A STUDY OF SELECTED CHARACTERISTICS AND THEIR RELATIONSHIP TO STUDENT SUCCESS AT FOUR POST-HIGH SCHOOL INSTITUTIONS

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PREFACE

The social-cultural and technological changes that have occurred during this generation have created a demand for technically competent workers. Increasingly this competence is being gained in public supported institutions by larger numbers of persons. Effective planning of technician education programs has been hampered by a lack of descriptive information relative to students being served by technician education programs at different types of post-high school institutions. The purpose of this study was to provide additional information about characteristics of technician education students that relate to the student's success.

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CHAPTER I

INTRODUCTION

The value of higher education is not frequently questioned for those who ultimately reach the baccalaureate or higher degree level. In fact there is a trend toward recommending higher education for all young people. Consequently, high schools and junior colleges view their primary role as one of providing a strong base of general studies that will prepare the student for specialized study at the upper division and graduate levels.

The bulk of our educational emphasis and effort is being directed toward an educational goal of a baccalaureate degree that, unfortunately, will be achieved by only 20 percent of each age group and not necessarily the top 20 percent in ability. The remaining 80 percent of each age group need realistic educational opportunities that fulfill their need for economic survival and assist them in becoming self sufficient and contributing members of society.

Statement of the Problem

As our society becomes more and more involved with and dependent upon technological innovations, it also becomes increasingly dependent on a competent technical work force. This technical work force is needed to assist in the designing and manufacturing of products as a part of the scientist, engineer, technician, and craftsman team. The

installation, service and maintenance of complex equipment, primarily a job of the technician, also requires substantial numbers of competent workers.

The need for technically competent workers creates a need to know more about preparing or educating people for this spectrum of the work force. Not only do we need to identify the similarities and differences in the populations being served in various institutional settings, but we need to know how to predict student success for purposes of recruitment, counseling, and selection.

Insight into how to design and conduct programs that will accommodate the right quantity and quality of people can be gained by knowing more about the characteristics of students who successfully complete these programs. The problem with which this study is concerned is the lack of specific knowledge about how characteristics of technician education students relate to the success the students have in completing their programs.

Purpose of the Study

The purpose of this study was to identify differences and similarities among technician education students at four post-high school institutions with respect to students who complete their educational program on time and those who do not. Considered in this investigation were a number of scholastic test scores, and personal and social background characteristics including scholastic aptitude, socio-economic background, age, sex, education and educational expectations (see Appendix A).

Specifically, this study was concerned with the following research questions:

1. Which of the selected personal and social background characteristics identified in a previous research study relate to student success (completion of the program within the scheduled time) in technical programs at four different types of institutions? (See Appendix A for review of the questionnaire which is the source of personal and social background characteristics.)
2. Which of the selected personal and social background characteristics identified in the above question relate to student nonsuccess (failure to complete their program within the scheduled time) in technical programs at four different types of institutions?
3. To what extent do the scores on the Technical Scholastic Test and the Nelson-Denny Reading Test relate to student success in technical programs at four different types of institutions?
4. Are there identifiable similarities and differences in student bodies at four different types of institutions with respect to selected factors relating to student success and nonsuccess?

Need for the Study

The need for this study was generated by the increasing demand for technically trained people in the work force and a lack of information and research with respect to the characteristics of students in

technician education. Although some types of occupational education have received federal recognition and financial support the past century the recognition of the post-high school engineering technology programs has developed rather recently.

Technological developments during and after World War II created a need for and caused an emphasis to be placed on technician education. As Graney (5, p. 8) puts it:

> Events leading up to World War II and the conflict itself compelled the government to establish the Engineering Science Management War Training Program. Literally hundreds of thousands of technician-level specialists were trained during this period, resulting in an acute awareness on the part of educators that a genuine longrange technical institute program was an absolute must.

The next big push was when Sputnik, one symbol of technological advance, flashed before the world's eyes. The United States responded with the National Defense Education Act which was designed primarily to promote science, language, mathematics, and engineering opportunities for the academically talented, degree-seeking student. This was a valuable assistance to scientific education, especially for the 20 percent that receive the college degree, but not necessarily for the 80 percent who do not. Venn (6, p. 2) says that:

> Unfortunately, the "pursuit of excellence" has left more of them behind. At the junior high school, high school, and junior college levels, most students, whatever their abilities, aptitudes, and interests, study those subjects that form the high road to the baccalureate degree. More than a few of them have difficulty appreciating the logic of this course. Despite propaganda about the importance of staying in school, they drift out of educational institutions in droves; the system loses 35 percent of its enrollers during high school, then 45 percent of its high school graduates, and finally 40 percent of its college entrants. Some of this attrition is unavoidable, of course, but, still, large numbers of these dropouts are simply early leavers who are capable of considerably more education than they received. "Lack of Interest" is by far the most frequent

> reason they give for leaving, because they do not fit into the present college-track play of education. Labor Secretary Willard Wirtz more aptly calls them "pushouts."

In 1963 the Vocational Education Act was passed, authorizing, among other major programs, help in the construction of vocational and technical education facilities. This act was amended in 1968 increasing federal expenditures for vocational and technical education to 3.1 billion dollars through 1972. All the implications of this bill for technician education have not yet been fully realized.

The influence of higher education's rigid structure for academics has hampered the development of occupational education. Curriculum planners in these programs have been reluctant to develop programs with the necessary specialized technical course content because these courses do not "transfer" to baccalureate degree programs. Students often hesitate to enroll in these programs for the same reason.

The comprehensive community college or technical institute cannot be understood without a clear, factual, and unbiased understanding of its students. Planning for the future must take into account that the individuals who attend the community colleges and technical institutes differ widely in ability, in adjustment, in beliefs, and in physical and mental health. It is not only important that the administrator, the instructor, and the community know that these variations do exist but they should have a knowledge of their magnitude and nature (7, p. 1).

With respect to educational needs and planning, McConnell (8,p.19) states:

> Planning for the future must take into account the basic fact that whatever system of higher education emerges from the effort to assimilate eleven million or even seven million students, will need to be adapted, not only to great

> variation in academic aptitude and achievement, but also to highly diverse social and cultural backgrounds, interests, and dispositions.

Much more needs to be known about the type of student now being served by technician education programs for more realistic counseling and guidance. Because of its relatively short existence, there is a lack of research in all phases of technical education, and particularly in the area of student characteristics. This is evidenced by Phillips and Briggs (9) who listed six significant studies in a review of the literature in the field of technical education.

Von Stroh (10, p. 5) says that:

> Most of the vocational-technical education research done to the present time has been concerned with agricultural and home economics education while relatively less has been done on trade and technical education and training.

In a recent review of Oklahoma based research in technical education, ten studies were found that were in the general area of student characteristics (11). Of these ten studies, two were concerned with the same general types of factors as this study deals with, but neither had the same scope or objectives as this study.

Scope and Limitations of the Study

This study examined selected scholastic achievement scores as well as the personal and social background characteristics of first time entering students in four post-high school technician programs in Oklahoma as studied by Phillips (12) in 1967. These characteristics were then analyzed with respect to whether the student was successful in completing the program. There was no effort made to determine the reasons for the nature of the results or to identify additional characteristics.

The scores from the Technical Scholastic Test, and Nelson-Denny Reading Test were used. Personal and social background characteristics considered were items from the questionnaire used by Phillips.

Assumptions

It is assumed that:

1. The students of this population are similar to the students that have enrolled and will enroll in these programs since the data was collected.
2. This population of students is similar to students enrolling in similar types of programs at similar types of institutions.

Definition of Terms

Technical Education - Education to earn a living in an occupation in which success is depending largely upon technical information and understanding of laws of science and principles of technology as applied to modern design, production, distribution and service (13).

Technician (Engineering) - A worker on a level between the skilled tradesman and the professional scientist or engineer. His technical knowledge permits him to assume some duties formerly assigned to the graduate engineer or scientist. For example, technicians may design a mechanism, compute the cost, write the specifications, organize the production, and test the finished product. There are technicians in other occupational fields (13).

Success or Successful Student - Indicated by being recorded on the

student's transcript that a certificate or associate degree has been awarded by the time the student was scheduled to have completed the program.

Nonsuccess - All students not having been awarded a certificate or associate degree by the time they were scheduled to complete the program.

