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Serwell, Thomas John, Ph.D.

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A STUDY OF THE EMPLOYMENT PATTERNS OF SPECIAL NEEDS COMPLETERS FROM SECONDARY VOCATIONAL EDUCATION PROGRAMS IN MICHIGAN

By

Thomas John Serwell

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Teacher Education

1991

ABSTRACT

A STUDY OF THE EMPLOYMENT PATTERNS OF SPECIAL NEEDS COMPLETERS FROM SECONDARY VOCATIONAL EDUCATION PROGRAMS IN MICHIGAN

By

Thomas John Serwell

Past federal and state legislation emphasized stronger programs for special needs youths. Recent legislative activities continue to identify policies specifically requiring greater access, support, and improved programs for special populations. This descriptive research was initiated to understand some of the effects that vocational education has had on special populations. The researcher's purpose was to determine the effects of participation in secondary vocational education on the employment patterns of special needs completers as compared to regular completers their first year after graduation. Specifically, the researcher compared the extent to which special needs completers and regular completers were active after high school, reported employment status, expressed job satisfaction, described the relationship of employment to vocational training, and earned comparable wages.

The population comprised 188,384 completers of public secondary vocational programs approved by the Michigan Department of Education, Vocational-Technical Education Service, from 1981 through

1985. This population represented the vocational completers who responded to the Michigan annual follow-up survey their first year after graduating from high school. The data came from five unedited Michigan Department of Education data tapes.

The researcher applied an aggregation technique to each of the five years of data, forming "completer types" at the Career Education Planning District level. The data were analyzed using tabulation and summary of responses, percentages, means, and chi-square. Analysis of the data produced the following findings:

1. Special needs completers' employment patterns did not completely parallel those of regular completers. However, whereas significantly higher active rates were recorded for regular completers, it appeared that after gaining employment both groups shared similar employment experiences.

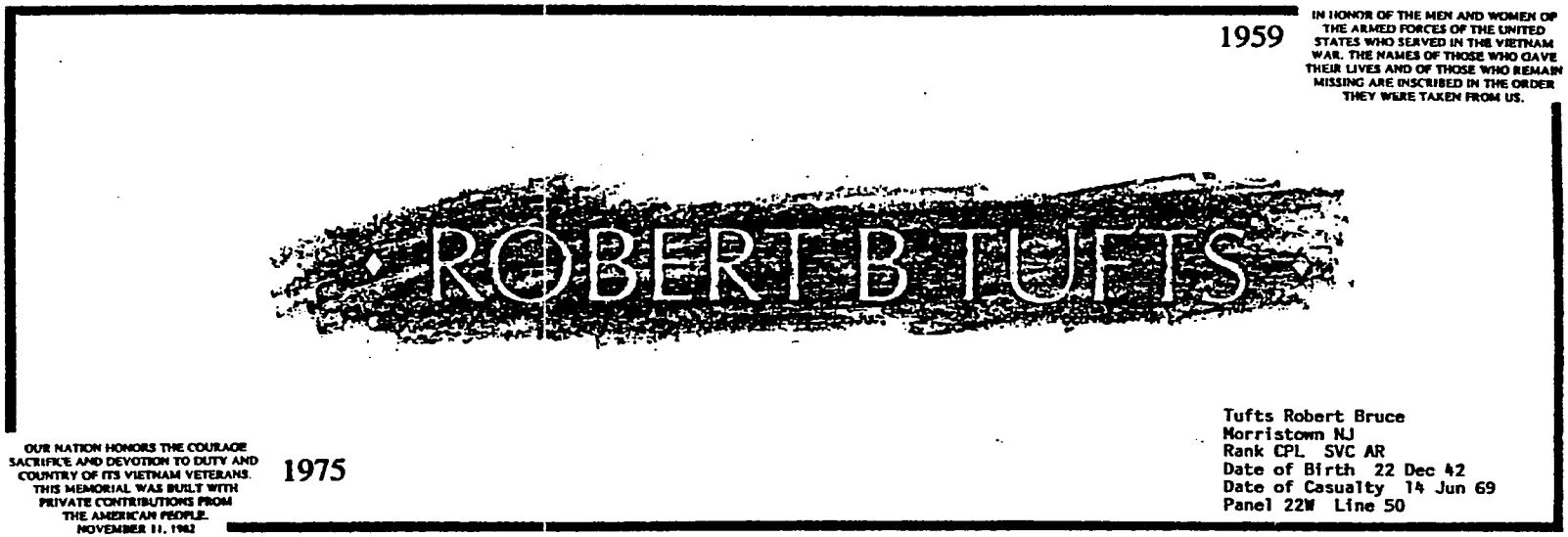
2. The same problems in employment identified in other research as related to gender and ethnicity were reflected within the special needs and regular completer comparisons.

