire community of the adult work force and now offer services to the currently employed and the unemployed. Occupational education has thus expanded horizons and marked two-year institutions immeasurably but must now provide for success and promotability as well as entry into employment. Continuous interaction with students should begin with preadmission testing, assessment and counseling to assure a reasonable match of student aspirations and skills with programmatic requirements and expectations. These services should include career development activities which lead to successful placement and/or transfer.

(j) A curriculum structure with multiple exit/reentry points should be considered for the AAS degree wherever possible. A multiple exit/reentry structure for the AAS degree has distinct advantages fo many students who because of work, family or other obligations do not complete the AAS degree in a continuous mode. Such students necessarily take advantage of convenient "stop-outs" where they can complete a segment of the program with some degree of closure before going further. One such common "building block" approach is a series of certificates which represent flexible components of the AAS degree program that may eventually be converted into the full degree. In this sense, the degree becomes a credential increasingly representative of technical and mid-management level employment; a natural step up from certificates generally identified with entry-level employment

plateaus. The technical specialty in the program should be given particular consideration.

(k) Credit toward the AAS degree should be awarded for knowledge and skills acquired through prior experience. Increasingly, the concept of learning, is gaining acceptance. The ultimate determinant of what is creditable must, however, reside in college policy determined with substantial faculty involvement. Currently, credit is being awarded by many colleges for prior knowledge and skill acquired from many sources including proprietary schools, the military, labor unions, community based organizations, in-service programs of business and industry, work experience, independent study, and examinations. Care must be exercised to assure that the integrity of program outcomes it maintained when such experiences are assessed.

(l) AAS degree curricula should be articulated with appropriate general and vocational secondary schools. There is a trend toward increased articulation between secondary and post-secondary institutions. The advantages o such articulation are to encourage earlier goal orientation, provide possible advanced placement, and avoid unnecessary duplication. The growing use of outcomes as a basis for instruction and learning should make program comparisons much easier than the previous use of course titles and catalog descriptions.

(m) AAS degree curricula should be articulated with receptive and appropriate four-year institutions through the cooperate planning and implementation of transfer agreements including two plus two curricula. Although AAS degree programs are designed primarily to prepare students for employment, they can no longer be considered terminal. In addition to the necessity for lifelong learning in response to the knowledge

explosion, students can expect to make several career changes during their lifetime. Further education, including work toward a baccalaureate degree, should be anticipated for AAS degree graduates potential for transfer. However, the occupational outcomes of AAS degree programs should not be subverted to the transfer potential.

(n) Selected AAS degree programs should be networked among two-year institutions at the local, state, and national levels. There is increasing interest in developing consistency and comparability among similar occupational programs on state and national levels.

These criteria for excellence show the main characteristics, philosophy and purposes of community, technical and junior colleges as the basic type of institutions where post-secondary education takes place in the United States. Such institutions make implicit in these criteria the assumption that they have taken on preparation for employment as a major function of their emerging identity. There has been an expected national acceptance of the 1,200 community, technical and junior colleges as the preferred delivery system for a national program of human resource development embracing job and career-oriented training, education, and services for the entire adult community--pre-employed, employed, and unemployed. They find that such a goal is humanitarian and also central to the national self-interest to ensure an educated and trained work force prepared for present and future manpower needs which, in turn, helps maintain a strong competitive position for the nation in the world economy.

## The Training of Teachers

The underlying principles behind American public education can be

summarized as decentralization, free, compulsory and universal education. One educational ladder involving one system of articulated schools leading from the kindergarten to the university. The great variety of practices and standards which, as a result of this policy, prevail throughout the educational system of the United States leads to as great a variety of standards in the training of teachers.

In effect, all kinds of methods of teacher preparation are found. Teacher's standards are set by the individual states' acreeditation agency. These divergencies from state to state in terms of standards, and, from local authority to local authority in terms of methods of teaching, are due to the wide divergences that prevail in economic conditions, in the popular attitude toward education, in the effectiveness and aspirations of local control, and in the social status that is accorded a teacher.

Teachers of vocational-technical education and training must be both professionally and occupationally competent. They are considered the most important and critical element in vocational-technical education and training. The values, skills, professional knowledge, experience, and human relations factors that a teacher possesses largely determine the quality of learning opportunities that occur in the name of vocational education.