CHAPTER II

REVIEW OF THE LITERATURE

This review deals with selected studies that appear to contribute to what seem to be some of the most educationally significant characteristics of post-high school students seeking technical training of less than baccalaureate level. After reviewing the literature related to characteristics of these students, it appeared logical to divide the chapter into the following sections: (1) Background, (2) Theoretical Concepts, (3) Diversity of Student Populations, (4) Academic Characteristics, (5) Nonacademic Characteristics and (6) Technician Education Students.

Background

Present day demands placed upon higher education by our society to serve an ever increasing heterogeneous group of students has pointed attention to the need for updating all aspects of education policy including admission policies, program offerings, and pre-college counseling. Technician and associate degrees are becoming increasingly more significant to a larger percentage of high school graduates. Colleges and universities are expanding their curricular offerings to accommodate those students seeking technical training of less than a baccalaureate level. The question is no longer "Who should go to college?" but rather, "What type of program will best meet the needs of each

particular individual?" The problem of bringing the students, institutions, and programs together with mutually satisfying results requires continuing inquiry.

According to McConnell and Heist (14,p. 226) the first study dealing with college students was reported by Carrell in 1896. This study, which followed closely the pioneering work in intelligence testing, was an attempt to measure differences in sensory perception as a correlate of intelligence. Although research on college students can be traced to the late 1800's, it was the late 1930's before significant research in this area was reported. Since that time research relative to students in higher education has rapidly increased. In 1964, Coffelt and Hobbs (15,p. 1) reported: "...the output of published research relating to college students had quadrupled in this decade over the previous one."

Theoretical Concepts

Many educators feel that a more optimal goal choice can be achieved if sound empirically supported concepts of vocational development and choice are constructed. Several theoretical approaches have attempted to bring into focus the process through which late adolescents move in the transition from high school training and education to a work situation. Super, Ginzberg, and Ausubel have been three of the most active theorists in this area.

Ginzberg (16) and Super (17) view vocational choice as a development process of several stages. Ginzberg conceptualizes individuals betwen the ages of 14 to 21 as being in a realistic stage of vocational development. This stage has been preceded by previous stages of fantasy

and tentative choice. The tentative choice stage is in turn comprised of three substages; exploring to learn as much as possible about himself and about the outside world, testing himself, and searching for new perspectives and experiences in order to increase his understanding of reality. Through exploration the adolescent is better able to crystallize and eventually specify an educational or vocational choice to which he can commit himself with some confidence.

A recent formulation presented by Super is in a 1963 monograph. He attempts to deal with exploratory and establishment stages in a way which furnishes a basis for research.

The educational development of the exploratory stage is described as crystallizing an educational preference, specifying an educational preference, and implementing an educational choice. This is the stage in which the individual narrows his field of preferences, commits himself to a specialized program of education or training, and finally makes his choice as a reality. A student that continues in a program until successful completion could be seen as crystallizing and specifying his educational-vocational concept.

Super (17) continues by defining exploration as referring to:

> ...activities, mental or physical; undertaken with the avowed or unconscious purpose or hope of eliciting information about oneself or one's environment, or of verifying or aiming at a basis for a decision, conclusion, solution, or hypothesis, or of being entertained, challenged, or stimulated.

Super describes what he considers to be the important differences between his own and Ginzberg's theoretical position: First, Super's developmental tasks and behaviors which are thought to be associated with the exploratory stage are specified in considerably greater detail; second, his discussion of these tasks and behaviors is specific rather

than descriptive or speculative; and third, his exploratory stage is extended to include a testing through trial jobs.

Ausubel (18) earlier stated:

> The adolescent must exchange derived status for primary status, become a person in his own right, and acquire intrinsic feelings of adequacy and worth. In this process the choice of a vocational (or educational) goal plays a crucial role. The chief agent in promoting development is exploration which furnishes the adolescent with opportunities to make (educational) choices and independent decisions, to play different kinds of adult roles, and to establish his own identify.

Diversity of Student Populations

It has been noted that individuals who seek or need more education differ widely in ability, in adjustment, in beliefs, and in physical and mental health. While some needs are important in determining interest in future education, others are equally potent in determining the kind and amount of education desired. Some students have heavy responsibilities and few resources, whereas others are in a most favorable financial position. Financial need and accessibility are major factors in determining whether individuals are able to obtain an education beyond high school. Equally important is the availability of a wide range of programs adapted to the needs, interests, and abilities of the prospective students. The programs must also be related to the economy of the area in order that placement for graduates will be available (19, p. 41).

The data in Beyond High School makes it quite clear that the potency of any given institution cannot be effectively assessed apart from the kinds of students in relation to whom its power is genuinely functional. A little ironically, few colleges (and proportionally

fewer students) are very much aware of the nature of the complicated matching of youngster and institution that produces the significant and meaningful modifications that we properly call growth. The common pieties of the catalogue and the traditional rhetoric of our educational creed obscure the diversity in both undergraduates and colleges that must be dealt with if the college experience is to be most productive (20).

For how many of our youth is the traditional educational opportunity a clearly profitable enterprise. About 52 percent of those graduated from high school in June enrolled in some kind of college for the following September. Of that group, only about half persist for four years, and only about half of those who persist take their first degrees on the conventional schedule. If college attendance is so favorable to growth, why is the rate of attrition so exorbitant?

Academic Characteristics

An early study of significants indicating diversity among college students was reported by Learned and Wood (21) in 1938. This study furnished data on the variations in scholastic aptitude and achievement among 49 Pennsylvania colleges. Significant differences in the general level of intellectual attainment, as measured by achievement tests, were found among the several colleges and universities. Scores on a test of mental ability also showed diversity among student bodies and among groups of students studying in different fields. In three colleges with the lowest mean scores on a general culture test of sophomores, no student scored above the mean of the highest college,

and the student with the lowest score in the highest college did not approach the mean score in the lowest three.

McConnell and Heist (14, pp. 230-248) studied 200 of the more than 1,800 institutions (11 percent sample) to investigate the distribution of ability of entering college students among institutions. The American Council on Education Psychological examination (ACE) was used as a measure of ability for comparing entering students at the institutions included in the sample. The mean ACE total score for 60,539 students in the study was 104.4 with a standard deviation of 27.1. The mean scores among the schools ranged from a low of 37.5 to a high of 142.2. This dispersion of institutional means covers almost four standard deviations.

Some colleges attracted or selected students nearly all of whose scores were above the national mean, and others attracted students whose scores were predominantly below the national mean. McConnell and Heist (14, p. 232) conclude: "...on the basis of academic ability alone the composition of the student bodies on a great many campuses is highly unlike that in many others."

Two studies reviewed by Young (22, p. 255) reported diversity in ability levels among college student bodies. These two studies found a positive relationship between the ability level of students and the highest degree offered by the institution.

Coffelt and Hobbs (15) studied the 1962 freshman classes at all Oklahoma institutions of higher education, both public and private. The diversity among students in Oklahoma colleges was similar to the patterns found in other studies. In this study, the composite standard score on the American College Testing Program (ACT) was used

as one measure of scholastic aptitude. Median composite standard ACT scores ranged from a low of 9 to a high of 22. Approximately 50 percent of the students at the two state universities had composite standard ACT scores of 21 or over, while approximately 25 percent of the students attending the state's four-year colleges had scores of 21 and over.

Results of this study regarding the relationship between ability scores and the highest degree offered were similar to those reviewed by Young (22, p. 255). In the Oklahoma study, when academic ability measured by the ACT was considered, students at the state's four-year colleges were closer to students in the state supported junior colleges than to the students in the state universities.

A study by Astin (23, pp. 3-20) reported diversity among student bodies at different institutions. Information was collected from 127,212 entering students during freshman orientation week at 248 colleges and universities. Astin used intellectualism, estheticism, status, leadership, pragmatism, and masculinity as six factors to analyze differences among institutions. He found that institutions' profiles vary greatly on some of these six factors.

Bereiter and Freedman (24, pp. 563-590) reviewed four studies which investigated differences in academic ability among various major fields. In general, the average test scores of academic ability fall into an order with the physical sciences, engineering, and mathematics at the top, followed by literature and the social sciences. The applied fields agriculture, business, home economics and education were at the bottom. When sex is considered a somewhat different distribution is found. Bereiter and Freedman conclude: "It therefore appears that any

statement about the greater appeal of the natural sciences to students of high intelligence would need to carry the qualification, 'for men'."