3. Geographic location played an important role in the employment patterns of individual completers and may have been based on the availability of jobs in the local economies.

4. Participation in high school cooperative education seemed to help special needs completers achieve results more closely associated with regular completers.

5. Year-by-year analysis revealed few changes in the employment patterns established in this study.

IN MEMORY OF



AND TO DAD--I KNOW YOU WOULD HAVE BEEN PROUD!

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CHAPTER I

INTRODUCTION

Statement of the Problem

The researcher's purpose in this descriptive study was to determine the effects of participation in Michigan public secondary vocational education programs on the employment patterns of special needs completers as compared to regular (non-special needs) completers their first year after high school graduation in 1982, 1983, 1984, 1985, and 1986. Specifically, the researcher endeavored to compare the extent to which special needs completers and regular completers were active after high school, reported their status of employment, described the relationship of employment to their training, indicated job satisfaction, and earned comparable hourly wages.

In recent years, the vocational experiences of special needs students (disadvantaged, handicapped, and limited English proficient) have received increased attention. Much of this attention has centered on the employment and employability of these individuals. Cross (1980) recommended that research be conducted to answer questions in the area of employability. As policies and programs are developed for special needs groups, empirical information is necessary on which to base decisions. To date,

relatively little research has been conducted in Michigan pertaining to special needs students and vocational programs. Research on the effect of vocational education on the employment patterns of students with special needs is certainly in order.

Throughout history, special populations have been systematically excluded from or have had limited access to the mainstream of society, although federal and state laws and court decisions have been instrumental in reversing these trends. Over the last 25 years various federal and state laws have provided stronger vocational education programs for youths and adults with special needs. Such legislation sometimes necessitated the creation of new programs or the expansion of those already in existence. Large sums of money were earmarked to address these concerns, and indications are that federal intervention and funding will continue.

The Carl Perkins Vocational Education Act of 1984 mandated that 57% of all allocated funds be designated specifically for the training of special populations. In 1985 alone, the total proposed United States funding of the Perkins Act approximated $950 million. In Michigan State Plan for Vocational Education 1986-88 (Michigan State Board of Education, 1986) it was proposed that approximately $25 million (estimated combined federal and nonfederal allocations) be spent for special populations. In addition to the Vocational Education Acts, Public Act 198 and PL 94-142 have resulted in a significant increase in the numbers of handicapped and other special needs students entering regular vocational education programs in Michigan. The Michigan Department of Education estimated that

during the 1983-84 school year 15% (16,419) of the total enrollment in secondary vocational programs was categorized as special populations.

Through the years, vocational education has provided a variety of mechanisms for the education of diverse hard-to-employ students. Schneider (1985) found that retention of potential dropouts has been increased as a result of vocational education. In addition, the numbers of special students served in vocational programs (Bottoms & Copa, 1983; Phelps, 1985) have increased due to mainstreaming. Basic to the philosophy of vocational education is the provision of knowledge and skills to enter employment. Implicit in mainstreaming is the theory that the process of moving students from a restricted environment to a less restricted one is appropriate and beneficial. As a result of these moves, the special needs student, with special assistance, can compete in regular vocational classes with non-special needs students. Mainstreaming issues have become a growing concern to many vocational educators (Bottoms, 1985). Some question the adequacy or usefulness of vocational education for special needs students.