Balancing occupational competency against professional expertise presents a challenge for vocational-technical education and training which America is trying to cope with. New alternatives for teacher preparation may be the most viable ways to cope with changing demands. In general, America's vocational education system considers two different routes for obtaining teachers. One route emphasizes

occupational experience, whereas the other gives priority to professional and academic affairs. There has been an effort toward welding the two routes into a flexible but comprehensive approach that is expected to result in teachers who are better qualified to serve vocational-technical education and training.

The need for vocational teachers with high professional credibility is a national concern. Alternatives in new designs in teacher preparation for vocational-technical education and training have been proposed. Evans (1971) presented a dozen prototype programs for pre- and in-service education; Cotrel (1971) saw performance-based teacher education as a way of vitalizing teacher education while Essex (1971) proposes an executive teacher model.

There are also a large number of community college to university transfer programs that encourage vocational program students with high potential and demonstrate interest to continuing toward a baccalaureate degree and full teacher certification. These latter programs usually build in a cooperative experience that not only meets certification requirements but also provides a broad range of occupational experiences designed to overcome undesired routine, repetitions or highly specialized experiences. There has been at least one thing in which all America's vocational education leaders agree--that vocational-technical education will continue to demand teachers who are both professionally and occupationally competent.

## The Teaching Profession

Teachers of vocational-technical education are members of the education profession. The fact that vocational teachers may have

occupational backgrounds is not a basis for altering a professional relationship with education. State and local authorities have the responsibility for establishing policy and regulations concerned with the teaching profession. Labor unions also play a very important role. Due to the decentralization principle that prevails in America's education, most of the teaching profession depends on state or local authorities procedures.

Inspired and advanced authorities consider the teacher a kingpin in the social system and do their best to give them a thorough training. Others that the teacher as someone appointed to "deliver the goods" as in a factory or a business concern and, according to Mallison (1977, p. 135):

> Until recently it was no unknown thing or for teachers in certain districts to have no security of tenure, or to be appointed on a contract for one year only with no knowledge as to whether that contract would be renewed.

In too many areas, they are still too much at the mercy of the local superintendent of schools who in turn must see that the taxpayer is satisfied that he is getting value for the money spent on education.

Again, this depends upon the local economic conditions, the community attitude toward education and social status afforded the teacher. In some states where vocational-technical education is well organized and carries a highly developed prestige, the vocational education teaching profession is a very recognized one and its teacher's organization plays a relevant role in the development and promotion of vocational-technical education as both teaching and vocational education leadership.

## General Framework for Planning

### Policy Development

The organization and administrative structure which serves as a basis for policy development and planning for technical and vocational education in the United States is a combination of local and state concern with that of national goals and priorities. There is an understanding of policy as a set of expectations to be met in the conduct of vocational education. Such expectations should be adopted by boards and governing groups at the local, state, and federal levels, and from each level suggestions are expected for appropriate processes and procedures in activities related to technical and vocational education. Unless policy recognizes and permits such groups to b e organized and to function, the preferred practice cannot be operationalized.

Planning for vocational-technical education and training has been a widely recognized need and federal legislation has continued to set the stage fro planning vocational education. The 1968 Amendments to the Vocational Education Act of 1963 required stages to develop annual and long range plans. The long range plan could be for a three to a year period to be updated annually. The Vocational Education Amendments of 1976 further modified this requirement by specifying an annual plan and a five-year plan. The five-year plan was a one time document that would be followed by another five-year plan. However, besides the federal government, there are other partners in the system.

## Partners of the System

### The State

The state and local authorities which have the responsibility to provide and control education have their own feeling about the relevance of vocational-technical education and training any practice of such educational programs can not be successful without support since education is in fact a matter of state and local communities.

### The Teacher's Organization and Labor Unions

Both teacher organizations and labor unions are very important elements to be considered in the process of policy development and planning for vocational-technical education and training. They are very well organized and influence both professionally and as community

### The Different Social Groups

The demand for education among the different social groups, mainly the disadvantaged, is a powerful element to be considered in the establishment of policy and planning related to vocational-technical education and planning. Besides the need to improve social and economic conditions, there is a permanent effort toward the equality of civil rights and educational opportunities.

### The Industry

Industry is one of the most powerful elements to be considered in policy development and planning for vocational-technical education and

training. Its constant need for a skilled and technically educated work force capable of meeting the efforts toward technological innovations in order to assure a special place in international competition is a basic contributor factor for vocational-technical education and training development.