An excellent synthesis and critique of research relating to the junior college student has been made by K. Patricia Cross (25). Cross' analysis is concerned with junior college students in general.

At present the data that exists pertaining directly to occupational education students is rather scarce and fragmented. A description of technical students is treated by Aaron J. Miller (26, pp. 49-54). Also, a review of literature by Anderson (11) gives some characteristics of technical students in Oklahoma.

Nonacademic Characteristics

According to McConnell (8, p. 20) interest in nonacademic aptitudes stems from several sources:

> One is the evidence that measured scholastic aptitude, or even previous scholastic achievement, is in only a limited degree related to college success, expressed either in persistence or in grade point averages. It is becoming increasingly apparent that the social and cultural background of students, and poverty or the wealth and variety of their previous experience, condition their educational development.
>
> Their attitudes, values, intellectual disposition, and educational goals will likewise help determine how they respond to instruction, to student and faculty culture, to the dominant characteristics of the institution they attend.

In his discussion of technical students, Graney (5) states "there are surprisingly few factual data which define the kinds of individuals such students are." He goes on to say that there is much speculation about technical students; but, "the speculation deals less with the subject of what technical students are than with what they ought to be."

Hakanson (27) investigated the relationship between selected personal characteristics and educational attainment of students in occupation-centered curricula at six junior colleges. Findings from this study indicate that low and especially middle socioeconomic status students are more likely than high socioeconomic students to complete an occupation-centered curricula. Hakanson found that only 14 percent of the students withdrawing from college transfer programs enrolled in occupation-centered curricula during the period of the study. This finding is consistent with the information reported by Taylor and Hecker (28). These investigators found that students who are not successful in the program they select upon initial enrollment tend to withdraw from college rather than change to another curriculum. This was true even though there were numerous alternative programs and counseling facilities that were available to students studied.

Relative to socioeconomic background and college attendance, Bradfield (29, pp. 123-129) summarizes several studies which show that economic background is an important variable in determining who will attend college. The college attendance rate is higher among students from the upper socioeconomic levels than among students from lower socioeconomic levels.

The conclusion reached by Medsker and Trent (30) concerning the relationship of ability, socioeconomic background and college attendance, supports the conclusions reported by Bradfield. This study involved 10,000 students in the 1959 high school graduating class in 14 midwestern communities with similar demographic and industrial features. They found scholastic ability and high school rank to be closely related to college attendance. Medsker and Trent conclude (30, p. 99):

> ...more important than either ability or high school record in determining college attendance was the occupational level of the father, as is evidenced by the fact that college entrance ranged from 72 to 78 percent in the top three occupational categories, and from 28 to 37 percent in the three lowest categories. In fact, more students of low ability from high socio-economic homes entered college than did high ability students from low socioeconomic homes.

Relationships were also reported between the occupational level of the father and the type of college attended, and the educational attainment of the parents and the type of college attended. In general students who attended junior colleges came from homes where the father's occupation was classified in the lower levels and the educational attainment of the parents was high school graduation or less. Students whose father's occupations were classified in the upper levels and whose parents had attended college tended to go to four-year colleges and universities.

A 1965 report of the Coordinating Council for Higher Education (31, p. 17) relative to the California junior colleges includes the topic of family background of students. This report states:

> There are now sufficient data about the antecedent characteristics of Junior College students to permit several generalizations. These are made with the full recognition that community colleges attract students from all sections of California society. Nevertheless, students from the homes of clerical, skilled, and unskilled workers are greatly in the majority. Clark, for example, found that the student body at San Jose Junior College reflected the socioeconomic structure of the community it served. This and other studies indicate, too, that the more metropolitan the community, the more Junior College students will be from working class families. The relationships of family background to factors relevant to success in college are well established. Several of these factors are of considerable importance to Junior College education.
>
> 1. A majority of California Junior College students have parents with only high school educations.

2. Family encouragement and support is low for many Junior College students since education is not highly valued by the family. On the other hand, the upward social mobility of some working class families may result in unrealistic aspirations on the part of many students.

3. The majority of Junior College students find it necessary to work in order to support themselves in college. Often this means reduced course loads or such stress that achievement is impaired.

4. The relative lack of cultural and civic interests in homes from which a majority of Junior College students come may have profound effects on student motivation and achievement... and on the general student environment of the colleges.

Schoendeldt (32, pp. 91-130) reached a somewhat different conclusion regarding the relative effects of socioeconomic background and intelligence on college attendance. The relationships among socioeconomic environment, general academic ability, and post-high school education were investigated using the data from Project Talent. It was found that students from the higher socioeconomic levels attending technical schools tend to come from the lower ability groups while technical school students from lower socioeconomic levels are more evenly distributed among the ability levels. Although the data from this study shows that both ability and socioeconomic background affect college attendance, ability has more influence than does socioeconomic background.

It was suggested by Schroder and Sledge (33, p. 97-104) that personal and motivational factors may be more important determinents of college achievement than the socioeconomic level of the parents; however, at least two studies by Astin (34, pp. 219-227) and Caskey (35) report that a majority of college dropouts came from the lower socioeconomic groups attending college.

Regardless of achievement level, Gottlieb (36, pp. 266-289) reports that middle-class and upper-class boys are more likely to report parents as influencers of one's choice to attend college than are respondents from the lower class. High-level achievers within each class report greater parental encouragement. The patterns of influence of teachers and school counselors indicates that high achievers receive more encouragement more frequently than any of the other groups.

Technician Education Students

A review of the literature relative to technical education reveals that research in this field is limited and fragmented. In 1960 Cooper (37, p. 336) stated:

> The literature of technical and semi-professional education tends toward generalization and observation rather than empirical data. The limited number of studies available dealt primarily with (a) the need for such training, (b) the types of institutions offering it, and (c) analysis of specific programs.

Roney (38, p. 14) found the situation to be very similar in 1964. According to Roney:

> Literature pertinent to this study was found to be largely descriptive in nature. Reports of controlled experimental research appeared to be limited, and when such reports were available, they were short, highly specific and localized projects.

In his 1966 review, Larson (39) reported a similar conclusion. In the preface to the review he states:

> Since technical education is a relatively new field, the amount of significant, sophisticated research is quite limited. However, much helpful information for research is contained in reports, conference summaries, articles, and other publications.

As indicated above, there are surprisingly few factual data relative to the kinds of individuals served by technican education in

spite of the growing interest in technician education in recent years. While factual information is scarce, speculation abounds which is clouded with inaccuracies and prejudices. From it, however, emerge certain generally accepted conclusions.

In choosing a college, Smith and Lipsett (40, pp. 163-171) state that the technical institute student is less apt to consider such factors as social contacts, a beautiful campus, renowned athletic teams, or distinguished professors than are students at many liberal arts colleges. The technical institute student is more interested in a specific course of study leading to an occupational goal.

In 1959, Henninger (41) reported that at entrance the average age of the technician student is 20 years and the range was from 18 to 27 years according to data from 93 post-high school institutions. A study conducted by Medsker (42, p. 45) in the late 50's found California community college students to be older and to have a wider range. Data on 13,304 community college students in California reveals that 53 percent are between 16 and 22, and 16 percent over 30. In the North Carolina community colleges and technical institutes, 74 percent of the students are between 16 and 22 years of age with 13 percent over 30 (43, p. 151).

Miller (44) describes the technician education student as a person with average or above average intelligence, but his high school transcript may not reflect his true potential as a technician because of improper motivation during high school. This student may express a disinterest in mathematics and science of the kind to which he may have been exposed in high school.

Based on 20 years of observations, Van Hall (45) gives the following description of the technical student:

> The technical student is work oriented, pragmatic, has an unquenchable sense of curiosity and comes to school with clearly established career goals. The technical student will show a strong aptitude in the mathematical, scientific and mechanical areas, but will show little interest in English and social studies. The technical student's scores on standardized intelligence tests may not be a good indication of his true potential as a student, since these tests are largely verbal-based. Finally the technical student does not possess a deep social consciousness concerning what some students consider the great issues of the day. Club activities which are directly related to the technical student's curriculum are the only ones in which he is likely to show an interest.