Tremendous strides have been made in technology during the last several decades; hence, students must be prepared to function successfully in a highly technological society. In the past, youths with little or no education entered the labor force and found many types of unskilled employment. But as time passed, the number of such jobs decreased; they usually were the first to be eliminated

during economic decline or through automation. During the 1982 recession, unemployment in Michigan reached a record 17.2%; this figure dropped to 7.6% in December 1985. Of the individuals returning to work, a large proportion found employment in nonmanufacturing occupations. But employment among blacks and teenagers stood in stark contrast to the overall changes in employment patterns (Saunders, 1986).

The cost of unemployment to society has been staggering (Parnes, 1984). In economic terms, the loss of income is manifested in several ways. The numbers of unemployed workers represent a financial toll far greater than just the loss of income to the worker. These individuals lack money to return to the economic system, and their presence requires subsistence through welfare and unemployment benefits, which adds to the strain on society. Figures released by the United States Bureau of the Census (1984) indicated higher rates of unemployment among minority and disabled groups than among the majority population. Traditionally, it is the special needs students--the handicapped and the disadvantaged--who have been characterized as hard to employ or least likely to find employment.

The debilitating conditions of the unemployed are also seen in individuals considered underemployed. From an employer's perspective or an economist's orientation, underemployment is the condition in which people have jobs in which they produce less than they are capable of producing. Thus, in a sense, their cost of production is greater than it ought to be; in human terms that toll may be greater still and, in fact, inestimable. Persons who are

underemployed cannot help but feel unfulfilled because they realize at some point that they are doing trivial and unchallenging work.

Martin (cited in Parker et al., 1977) acknowledged that employed special populations "are often delegated to the most menial of tasks, far beneath their potential abilities" (p. iii). In a study of women in the labor market, Noble (1985) found that "often the opportunities that women encounter in the labor market and in the premarket training and education constrain their choices to a narrow set of alternatives." Jefferies-Jackson (1980) reported similar results in a comparison of first-year male and female vocational graduates in Michigan. Neither researcher, however, addressed the special needs status of the individuals in their research.

Just as a producer needs to know how consumers receive his product or service, so too must a school know what happens to its students. Several authors (Bottoms, 1985; Cross, 1980; Phelps, 1984) have called for further research pertaining to former vocational education special needs students. The prime objectives of vocational legislation have been to expand efforts to serve special populations. Michigan, as well as other states, annually conducts follow-up efforts in the assessment of vocational education. Hence a study of the employment patterns of special needs completers and regular completers from secondary vocational programs is necessary. This effort will result in an explication of the programmatic outcomes and the differences between these groups

in terms of such outcomes, thereby helping to clarify the effect of offering regular vocational education to special populations. In addition, the procedures used in this study might have implications for use in other states in which similar survey information has been accumulated.

Purpose and Objectives of the Study

This study was designed to determine the effects of participation in Michigan public secondary vocational education programs on the employment patterns of special needs completers as compared to regular (non-special needs) completers. Employment pattern was defined by the following indicators: post-high school activity, employment status, job satisfaction, salary (average hourly wages), and program-related job classification.

The writer had the following objectives in conducting the study:

1. To determine the extent, if any, to which employment patterns of regular completers are congruous with employment patterns of special needs completers of vocational education programs.

2. To determine whether selected student characteristics affect the employment patterns of regular and special needs vocational program completers.

3. To determine whether the employment patterns of regular and special needs vocational program completers differ among four geographic regions within the state.

4. To determine whether participation in cooperative education affects the employment patterns of regular and special needs vocational program completers.

5. To determine year-by-year trends in the employment patterns of regular and special needs vocational program completers.

Research Questions

The writer sought to answer the following research questions in this study:

1. Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

2. To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

3. Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

4. To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

5. Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

Design of the Study

This research was a descriptive study designed to determine the effects of participation in secondary vocational education programs on the employment patterns of special needs completers as compared to regular completers their first year after graduation by using State of Michigan data tapes. The population comprised all completers of regular public secondary vocational education programs approved by the Michigan Department of Education, Vocational-Technical Education Service during 1981, 1982, 1983, 1984, and 1985. These individuals responded to the state's annual follow-up survey their first year after graduation.