All these partners, combined with internal and international social and economic problems associated with a highly decentralized administrative structure are some of the basic factors in determining policy and planning for vocational education and training. The general framework is much more complex than that of simply establishing federal regulations; after all, public funding is a concern of state and local communities.

## The Responsible Authorities

Traditionally, the United States has manifested a widespread opposition to uniformity and educational prescription of any kind. According to Mallinson (1977), little more than 20 years ago there existed in the United States 40,605 separate local administrative bodies for education, with more members on the boards of education in some states than were teachers and ranging in size from localities with a single teacher school to a system like that of New York City with about 36,000 teachers. Over the last 30 years or so moves have been constantly made to secure a greater participation by the Federal Government in the provision of funds for education, but apart from funds for various special types of education, mainly vocational, any attempts through federal aid to equalize educational opportunities or to establish reasonable standards throughout the whole country have

been resisted through fear of federal control. The fundamental problems seems to be those of how to increase funds for education from the national purse without interfering with the rights of local authorities to adapt education to local or regional needs, and how to maintain satisfactory standards of education uniformly throughout the country.

If the American Federal Government has played a relatively small part in the administration of education, neither can the state be said to be in a position to exercise effective control. Within each state there is a Board of Education responsible to the legislative power for issuing general directives and programs of education for training of teachers and meeting part of the cost of education. There are also separate local education authorities which vary in size, population and efficiency. It is, therefore, the local education authorities that determine more particularly the actual program of studies and decide what salaries are to be paid, and that also provide education funds. Again, Mallinson (1977), recalled that this form of administering education was influenced by the Jefferson concept of democracy that argued that education was a function of government of local self government. This Jeffersonian approach means that the history of education in the United States is the history of the education of the public itself, and that progress must depend on the ability of the general public to realize education's value and significance.

According to Miller (1985), federal involvement in public education has a short history. Some people see the Morrill Act of 1862 as a beginning point of federal concern in public education. Others see the Smith-Hughes Act of 1917 as the beginning point. Together

these two acts do represent federal action that affected public education: the Morris Act at the collegiate level and the Smith-Hughes Act at the secondary level. The related literature examines the fact that the Commission on National Aid to vocational education was created by an Act of Congress on January 20, 1974 and was organized on April 2 of the same year. This commission reflected a sensitivity to the issue of federal versus state responsibility for education. Questions developed by the Commission and submitted to various governmental departments, individuals and national organizations evidence an awareness of the federal-state issue.

The Commission reports that national grants were needed for the salaries and the training of vocational teachers in order to: (1) help solve problems too large to be worked out extensively and permanently except by the nation; (2) help the states having varying resources to carry the cost of providing vocational education and, thereby make this education possible in states and localities already burdened with meeting the requirements of general education; (3) equalize among the states the large and unequalled task of preparing workers who tend to move from state to state thus making training for work a national as well as a state duty; and (4) give interest and prestige in the states to the work of preparing youth for useful and productive service.

Again, Miller (1985) explains that several guiding principles were recognized by the Commission as conditions under which grants for vocational education should be given. Their principles, like the findings reported, emphasized states rights, the national character of the problem, and the need for a cooperative effort to solve the problem. Of the 13 principles given, three illustrate this general

nature: (1) The federal government has no authority to control or manage the internal affairs of states, nor can it take part in controlling or managing their educational systems. The development of vocational education at the present time is a matter of urgent concern to the nation as well as to the states, and each owes a duty in its development in the interest of the general welfare. Appropriations out of the federal treasury of the money of the whole nation should be accompanied by such a reasonable voice or participation by the national government in cooperation with the states as will ensure the proper expenditure of the money for the definite purpose of the grant and such as will ensure a minimum of efficiency.

Although federal government has no direct action in the organization and administrative process of technical and vocational education, the federal involvement still has some merit for its development. The development of human resources for the nation's economy is a national concern. The national wisdom represented by the federal government transcends that of individual states. There exists at the federal level an insight into the needs of the nation's people that is greater than that held by the states on an individual basis. It is the federal participation in technical and vocational education that has moved the nation toward desegregation, equal rights, reduction of poverty, introduced research, cooperative education, the needs of the disadvantaged and handicapped, sex equity, leadership development and curriculum development as points emphasized in recent federal legislation for vocational and technical education.