The following description of the "Typical Technical Student" is based on information from a statewide study in North Carolina (7, pp. 41-42). According to this study:

> The typical technical student in the North Carolina community college or technical institute is a male, white, single, and between 18 and 22 years of age. He attends class more than 18 hours per week, during the day and is probably classified as a returning freshman.
>
> The student attends an institution in his home county, lives with his parents, and travels less than 10 miles to class. He is employed, at least part-time. His parents had an income of more than $5,000 during the last twelve months, even though they do not have a twelfth grade education.
>
> After graduation the typical technical student plans to work in North Carolina, but does not plan to work toward a four-year degree, although more than one-fourth of his classmates do. He would have continued his education at another institution this year if the one where he is now enrolled had not existed. The institution he is attending is located in his home county.
>
> In high school, the typical student was enrolled in the general curriculum and he was referred to the community college or technical institute he is now attending by the high school counselor or by another student.

CHAPTER III

METHODOLOGY

The purpose of this study was to identify differences and similarity among technician education students at four post-high school institutions with respect to students who complete their educational programs on time and those who do not. A review of the literature revealed little information concerning characteristics of students served by technician education programs at different types of institutions. This is especially true of data from longitudinal research. The problem with which this study is concerned is the lack of specific knowledge about how characteristics of technician education students relate to the success the students have in completing their programs. This study is a continuation of the initial study conducted by Phillips (12) in 1967. From his review of the literature, Phillips identified a number of student characteristics thought to be important for educational planning and student guidance.

Background Information

Following is a brief description of the procedures used in the Phillips study to give the reader sufficient background for this study.

Institutions

Institutions included in this study were selected from the 12 public-supported post-high school institutions in the state which offered technician education programs. The four institutions selected consisted of: (1) a residential, public-supported junior college, (2) a residential, public-supported vocational technical school, (3) a nonresidential, public-supported metropolitan technical institute, and (4) a public-supported residential technical institute located on a state university campus. These institutions were selected primarily because of their diverse characteristics. While there are some common elements among the selected institutions, each institution has certain unique characteristics.

Curricula

The curricula included in the study at each of these schools were those which are reimbursed by the Technical Education Division of the State Department of Vocational-Technical Education. Each of the institutions had operated technician education programs for a minimum of six years prior to the study in 1967.

Population

Subjects included in this study were selected from the four participating institutions using the following criteria: (1) They must be enrolled in the technician education program for the first time in the 1967 fall semester, and (2) must be enrolled as full-time day-time students. All students enrolled in the selected programs at the four participating institutions were eligible to be included in the study.

Except for a limited number of students who were absent and 12 electronic data processing students at the residential vocational school who had conflicting schedules, the 724 students in the study represent the total number of students meeting the criteria for inclusion in the study.

Instruments

Three instruments were used to collect data for the study--two standardized tests and a questionnaire. All data were collected in group settings at the individual institutions within nine days from the start of the semester.

The two standardized instruments used as measures of scholastic aptitude were the Technical Scholastic Test and the Nelson-Denny Reading Test. The Technical Scholastic Test contains 150 items which are designed to measure knowledge and abilities important for success in technical occupations. The test was designed to: (1) assess the technical knowledge acquired through practical experience with electrical and mechanical equipment; (2) measure the knowledge acquired through academic study of the physical sciences; and (3) indicate general scholastic ability. In addition to a total score, Technical and Scholastic composite scores are obtained from the test, the technical scale measures important aspects of technical ability at the sub-engineering level and the Scholastic score measures potential for profiting from training and is closely related to general intelligence.

The Nelson-Denny Reading Test was used as a measure of scholastic aptitude based on previous research showing a positive relationship

between reading skills and academic achievement. It is also suitable in length and easy to score.

Information for determining background and the personal social factors thought to be useful in the study were obtained by the use of the Student Information Form I. This instrument consisted of 59 items and was designed for use in the study.

Data Collection and Coding

Three of the institutions included in the study operate on the semester system. At these institutions, the technician education curricula are designed to be completed in four semesters. Therefore the students that enrolled in the fall semester of 1967 would be expected to graduate in the spring of 1969. It was decided to wait until after the completion of the summer session in 1969 to collect the data at these institutions. The other institution operates on the trimester system. Some of the technician education curricula at this institution are six trimesters in length so the subjects for the study were expected to complete their program at the end of the summer trimester in 1969.

During the summer of 1969 the registrars of the schools included in the study were contacted and a time was set when the transcripts of the subjects would be brought up to date and available. Arrangements were made for obtaining unofficial transcripts for each of the subjects.

Unofficial transcripts were obtained for 703 of the original 724 subjects leaving only 21 that are missing. Of the 703 transcripts obtained, 17 were found to not fit the original criteria leaving 686

usable subjects making the data 94.7 percent complete. Table I shows the number of original and follow-up subjects by technology and by institution.

For the purpose of this study, "success" was defined as graduating from the program at the scheduled time. Subjects were assigned a "status" according to their standing at the time they should have graduated. If the transcript indicated successful completion, (a certificate, or a degree awarded), they were counted as "graduates." When the transcript showed successful enrollment just prior to the scheduled completion date but did not show a completion, they were counted as still "in the program." Those whose transcript indicated a transfer to another program within that institution were counted as "transferred." If the transcript did not indicate a transfer, completion, or successful enrollment just prior to the scheduled graduation time, the subject was counted as "dropped." Because it is not indicated on the transcript, those who transferred to another institution are counted with the ones who dropped. Table II shows the distribution and percent by school and status.

TABLE I

DISTRIBUTION OF STUDENTS INCLUDED IN THE STUDY
BY SCHOOL AND TECHNOLOGY

Technology	Junior College		Vocational Tech. School		Metropolitan Tech. Institute		On-Campus Tech. Institute		Total	
	Orig.	Follow-up	Orig.	Follow-up	Orig.	Follow-up	Orig.	Follow-up	Orig.	Follow-up
Aeronautical	--	--	--	--	--	--	22	22	22	22
Computer Programing	--	--	--	--	30	28	--	--	30	28
Construction	--	--	--	--	--	--	11	8	11	8
Data Processing	121	114	65	63	--	--	--	--	186	177
Drafting	--	--	95	93	--	--	--	--	95	93
Drafting & Design	34	32	--	--	36	34	16	15	86	81
Electronics	33	33	98	93	34	27	26	25	191	178
Fire Protection	--	--	--	--	--	--	13	12	13	12
Mechanical	36	35	--	--	--	--	22	22	58	57
Metals	--	--	--	--	--	--	7	6	7	6
Petroleum	--	--	--	--	--	--	9	8	9	8
Radiation	--	--	--	--	--	--	16	16	16	16
Total	224	214	258	249	100	89	142	134	724	686

TABLE II

DISTRIBUTION OF SUBJECTS BY SCHOOL AND STATUS

Status	Junior College		Vocational Technical School		Metropolitan Technical Institute		On-Campus Technical Institute	
	Nr.	%	Nr.	%	Nr.	%	Nr.	%
Graduated	84	39.3	61	24.4	9	10.0	45	33.6
In the Program	9	4.2	20	8.0	23	25.9	27	20.1
Transferred	34	15.9	48	19.3	1	1.1	8	6.0
Dropped	87	40.6	120	48.3	56	63.0	54	40.3
Total	214	100.0	249	100.0	89	100.0	134	100.0

Statistical Procedures

Two methods were used to determine which items had a significant relationship to student success. The population was grouped into two categories (successful and nonsuccessful) according to whether they completed the program on time. For three of the institutions the chi-square test was used to determine significance. In cases where the expected values were to low, the data was regrouped in order to get a valid test. The number of successful students was so low at one institution that a valid chi-square test could not be made. These items were tested for significance by finding the exact probability in a Hypergeometric Probability Distribution Table (46).

By using this table, the exact probability can be found for two by two tables with a fairly small total even though a valid chi-square test cannot be made. Two methods were used to determine significance when

there were more than two values or choices of responses. One method used with ordinal and ratio type data was to collapse into two groups of about equal size, to make the statistical test. In order to try to overcome some of the objection to so much collapsing, each of the ordinal data groups was tested against the remaining data as a group. This would identify a particular category that was statistically different than all others. In some cases only partial collapsing was done before checking the different categories. If significance was found in any way it was noted and the categories indicated.

An effort was made to collapse the data from the other three schools uniformly. Appendix B shows the categories, other than original, that were tested.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to identify differences and similarities among technician education students at four post-high school institutions with respect to students who complete their educational program on time and those who do not. Results of the data analysis is presented in this chapter. Conclusions and recommendations based on these results are presented in Chapter V.