The instrument used in collecting data was the annual Follow-up Survey of Students (No. VE-4045-A) for 1982, 1983, 1984, 1985, and 1986 from the Michigan Department of Education (see Appendix A). The response rate approximated 73% with the use of these surveys. Information was received on employment, post-high school training, pay rate, job satisfaction, use of vocational training, and student demographic data.

The data-analysis techniques employed in the research included tabulation and summary of responses, percentages and frequency distributions, and chi-square. After tabulation, individual responses (totaling 188,384 student records) to the questionnaires were aggregated to "completer types" at the CEPD level.

Tabulation and summary were used to facilitate statistical analysis and to present trend and pattern relationships. Percentages and frequency distributions were also used in analyzing

the data and reporting the findings. Chi-square was used to determine whether significant differences existed between variables for the research questions. An alpha level of .001 or less was established to indicate statistical significance.

The data were processed using the IBM 4381 mainframe computing system at Michigan State University and the Statistical Analysis System (SAS).

Assumptions

To accomplish the objectives set forth for the study of special needs completers of regular vocational programs, the researcher made the following assumptions:

1. The programs offered in each CEPD were typical of and comparable to the various types of secondary vocational programs offered in Michigan.

2. The aggregated response rates for program completers were representative and large enough to allow generalization of the findings to other districts offering secondary vocational programs.

3. Post-high school activity, employment status, job satisfaction, salary (average hourly wages), and program-related job classification are valid indices of employment patterns for vocational program completers.

4. Guidance, placement, and other ancillary services were available to all vocational program completers.

5. Special services were also available and were rendered to completers identified as and termed "special needs" completers.

Delimitations and Limitations

With the enactment of the Carl Perkins Vocational Education Act of 1984, the definition of special populations was expanded to include a variety of groups with special needs. This writer considered and delimited the special needs category to include only (a) handicapped, (b) disadvantaged, and (c) limited English proficient students (see definitions section). These special needs designations were assigned to the students and indicated on the data tapes by personnel in the students' home schools.

To provide vocational education and to fulfill state-mandated requirements, four alternative vocational education programs have generally been used in Michigan public school systems to provide for students with special needs: (a) regular vocational education, (b) adapted vocational education, (c) special education/vocational education, and (d) individualized vocational training (Michigan Department of Education, 1980). This study was limited to regular secondary vocational education programs in public high schools and area vocational schools in Michigan. For the purposes of this investigation, adapted vocational education, a program in which supplementary aids and services are provided so that eligible special education students can participate in the regular education environment, was considered regular vocational education. However, no distinction was made in this study concerning completers who had been officially enrolled in special needs projects during their secondary education. The researcher did not include completers of

individualized vocational training programs, special education/ vocational education programs, or other such programs. These programs, separate from regular vocational education, are designed specifically to focus on a student's particular ability level and may not be representative of the training given to any other student.

Further, this study was delimited to special needs and regular vocational completers who responded to the follow-up questionnaire approximately one year after graduation. Individuals included in this study were those who had completed a regular vocational program in an area vocational center or a local vocational program and whose class had graduated from a Michigan public high school from 1981 to 1985. These completers were in secondary wage-earning programs approved by the Michigan Department of Education, Vocational-Technical Education Service and were eligible to receive reimbursement. Nonresponding completers were recontacted by personnel in their home school systems in an attempt to achieve higher return rates. However, in some instances the information for the survey questions was provided by a "proxy" or "second-party response" (someone other than the completer, i.e., parent, sibling, and so on) who was familiar with the completer and responded for him/her.

Certain endogenous and exogenous variables were beyond the researcher's control. For example, high unemployment may have occurred among regular and/or special needs completers in a given geographic area simply because there was high unemployment in that

area, and not as a result of vocational education program effects. Aggressive placement personnel in certain schools may have exceeded expectations, which resulted in higher-than-average placement. Whenever possible, if such was the case the researcher has attempted to make that information known.

The findings, implications, and recommendations may be generalized only to other districts in Michigan that have similar programs.