Recent federal legislation has reflected new national priorities. The Vocational Education Amendments of 1976 included a changing of

emphasis. There have been changes in eligibility for federal assistance, for specific program areas to all areas of vocational education. National priorities are a justification for federal involvement in vocational education. This does not mean direct participation in terms of the system. This federal funding serves only as a stimulus to the state and local authorities to provide vocational-technical education especially when it is estimated that the federal contribution is less than 15 percent of all expenditures for vocational-technical education. As a result, state and local authorities throughout the nation has spent money and effort to provide excellent vocational education systems. In some states, such systems are very well organized under the form of the State Department of Vocational Education, side by side with the State Education Superintendent and sharing the same State Board of Education. In this type of organization the existing vocational school and the general education system of public high schools can be articulated more easily. In this process of organization and administration, the state's right to control education is maintained and, at the same time, the nation's concerns and priorities are met. Thus, it is under this basic characteristic of an organization and administrative structure that the United States developed its own policy and planning for vocational-technical education.

## Financing

In the United States vocational education is mainly part of the public education system. Thus, as in any other form of education, vocational-technical education and training is basically financed by

the individual state and local authorities funds. The estimated participation of the federal government in financing process is about ten to 15 percent of the total expenditures for vocational education. The State Board of Education, in general, participates in about 50 percent of the funds needed and the rest of the money has to be found by the separate local authorities. Approximately 70 percent of the local cost of education, including vocational-technical education and training, has to be met out of the local taxes in a special budget. Hence, the emphasis in local communities, in education weeks, in press publicity, school demonstrations, public education meetings, school exhibitions, and in parent-teacher associations.

Education, in general and particularly vocational education, must be constantly in the public eye. The taxpayer must know that he/she is getting value for his/her money and a healthy rivalry must be fostered between neighboring communities both to stir the sluggish and to lead to further experimentation. Vocational-technical education schools and training centers are seen as an important element to attract business and industry to that community based on the human resources available and in this way to generate more jobs and trade in the community in order to increase the general and education budget through the increasing of the total revenue.

## Trends and Issues in Vocational Technical Education

The United States appears to be well tuned to a climate of moderate change, able to react fast and with vigor to the future. The most overwhelming conclusions in all studies on the subject of

education, including vocational-technical education and training, is that quality education is the essential ingredient to success in keeping the high standing of America's society. There will continue to be the strong tradition of taking responsibility for one's own progress. Moving from one employer to another is an important part of making one's way. Going back to school to earn more dollars is a recognized motivation for learning. Thus, the role of the state as a corporate representative of society's goals is to provide opportunities for education. Hence, it is probably fair to say that the trend toward individual benefit as the primary motor for vocational-technical education and training will continue. There will also be a continuing understanding that the offer of learning opportunities is important for attracting and keeping good people. Corporate and individual benefits will continue in a dynamic equilibrium that in the past has changed with economic cycles and labor conditions.

Although this apparent moderate climate for changes is in the near future, the United States will be faced with many different problems. The demographic and technological trends show that (1) the senior class of the year 2000 will enter elementary school in the 1987-1988 school year and that the size of the school age population will continue to decline until that year; (2) in 1982, 32 percent of the American population was between the ages of five and 17, by the year 2000, only 28 percent of the total population will between the ages of five and 17; and (3) minority populations will become the majority in most grade schools in the nation's large and middle-sized school districts by the year 2000 with older citizens above age 55 will participate in public school programs in greater numbers.

In terms of the work force the statistic from the Department of Labor shows that in 1982, 60 percent of the working population was under the age of 40. Minorities (mostly Hispanics) will comprise 22 percent of the new entrants into the labor force in the year 2000. Migration to the Sun Belt will continue. Americans, especially the young, will move south and west because of new jobs that will be created there between now and the year 2000. Small scale businesses will be developing in the northern part of the United States. Between now and the year 2000, women will enter the work force at a faster rate than any other group within the American population. Between 1979 and 1984, employment in the United States increased by eight million jobs. But, 1.8 million fewer people earned $14,000 or more. All job growth in 1984 was in jobs that earned less than $14,000 annually and three out of five of all new jobs in that year paid less than $7,000 or less annually. The salary structure began to change in 1981, when the construction and manufacturing industries lost 500,000 jobs.