The Student Information Form I, Nelson-Denny Reading Test, and the Technical Scholastic Test was completed by each of the original 724 subjects and this information was available for the 686 subjects used in this follow-up study. In a few cases the responses were not usable and some of the items did not apply to all of the subjects. The analysis presented is based on the usable responses.

The analyses are presented in two sections. First, the analysis of items on the Student Information Form I are presented. The second section presents the results of analyses of scholastic aptitude variables.

Nonscholastic Factors

This section presents the analysis of items on the Student Information Form I (See Appendix A). Table III shows the responses to items that were significant with respect to success or nonsuccess and

TABLE III

RESPONSES OR FACTORS RELATING TO SUCCESS AND LEVEL OF SIGNIFICANCE FOR ITEMS ON STUDENT INFORMATION FORM I

Items from Student Information Form I (See Appendix A)		Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
1	Sex	.05 Male	--	--	No Test
2	Marital Status	--	.1 Married	--	.05 Married
3	Dependents	--	--	--	.05 Dependents Indicated
4	Veteran	--	--	--	.01 Veteran
5	Farm Background	--	--	--	--
6	Public or Private H. S.	--	--	--	--
7	Year Left H. S.	--	.1 Previous to Spring 1967	--	.01 Previous to Spring 1967
8	Age	--	--	--	.01 20 or more
9-B	Influence of Hobby	--	--	--	--
11-A	Previous Post H.S. Education	--	.05 Yes	--	.05 Yes
11-B	Semester Hours	--	.05 College Hours indicated	--	.01 College hours indicated

TABLE III (Continued)

Items from Student Information Form I (See Appendix A)		Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
12	H. S. Rank	--	.05 Top ½	--	--
13	Size of Graduation Class	--	--	--	.1 Hi 100-300*
15	Father's Education	.01 Hi Less H. S. Lo Post H. S.*	--	--	--
16	Mother's Occupation	--	--	--	--
17	Mother's Education	--	.1 Lo Less than H. S.*	--	--
18	Favorite Subject	.05 Lo Eng. Other Hi Math*	--	.01 Hi Math**	--
19	Least Favorite	--	--	--	--
20	Best Grades	--	--	.1 Hi Math**	--
22	Highest Education Expected	--	--	.05 Higher Degree	--
24	Knowledge of Programs	--	--	--	--
25	Accurate	--	--	--	--
26	Vocational Education	--	--	--	--

TABLE III (Continued)

Items from Student Information Form I (See Appendix A)	Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
27 Vocational Program	--	--	--	No Test
28 Years Vocational Program	--	--	No Test	--
29 Size of Town	--	--	--	--
30 Distance from H. S. to Here	--	.1 Hi this town & 50-100 Miles*	.05 Hi Less than 25 Miles, Lo this Town**	--
31 Distance Now Live	.05 Hi 1-15 Miles Lo on Campus*	—	—	—
33 Expected Earnings	--	--	--	--
35 Trouble Expected	--	--	--	.1 No Trouble*
36 Found out about Program	--	.01 Hi Other Lo Mail*	--	--
37 Visit with Counselors	--	--	--	--
38 Counselor in H. S.	--	--	--	--
39 What did he tell you	--	--	--	--
40 Consider Program while in H. S.	.01 Yes	--	--	.001 No

TABLE III (Continued)

Items from Student Information Form I (See Appendix A)		Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
41	Final Decision in H. S.	.1 Yes	--	--	.05 No
42	School Rep. Visit	--	--	--	.1 No
43	School Visit	--	--	--	--
44	Most Encouraged	--	--	--	--
45	When Decide on Occupation	.01 Hi more than a month, & at Least a Year*	.1 Hi More than a month, and at Least a Year*	--	--
46	Full Time Job	--	--	--	--
48	Interest in Job	--	--	No Test	No Test
49	Earnings	--	--	--	No Test
50	Job Relation to program	--	--	--	No Test
51	Part Time H. S. Job	--	--	--	--
52	Chances of Getting Job	--	.01 Excellent*	--	--
53	Job without Training	--	--	--	--
54	Interest in Present Training	--	--	--	--

TABLE III (Continued)

Items from Student Information Form I (See Appendix A)	Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
55 Confidence in Completing	--	.01 Very Confident*	--	--
56 Earnings at Graduation	--	--	--	--
57 Earnings in Five Years	.05 Lo Over $800 per Month*	--	--	--
58 Plans after Graduation	--	--	--	--
59-A Where Prefer to Work	--	--	.1 Lo in Okla.**	--
59-B Expect Best Opportunity	--	--	--	--

*Not necessarily the significant variable since the chi-square test was made with more than two response choices. Categories indicated had highest and/or lowest observed cell value with respect to expected value which provided an indication of the significance variable.

**Responses indicated were significant when tested against all other responses collapsed together.

the level of significance (.1, .05, .01, .001). When indicated with an asterisk, the statistical test was made with more than two response choices. The category with the highest and/or lowest observed cell value with respect to expected value is given.

In many cases the data from responses to items had to be collapsed in order to make a valid statistical test. Appendix B shows the categories into which the data was collapsed in order to make the statistical tests. In some cases a valid test was not made because of a low number in a category. In this case, and when the data was not meaningful, "no test" is indicated in Table III. As mentioned previously, the data from the Metropolitan Technical Institute was tested by tables rather than by the chi-square test as were the other three institutions. The tables used would test only a two by two table so for items with more than two response choices, each choice was tested against all others grouped together. Where noted in Appendix B the data was collapsed into new groups before being tested for significance.

There were 54 items from the Student Information Form I that were tested for a significant relationship to student's success. Of these 54 items tested, 27 did not have a significant relationship to success or nonsuccess at any of the four institutions. There were 18 items that were significant at only one institution and nine that were significant at two institutions. None of the items tested had a significant relationship to student success at more than two of the four institutions.

Looking at the significant responses by institution yields the following distribution. There were eight items having significant relationship to student success at the Junior College, 11 at the Vocational Technical School, five at the Metropolitan Technical

Institute, and 12 at the On-Campus Technical Institute. Tables IV through VII show the items that were significant at each of the institutions.

At the junior college, student success has a significant relationship to eight items as shown in Table IV. The four following items were not significant at any of the other three institutions: sex, father's education, distance now living from school, and expected earnings in five years. The males and those who's fathers had less than a high school education were more likely to complete their program. The other significant items may indicate long range, realistic plans; a determination to better themselves; and a tendency to come from the local community. This is not well supported, however, by other factors from the questionnaire.

Table V shows the 11 items that were significant at the vocational-technical school. The five items significant at this institution that were not at the other three institutions are: high school rank, mother's education, how they first heard about the program, chances of getting a job, and confidence in completing the program. These successful students might be described as older, having some previous post-high school education, academically capable but having a rather strong and specific orientation toward work.

The five items found to be significant at the metropolitan technical institute are shown in Table VI. Three of these items, subject in which they made their best grade, highest education expected, and where they would prefer to work, were not significant at any of the other three institutions. The three items indicating that these students

may be scholastically inclined is not supported by the scholastic scores shown in the next section of this chapter.

TABLE IV

ITEMS RELATING TO STUDENT SUCCESS AT THE JUNIOR COLLEGE

Item From Student Information Form I (See Appendix A)		Significant Factor
1	Sex	.05 Male
15	Father's Education	.01 Hi less than H. S.* Lo Post H. S.
18	Favorite Subject	.05 Hi Match* Lo English and Other
31	Distance Where Now Live	.05 Hi 1-15 Miles* Lo On-Campus
40	Considered Program While in H. S.	.01 Yes
41	Final Decision in H. S.	.1 Yes
45	When Decide on Occupation	.01 Hi More than a month and at Least a Year*
57	Earnings in Five Years	.05 Over $800 per Month*

*Not necessarily the significant variable since the chi-square test was made with more than two response choices. Categories indicated had highest and/or lowest observed cell value with respect to expected value which provided an indication of the significance variable.