Historical Perspective

Americans have historically supported the concept of public education. Although public education is primarily the responsibility of the individual states, the federal government has played a major role in funding, shaping, and expanding the scope of public education. The Land Ordinance of 1785 (U.S. Congress, 1848) initiated the involvement of the federal government in education while providing for the orderly development of the Northwest Territory. It divided the land into townships and sections and "reserved the lot number 16 of every township, for the maintenance of public schools within said townships" (p. 49). Later, the depth of interest in education by the federal government was clearly articulated in Article Three of the Northwest Ordinance of 1787, which stated that "Religion, morality, and knowledge, being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged" (p. 52). Lapati (1975) suggested that this statement was central to many

serious, albeit unsuccessful, plans by influential people in early years to use education to bring about societal change.

Although education is not mentioned in the Constitution as a responsibility of the government, governmental involvement in education at the national level has continued through various forms of federal legislation and subsequent amendments, renewals, and/or updates (Lu, 1965). Such legislation has included activities to increase land grants (aid) to establish and maintain public schools and programs to extend the educational offerings to other than just the traditional "college bound" students. Milstein (1976) insisted that later grants "increasingly involved the federal government in decisions concerning the use of federal funds" (p. 10). The school doors were being opened to greater numbers of people who earlier could not attend. And as the National Advisory Committee on the Handicapped (1976) asserted, although the federal role has been slow to evolve, it has been indispensable to the education of students from special populations consisting primarily of the handicapped and disadvantaged.

Throughout history, the handicapped and disadvantaged have received differential and often harsh treatment. Hart (1981) cited a variety of actions that have been used in diverse cultures throughout the centuries toward people with special needs. Some of these actions were cruel and/or brutal, whereas others were characterized by indifference, exclusion, or outright disregard for the individual's situation. Many people needing help were not

identified as having problems and were forced to compete on an equal footing with the rest of the population or were placed in makeshift programs for deviants and failures. These actions were not isolated to different times or foreign cultures but occurred in the United States, as well. Perhaps, as Reynolds (1976) suggested, it was because individuals with special needs were viewed as being in some way "different" that they were treated differently. But, regardless of the reasons, some special populations were segregated from the mainstream of American life.

Over the years there have been isolated instances, such as legislation for blind education in 1879 and various rehabilitation statutes, in which attempts were made to address certain groups within special populations. These segmented attempts resulted in the establishment and growth of specialized educational institutions and public training programs in which adults and children were often grouped under broad classifications. Institutions were left with the problems associated with allocating limited resources, identifying needs, and developing solutions for two diverse levels.

In public education, little headway was made toward meaningful solutions in this area. Although the public accepted special classes in schools, the services provided often depended on the wealth and goodwill of the community. "As a general rule, the nation's schools were highly ingenious and very successful in denying educational opportunities, equal or otherwise, to handicapped children" (Turnbull & Turnbull, 1978, p. 19). The dominant practices in dealing with special students seemed to be

exclusion and classification. In public schools, the mentally and physically handicapped were usually grouped in special education classes with the same instructor and followed the same program. Disadvantaged, bilingual, and learning disabled (groups defined much later), denied adequate assistance, were often included in special education as well.

Societal attitudes concerning the educational rights of some special students tended to be very rigid. Early court decisions upheld the separation of special students who were denied entry into the schools lest they cause disruption or unnecessary instructional problems (Wilkins, 1977). Continuing into the 1950s and beyond, special education became the focus for students not considered normal, as if all their needs and problems could somehow be met by one program.

However, within the last 25 years the basic precepts concerning students with special needs have been revolutionized. According to the National Advisory Committee on the Handicapped (1976), federal laws supporting education of the handicapped were first passed in 1965. Lockette and Davenport (1971) identified the early 1960s as crucial to the awareness of and attempts to address problems of the disadvantaged. Perhaps it was the tenor of the times--the social concern, the endeavors to solve the nation's ills--that awakened Americans' resolve to respond to the problems of individuals with special needs. Many programs initiated by Presidents Kennedy and Johnson (the Job Corps, the Manpower Development Training Act, the

Vocational Education Act) had human concerns as central themes. As a result of legislative edicts and changing court decisions, new opportunities were provided to a wide spectrum of special students.