Since 1979, 97 percent of the net employment gains among white men have been in jobs that paid $7,000 or less annually. The working poor class had previously been composed of mainly women and minorities. The shift toward lower wages which began in 1979, is prevalent in all age groups of workers and all regions in the nation and is true year round for part time and full time workers. If the trend toward lower wages continues, the standard of living will decrease. The final baby boomers will leave school and enter the work force, it may be harder to find good entry-level workers.

After today's baby boomers enter the work force, workers will find less opportunity for upper mobility, since retirements in large numbers

will not occur for many years. Although the quality and productivity of the American work force is increasing, the labor force growth is slowing down. Other labor trends include an increasing number of women who work and an increase in personal problems which affect work. In the year 2000, worker retention will become a problem with the limited number of advancement possibilities and the supply of new workers will decline. Flexibility in work hours, alternative working schedules, and employee support services will be important for worker retention.

By 1995, 90 percent of the new jobs in the United States will be in the service sector and less than five percent of the work force will be working on assembly lines. New and existing jobs in 1995 will require more education, especially in high-tech areas where greater analytical and communication skills will be needed. By the year 2000, youth and minority unemployment problems of today that have been continued will create a shortage of workers. By this time, workers (16 to 24 years of age) will account for 16 percent of the work force as compared to 36 percent in 1985. This older, more experienced work force should provide improved productivity. It is also expected by the year 2000, that the labor market will hold the greatest promise for young, well-educated workers who can accommodate the shift to high-tech jobs that require more thinking, reasoning and communication skills. Businesses that rely heavily on low skilled, entry-level workers will find themselves competing for workers. At this time, women will comprise 47 percent of the work force and 60 percent of the female population will be working. Minority populations will comprise a large percentage of new additions to the work force in the year 2000.

Occupations predicted to have the largest job growth through the

year 2000 are computer programmers, computer systems analysts, cashiers, registered nurses, licensed practical nurses, computer operators, bartenders, cosmetologists, lawyers, electrical and electronic technicians. electrical and electronics engineers, nurses aides and orderlies, sales persons, waiters and waitresses, truck drivers, janitors and maids. The fastest declining occupations will be stenographers, railroad brake operators, shoe sewing machine operators, furnace operators, leather workers, telephone installers, farm workers, college faculty, postal services clerks, and pressing machine operators.

As the American population ages increase, there will be a need to do a better job of matching people to jobs. For the expected predictions, in the year 2000, there will be a shortage of workers and the older worker will be a human resource that must be used effectively. New policies will need to be developed within business organizations to encourage retired workers to continue working without losing retirement benefits. Older workers will need adjustment to work counseling and supervisors and managers of older workers will need to adapt a new set of supervisory skills. Personnel specialists will need training in placement of older workers in appropriate types of jobs.

The implications for vocational education is quite obvious. Public schools will retrain workers making career changes perhaps three or four times during their working lives, due to technology innovations. Curricula will need to be updated continually so schools can prepare students for newly created careers in business and industry. Schools will need to attract back some of the teaching professionals who have been lost to business and industry. There will

be a need for schools to adapt the ability to work with groups of students with varying interests, abilities, and career goals. They will need to become more flexible to meet the needs of students, to develop specialized instructional methods and class scheduling to accommodate groups of students who have similar interests, but may not remain with the same group throughout the day, unit, or semester.

Public schools which vocational education is part of will need to develop policies programs, and facilities that will allow them to better serve the illiterate, untrained young adult who desires to return to school, or the middle aged displaced worker who needs basic skills to acquire new technical skills. They will find it more cost-effective to integrate cable television and telecommunication technology to accommodate specialized, short-term educational needs rather than continuing to depend on full time, certified, and permanent instructors. At that time, schools will find that competency-based (learner outcome), individualized instruction is more cost-effective than large group instruction. The students with special needs will need less time in remedial instruction since they will have access to help when they need it. The gifted student will be able to complete their educational program more quickly. With the shortage of young workers that is projected to occur in the future, employers will encourage schools to reduce unnecessary educational practices and operate efficiently. There will be a need for schools to change their focus from a "basic skills care curriculum" and recognize that for students to be adequately prepared for a rapidly changing work place, new skills and knowledge must be integrated into the skill curriculum which may mean eliminating nice to know data and increasing the amount

of hands-on, problem solving instructional objectives.

Besides all of these challenges for a future that is almost a present reality since many of these events are now happening, America will react as it is used to doing. There is a willingness to embark into the future with a determination to solve this problem. That is the way that America works and this means solving problems and taking challenges.

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