TABLE V

ITEMS RELATING TO STUDENT SUCCESS AT
THE VOCATIONAL TECHNICAL SCHOOL

Item From Student Information Form I (See Appendix A)		Significant Factor	
2	Marital Status	.1	Married
7	Year Left H. S.	.1	Previous to Spring '67
11-A	Previous Post H. S. Education	.05	Yes
11-B	College Semester Hours	.05	College Hours Indicated
12	H. S. Rank	.05	Top ½
17	Mother's Education	.1	Lo Less than H. S.*
30	Distance from H. S. to Here	.1	Hi this Town and 50-100 Miles*
36	Find out about Program	.01	Hi Other Lo Mail*
45	When Decide on Occupation	.1	Hi more than a Month and at least a year*
52	Chances of Getting Job	.01	Excellent*
55	Confidence in Completing	.01	Very Confident*

*Not necessarily the significant variable since the chi-square test was made with more than two response choices. Categories indicated had highest and/or lowest observed cell value with respect to expected value which provided an indication of the significance variable.

TABLE VI

ITEMS RELATING TO SUCCESS AT THE METROPOLITAN TECHNICAL INSTITUTE

Items From Student Information Form I (See Appendix A)		Significant Factor
18	Favorite Subject	.01 Hi Math*
20	Best Grades	.1 Hi Math*
22	Highest Ed. Expected	.05 Higher Degrees
30	Distance from H. S. to Here	.05 Hi Less than 25 Miles Lo this Town*
59A	Where Prefer to Work	.1 Lo in Okla.*

*Responses indicated were significant when tested against all other responses collapsed together.

At the on-campus technical institute, there were 12 items with significant relationship to student success as shown in Table VII. Six of these items were not found to be significant at any of the other three insitutions. These items are: dependents, veteran, age, size of high school graduation class, trouble expected in completing the program, and did a school representative visit you. These successful students were likely to be married, supporting dependents, veterans, older, having some previous post-high school education, from a medium size school class, not expecting to have any trouble completing the program but did not have early plans to attend this program.

There are four items that are significant at both the on-campus technical institute and the vocational technical school. These common

items are: married, left high school previous to spring '67, had some previous post-high school education, and indicated having semester hours of college credit.

TABLE VII

ITEMS RELATING TO SUCCESS AT THE ON-CAMPUS TECHNICAL INSTITUTE

Items From Student Information Form I (See Appendix A)		Significant Factor	
2	Marital Status	.05	Married
3	Dependents	.05	Dependents Indicated
4	Veteran	.01	Veteran
7	Year Left H. S.	.1	Previous to Spring '67
8	Age	.01	20 or more
11A	Previous Post H. S. Education	.05	Yes
11B	Semester Hours	.01	Hi College Hours Indicated
13	Size of Graduation Class	.1	Hi 100-300*
35	Trouble Expected	.1	No Trouble*
40	Consider Prog. While in H. S.	.001	No
41	Final Decision in H. S.	.05	No
42.	School Rep. Visit	.1	No

*Not necessarily the significant variable since the chi-square test was made with more than two response choices. Categories indicated had highest and/or lowest observed cell value with respect to expected value which provided an indication of the significant variable.

The next highest number of common items of significance between any two institutions is two, between the junior college and the on-campus technical institute. These items are: did you seriously consider this program while in high school, and did you make a final decision to attend this program while in high school. However, these items had opposite relationship to student success at the two institutions. A possible explanation is that at the on-campus technical institute there are students who enroll or inteded to enroll in four year programs and then find that they are better served by the two year program. Because of being on-campus available to these students, a rather large number of these students are successful that did not have early plans to attend the technician education program.

Scholastic Aptitude Variables

This section presents the results from the two scholastic aptitude tests. From each of the two standardized scholastic aptitude tests, the Technical Scholastic Test and the Nelson-Denny Reading Test, two sub-scores and the total score were used. Each of these six scores were checked by institution group to determine whether it had a significant relationship to student success or nonsuccess. Table VIII shows whether the test results are significant. All significant results related the higher test scores with success in the program.

Of the six scores checked, only one was significant at all four institutions. Four of the scores were significant at three institutions and one was significant at only two institutions.

All six scores were significant at the Junior College and the Vocational Technical School. The sub-scores from the Nelson-Denny

Reading Test were not significant at the On-Campus Technical Institute. At the Metropolitan Technical Institute only one sub-score and the total score of the Nelson-Denny Reading Test were significant.

TABLE VIII

THE RELATIONSHIP OF TEST SCORES TO STUDENT SUCCESS

Scale	Junior College	Vocational Technical School	Metropolitan Technical Institute	On-Campus Technical Institute
Nelson-Denny				
Vocabulary	.01	.1	.1	
Comprehension	.05	.05		
Total	.05	.05	.05	.05
TST				
Technical	.001	.05		.05
Scholastic	.001	.05		.05
Total	.001	.05		.01

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The problem with which this study is concerned is the lack of specific knowledge about how characteristics of technician education students relate to the success the students have in completing their programs. Design of effective technician education programs has been impeded by the limited amount of available information concerning the students best served by these programs. Also, proper counseling of students has been hampered by the lack of information regarding the characteristics of students served by technician education programs at different types of institutions. This chapter includes a summary of the study, conclusions, and recommendations.

Summary

This study is a follow-up study to determine whether selected academic and nonacademic characteristics of entering technical students are related to success in completing the program. "Success" is defined as graduating from the program within the alloted length of time.

A previous descriptive study was made of first time entering technical students at four post-high school institutions in Oklahoma. These institutions were: (1) a residential, public-supported, junior college, (2) a residential, public-supported vocational technical school, (3) a nonresidential, public-supported metropolitan technical

institute, and (4) a public-supported, residential technical institute located on a state university campus. The population consisted of only students enrolled in curricula which are reimbursed by the Technical Education Division of the State Department of Vocational Technical Education. These students must also fit the following criteria: (1) They must be enrolled in the technician education program for the first time in the 1967 fall semester, and (2) must be enrolled as full-time day-time students.

Two standardized instruments and a questionnaire were used to obtain data for the original study. The Technical Scholastic Test and the Nelson-Denny Reading Test were used to obtain data relative to scholastic aptitude. The questionnaire was used to gather data relative to a number of personal and social attributes.

The data collection for the original study was completed during the first two weeks of the 1967 fall semester. All data were collected in group settings with the assistance of teachers and administrators at the four institutions. Results from the three instruments were punched into cards for machine analysis.

During the summer and early fall of 1969, after the students were scheduled to have completed their program, the follow-up study began. Through the cooperation and assistance of the registrars at the institutions, arrangements were made to obtain the unofficial transcripts of the students in the original study. Usable data was obtained for 94.7% of the original population. This data was also punched on cards and matched with the original data for machine analysis. Items on the questionnaire, Student Information Form I, and results from the scholastic aptitude tests, Technical Scholastic Test

and Nelson-Denny Reading Test, were analyzed to determine their relationship to success or nonsuccess of the students. "Success" was defined as graduating from the program within the time alloted for normal completion.

From the Student Information Form I, 54 items were tested to determine whether they were related to student success. Of these 54 items, 27 were not significant at the .1 level at any of the four institutions. There were 18 items that were significant at only one institution, and nine that were significant at two institutions. No items were found to be significant at more than two institutions. Two of the items that were significant at two institutions had opposite relationship to success at the two institutions.

The largest number of items from the Student Information Form I that were significant at any of the four schools were 12 at the On-Campus Technical Institute. There were 11 significant items at the Vocational Technical School, eight at the Junior College, and five at the Metropolitan Technical Institute.

Two subscores and the total score for both of the standardized scholastic tests were tested for a significant relationship to student success. Of these six scores tested, only one was found to be significant at all four instituions. Four of the scores were significant at three of the institutions and one was significant at only one institution.

All six of the scholastic scores tested were significant at the Junior College and at the Vocational Technical School. Four of the

scholastic scores were significant at the On-Campus Technical Institute, and two of the scores were significant at the Metropolitan Technical Institute.

Conclusions

1. The scholastic test scores have better relationship to student success at four institutions than responses to items on the personal questionnaire. There is, however, considerable difference in the four institutions with respect to how the test scores relate to student success.
2. The technical students attracted to the four institutions are quite diverse with respect to how their responses to items on the personal questionnaire relate to their success in the programs. There appears to be no sweeping generalizations that can be made about technical students at the four institutions except the ability to read and comprehend as indicated by the total scores on the Nelson-Denny Reading Test.

Recommendations

1. Technician education programs at different types of institutions serve students with different characteristics. It is recommended that school administrators and state officials responsible for planning an expanded program of technician education give careful consideration to the diversity of characteristics of students to be served.

2. Prospective technician education students are not receiving effective high school counseling. It is recommended that the high school guidance systems be assessed to determine the changes which would be necessary if the system is to provide constructive counseling to prospective technician education students. Particular attention should be given to the diversity of student characteristics that relate to student success at the different types of institutions.
3. There is considerable more scholastic data available for this population. It is recommended that more of this data be studied to determine whether there are characteristics that relate to success in the program.
4. The objective of technician education programs is to enable people to perform satisfactorily in technical positions. It is recommended that this population be studied after being on the job to determine what characteristics relate to job success.
5. This study yielded a derth of generalities with respect to characteristics of successful technician education students. It is recommended that more innovative research be initiated in search of general characteristics among successful and nonsuccessful technician education students.

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APPENDIX A

STUDENT INFORMATION FORM I

Questionnaire Used to Gather Student Socio-economic Background Data

1. Sex
   1. _____Male
   2. _____Female

2. Marital Status
   1. _____Married
   2. _____Single

3. How many persons other than yourself are dependent on you for their support?

   _____

4. Are you a veteran?
   1. _____ Yes
   2. _____ No

5. Did you live on a farm while attending high school?
   1. _____ Yes
   2. _____ No

6. Was the high school you last attended a public school?
   1. _____ Yes
   2. _____ No

7. What year did you leave or finish high school?
   19 _____

8. How old are you now?

   _____

9. What is your hobby?
   A._____
   Name Hobby

   B. Did this hobby influence your choice of training programs?
      1. _____ Yes
      2. _____ No

10. What is the name of the training program in which you are enrolled?
    1. ____Aeronautical Technology
    2. ____Chemical Technology
    3. ____Construction Technology
    4. ____Data Processing technology
    5. ____Drafting & Design Technology
    6. ____Electrical Technology
    7. ____Electronics Technology
    8. ____Fire Protection Technology
    9. ____Mechanical Technology
    10. ____Metals Technology
    11. ____Petroleum Technology
    12. ____Radiation Technology
    13. ____Other _____
    Name Program

11(A) How much education did you have before entering this program? (Circle the number which represents the highest grade you have completed.)

7 8 9 10 11 12
High School

1 2 3 4
College

_____
Other (specify)

(B) If you have completed some college work, how many semester hours have you completed? _____

12. Where did you rank in your high school graduating class?
    1. ____I am not a high school graduate.
    2. ____Top quarter of high school graduates
    3. ____Second quarter of high school graduates
    4. ____Third quarter of high school graduates
    5. ____Bottom quarter of high school graduates
    6. ____I do not know may rank in class.

13. About how many students were in your high school graduating class?
    1. ____I did not graduate from high school.
    2. ____Less than 50
    3. ____At least 50 but less than 100
    4. ____At least 100 but less than 300
    5. ____At least 300 but less than 500
    6. ____At least 500

14. What is (or was) your father's occupation?

    _____

    _____

15. Circle the number which represents the highest school grade completed by your father.

    1 2 3 4 5 6
    Grade School
    7 8 9
    Junior High
    10 11 12
    High School
    1 2 3 4
    College

    _____
    More

16. What is (or was) your mother's occupation?

    _____

    _____

17. Circle the number which represents the highest school grade completed by your mother.

    1 2 3 4 5 6
    Grade School
    7 8 9
    Junior High
    10 11 12
    High School
    1 2 3 4
    College

    _____
    More

18. What was your favorite subject in high school?
    1. ____Mathematics
    2. ____Science
    3. ____English
    4. ____Shop
    5. ____History & Government
    6. ____Other _____
       Specify

19. Which high school subject did you like least?
    1. ____Mathematics
    2. ____Science
    3. ____English
    4. ____Shop
    5. ____History & Government
    6. ____Other _____
       Specify

20. In which high school subject did you make your best grades?
    1. ____Mathematics
    2. ____Science
    3. ____English
    4. ____Shop
    5. ____History & Government
    6. ____Other _____
       Specify

21. Which of the following mathematics courses did you complete in high school?
    1. ____Arithmetic
    2. ____Algebra I
    3. ____Geometry
    4. ____Algebra II
    5. ____Trigonometry
    6. ____Other _____
       Specify

22. What is the highest education degree you expect to complete?
    1. ____Certificate of Completion
    2. ____Associate Degree
    3. ____Bachelor's Degree
    4. ____Master's Degree
    5. ____Doctor's Degree

23(A) IF YOU EXPECT TO COMPLETE A BACHELOR'S DEGREE, in what field do you plan to study?
1. ____4-Year Technology
2. ____Teacher Education
3. ____Engineering
4. ____Business
5. ____Other
6. ____I do not plan to complete a bachelor's degree.

(B) At which college do you plan to complete this degree? _____

24. Do you know of other Oklahoma schools which offer the same kind of training program in which you are now enrolled?
1. ____Yes
2. ____No

25. IF YOUR ANSWER TO NUMBER 24 IS YES, list the Oklahoma schools which you know have these programs.

_____
_____
_____
_____
_____

26. Were you enrolled in a vocational course in high school?
1. ____Yes
2. ____No

27. IF YOUR ANSWER TO NUMBER 26 IS YES, in which vocational program(s) were you enrolled?
1. ____Vocational agriculture
2. ____Distributive Education
3. ____Trade & Industrial

_____
(Name of program)

4. ____Technical_____

_____
(Name of Program)

5. ____Other _____

_____
(Name of Program)

28. How many years were you enrolled in a vocational program?
1. ____ 1 year
2. ____ 2 years
3. ____ 3 years
4. ____ 4 years

29. What is the size of the town in which you last attended high school?
1. ____ Less than 1,000 people
2. ____ At least 1,000 but less than 5,000 people
3. ____ At least 5,000 but less than 10,000 people
4. ____ At least 10,000 but less than 20,000 people
5. ____ At least 20,000 but less than 50,000 people
6. ____ At least 50,000 but less than 100,000 people
7. ____ At least 100,000 people

30. How far is the town in which you last attended high school from this town?
1. ____ It is this town
2. ____ Less than 25 miles
3. ____ At least 25 but less than 50 miles
4. ____ At least 50 but less than 100 miles
5. ____ At least 100 but less than 200 miles
6. ____ At least 200 miles

31. How close is the place where you presently live to the school?
    1. ____ I live on campus
    2. ____ Less than 1 mile away
    3. ____ At least 1 but less than 5 miles away
    4. ____ At least 5 but less than 15 miles away
    5. ____ At least 15 but less than 30 miles away
    6. ____ At least 30 but less than 60 miles away
    7. ____ At least 60 miles away

32. How many hours per week do you expect to spend studying outside of class?
    1. ____ none
    2. ____ 5 hours
    3. ____ 10 hours
    4. ____ 15 hours
    5. ____ 20 hours
    6. ____ More than 20 hours

33. How much do you expect the total costs (including everything--fees, books, housing, food, recreation, etc.) for the full length of training time to be?
    1. ____ Less than $1,000
    2. ____ At least $1,000 but less than $1,500
    3. ____ At least 1,500 but less than $2,000
    4. ____ At least $2,000 but less than $2,500
    5. ____ At least $2,500 but less than $3,000
    6. ____ At least $3,000 but less than $4,000
    7. ____ At least $4,000

34. Of the total expected costs for the training program, which you checked in Question 33, what percent do you expect to pay from each of the following sources?
    1. ____ Personal savings
    2. ____ Parents or guardian
    3. ____ Loans
    4. ____ Scholarships
    5. ____ Part-time employment during school
    6. ____ Summer employment
    7. ____ G. I. Bill
    8. ____ Other _____
       Give Source

35. How much trouble do you expect to have in getting enough money to make it through this program?
    1. ____ No trouble
    2. ____ Some trouble, but I'll make it O. K.
    3. ____ It will be difficult, but I can do it.
    4. ____ It will be so difficult that I may not be able to finish.
    5. ____ It will be so difficult that I probably will have to quit before finishing.

36. How did you first find out about this technical program?
    1. ____ An ad in a newspaper or magazine
    2. ____ Information from the school through the mail
    3. ____ Advertisement on TV or radio
    4. ____ From a school representative who contacted me
    5. ____ From friends of mine
    6. ____ From a vocational teacher in high school
    7. ____ From a high school teacher other than a vocational teacher
    8. ____ From a counselor in high school
    9. ____ From somebody in the Voc. Rehabilitation off.

10. ____ I heard about it from _____

37. Did you ever visit with a counselor about possibilities of attending this program?
    1. ____ Yes, I visited with a school counselor.
    2. ____ Yes, I visited with a U. S. Employment Service counselor.
    3. ____ Yes, I visited with a Vocational Rehabilitation counselor.
    4. ____ Yes, I visited with a counselor from the Bureau of Indian Affairs.
    5. ____ Yes, I visited with a Veterans Administration counselor.
    6. ____ No-I never visited with a counselor.

38. Was there a guidance counselor in the high school you last attended?
    1. ____ Yes
    2. ____ No

39. IF THERE WAS A COUNSELOR IN THE HIGH SCHOOL YOU LAST ATTENDED, what did he tell you about enrolling in this program?
    1. ____ He never talked to me about this program.
    2. ____ He generally encouraged me to attend this program.
    3. ____ He generally warned me not to enroll in this program.
    4. ____ He told me about this program but neither encouraged me to go nor discouraged me from attending.

40. Did you seriously consider attending this program while you were in high school?
    1. ____ Yes
    2. ____ No

41. Did you make the final decision to attend this program while you were still in high school?
    1. ____ Yes
    2. ____ No

42. Before you came here, did a representative from this visit with you about this program at some place other than this school?
    1. ____ Yes
    2. ____ No

43. Did you visit this school and look at its facilities before signing up?
    1. ____ Yes
    2. ____ No

44. Who most encouraged you to attend this school?
    1. ____ My parents
    2. ____ relatives
    3. ____ Friends about my age or not much older
    4. ____ Friends of my family
    5. ____ A previous employer of mine
    6. ____ The people here at the school who operate it or work for it
    7. ____ A teacher or counselor in high school
    8. ____ Somebody in a government agency (such as Rehab, Indian Affairs, VA, etc.)
    9. ____ Nobody encouraged me-- I decided all by my self.

10. ____ Other _____
Specify

45. When did you decide to go into the occupation for which you are now training?
1. ____ I really haven't decided--I'm still exploring.
2. ____ I decided just before coming here to school. (less than 1 month before)
3. ____ I decided more than 1 month but less than six months before.
4. ____ I decided at least one year before coming here.

46. Did you have a full-time paid job other than a summer job JUST BEFORE COMING to this school? (within one month)
1. ____Yes
2. ____ No

NOTE: If your answer to the preceding question (number 46) was "no", skip to question no. 51

47(A) IF YOU HAD A FULL-TIME PAID JOB JUST BEFORE COMING TO THIS SCHOOL (OTHER THAN A SUMMER JOB), what was this job?_____
_____

(B) How long did you have this job?_____

48. IF YOU HAD A FULL-TIME PAID JOB JUST BEFORE COMING TO THIS SCHOOL (OTHER THAN A SUMMER JOB), how interested were you in that job?
1. ____ Very interested--I hesitated to leave it.
2. ____ Interested--I like it better than most things I could be doing.
3. ____ Mildly interested--It was O.K. but no more so than many other jobs I might have had.
4. ____ Little interested--I knew other things I would rather be doing.
5. ____ Not interested--I I didn't like it and was looking for some way to leave it.

49. IF YOU HAD A FULL-TIME PAID JOB JUST BEFORE COMING TO THIS SCHOOL (OTHER THAN A SUMMER JOB), about how much money did you make a week?
1. ____ Less than $50 a week
2. ____ At least $50 but less than $75 a week
3. ____ At least $75 but less than $100 a week
4. ____ At least $100 but less than $150 a week
5. ____ At least $150 but less than $200 a week
6. ____ At least $200 a week

50. IF YOU HAD A FULL-TIME PAID JOB JUST BEFORE COMING TO THIS SCHOOL (OTHER THAN A SUMMER JOB), how closely related was it to the occupation for which you are now training?
1. ____ Very close-when I finish my training I may go back to it.
2. ____ Close-the biggest difference is this training will let me work at a higher level.
3. ____ Somewhat related-there were some things similar to the occupation for

which I am now training.
4. ____ Unrelated-it was an entirely different occupation than the one for which I am training.

51. Did you have a part-time or full-time paid job while going to high school?
1. ____ Yes
2. ____ No

52. What do you feel your chances are of getting a job in the field for which you are now training when you finish this training program?
1. ____ Excellent-I already know where I will be working.
2. ____ Good-this school places their graduates with little or no trouble.
3. ____ Fair-it seems some graduates get jobs but others do not.
4. ____ Poor-I guess it is strictly up to me to find my own job.
5. ____ I don't know -I have never considered it.

53. Could you get a job in this field without attending a training program such as this?
1. ____ Yes
2. ____ No

54. How interested are you in the occupation for which you are now training?
1. ____ Very interested-it is exactly what I want to do for a living.
2. ____ Interested-I think I will like it more than most things I might do.
3. ____ Mildly interested-I think it will be O.K. but no more so than many other things.
4. ____ Little interested-there are other things I would rather be learning.
5. ____ Not interested-I don't like it but there isn't much else for me to do now.

55. How confident are you that you can complete the program in which you are enrolled?
1. ____ Very confident-I am sure I will finish.
2. ____ Confident-I think I will probably finish.
3. ____ Unsure-I may or may not finish depending on what happens.
4. ____ Doubtful-I probably will not finish.
5. ____ Very doubtful-I plan to quit as soon as I can find a good job.

56. Upon completion of this training program, how much money per month do you think your first job will pay?
1. ____ $300 to $399 per month
2. ____ $400 to $499 per month
3. ____ $500 to $599 per month
4. ____ $600 to $699 per month
5. ____ Over $700 per month
6. ____ I have no idea.

57. At the end of five years of employment how much money do you think you will make per month?
1. ____ $400 to $499 per month
2. ____ $500 to $599 per month
3. ____ $600 to $699 per month
4. ____ $700 to $799 per month

5.____Over $800 per month

58. Upon completion of this program, what do you plan to do?
1.____Seek employment in a technical occupation for which I am training
2.____Continue my formal education on a full-time basis
3.____Enter military service
4.____Other

59(A) If you expect to seek employment upon completion of this program, where do you prefer to work?
1.____In Oklahoma
2.____In another state
3.____I have no preference

(B) Where do you expect to find your best opportunity for employment?
1.____In Oklahoma
2.____In another state
3.____I don't know

APPENDIX B

COLLAPSED CATEGORIES USED FOR STATISTICAL TEST

Item Number	Institution	Categories for Statistical Test
3	All	No dependents, one or more dependents indicated
7	All	Spring 1967, Previous to Spring 1967
8	All	Less than 20, 20 or more
11-A	All	H. S., Beyond H. S.
11-B	All	None, College hours listed
12	All	Top ½, Lower ½
13	All except on-campus Tech. Inst.	Less than 100, 100 or greater
	On-Campus Tech. Inst.	Less than 100, 100-300, 300 or greater
15	All	Less than H. S., H. S., Greater than H. S.
16	All	Housewife, Outside Home
17	All	Less than H. S., H. S., Greater than H. S.
22	Junior College	Certificate, Associate, BS, MS
	Voc. Tech. Inst.	Certificate, Other
	Metropolitan Tech. Inst.	Certificate and Associate, Other
	On-Campus	Associate, BS, MS, Doct.
25	All	Accurate, Inaccurate
27	All	Ag, T & I, Tec, Other
28	All	1-2, 3-4

APPENDIX B (Continued)

Item Number	Institution	Categories for Statistical Test
29	All	Less than 10,000, 10,000 or greater
31	All except Met. Tech Inst.	On-Campus, 1-15 Miles, greater
	Met. Tech. Inst.	1 - 15 Miles, greater
33	Voc Tech. School	Less than 2,500, greater
35	All	No trouble, some trouble, Other
36	Junior College	Mail, School Rep., Friends, Counselor in H. S., Other
	Voc. Tech. School	Mail, Friends, Voc. Teacher, Counselor in H. S., Other
	Met. Tech. Inst.	Mail, Friends, Voc. Teacher in H. S., Other
	On-Campus Tech. Inst.	Mail, Friends, Voc. Teacher in H. S., Other
37	All	Yes, No
44	All	Parents, Relatives, Friends, Teacher or Counselor in H. S., Other
52	All	Excellent, Good, All other Responses
55	All	Very Confident, Confident, all other Responses
56	All	$300-399 Per Month, $400-$499 per Month, $500-$599 per Month, $600 and over Per Month, No Idea
58	All	Employment, Education, Military and Other

VITA

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