By 1975 a major barrier confronting special students was removed with the passage of Public Law 94-142, the Education of All Handicapped Children Act. A new and sometimes controversial method called mainstreaming began taking shape. The central goal of mainstreaming was to provide suitable programs for every child, no matter how greatly handicapped. The result has been increased funding and greater access to regular classrooms for all special students. Although some authorities (Kunzweiler, 1982; Martin, cited in Reynolds, 1976) have questioned the effects of mainstreaming, its influence has been notable. The financial aspect of mainstreaming was reflected in research by Wilkens (1977), who found dramatic growth in state aid for special education alone from $900 million in Fiscal Year 1972 to over $2.4 billion in Fiscal Year 1976. With increased access to regular classrooms in the public schools, more attention and assistance were given to students from special populations.

Background of the Study

The previously mentioned revolution in education has also had a major effect on vocational education in the public schools. Those changes have allowed a host of students, denied vocational training because of their special status, the opportunity to participate in vocational programs with others of their age and given them access

to the occupational skills and knowledge necessary for employment. Phelps (1984) asserted that federal legislation has been one of the most important elements of change in education of special populations. Other writers (Davenport & Petty, 1973; Lockette & Davenport, 1971) have tended to agree with this viewpoint as it concerns the education of minorities and other special groups.

Specific legislation for vocational education (in its generic sense) has played an important role in the development of training programs for special populations. Vocational education was often synonymous with vocational training and vocational rehabilitation programs in its purpose of providing vocational programs to individuals with special needs. Vocational rehabilitation legislation was an early attempt to provide vocational preparation. Such legislation centered primarily on adult training in specialized educational institutions, usually outside the public school domain. Any vocational programs in the public school system for special students often existed separately from regular curricular offerings (Evans & Herr, 1978).

In the 1960s, along with other social awareness efforts, an important piece of legislation affecting vocational education was formulated. Just as the National Society for the Promotion of Industrial Education made great contributions toward creating the Smith-Hughes Act of 1917 (Struck, 1930), the report of the President's Panel of Consultation on Vocational Education (1963) was influential in expanding the concept of education for work to include special populations. Panel members strongly believed that

youths with special needs "must also be given some reasonable degree of assurance that they can, with aid, eventually join the labor force" (p. 228). The concern about and provision for special needs students in vocational education were formally recognized in the landmark Vocational Education Act of 1963 (PL 88-210). This act identified the social implications and needs of these special populations and was intended to provide vocational preparation to many groups and individuals not previously served by existing programs--those having academic, physical, and socioeconomic handicaps (Venn, 1967).

But as is often the case, the intent of the law was not sufficiently followed. In 1968, as required by previous legislation, the Advisory Council of Vocational Education issued its evaluation in Vocational Education: The Bridge Between Man and His Work. Council members criticized public vocational education for not providing vocational education to the groups they believed needed it most.

Although the Vocational Education Act of 1963 did bring about an awareness of the issues and some programmatic changes, it became obvious that further legislation was needed. The 1968 Amendments to the Vocational Education Act of 1963 (PL 90-576) earmarked funds specifically to address the concerns of special groups (primarily the handicapped and disadvantaged). The importance of these changes was summarized in a government report:

> The Vocational Education Act of 1963 merely recommended that students who have special needs related to disadvantaged or

> handicapping conditions be served by vocational education programs. The Vocational Education Act of 1968, however, required States to spend at least 25% of their basic State grant funds to pay for the services and programs for those disadvantaged or handicapped students who could not succeed in regular programs without special assistance (Resurge 79, 1980, p. 7).

Through Title II of the 1976 Education Amendments (PL 94-482) pertaining to vocational education, special needs funding was expanded to 30% of basic state grant funds (above the costs of providing vocational education to regular students) and also required matching funds, thereby greatly increasing the amounts spent. Limited English Proficient (LEP) was included in the definition of special needs, and the desire to overcome sex bias and sex stereotyping was addressed.

The effects of these two vocational education amendments for students with special needs did not go unnoticed. Phelps (1984) pointed to dramatic increases in funding for special populations due primarily to the set-aside, matching, and excess-cost provisions in these amendments. "The total local, state, and federal expenditure for the national priority populations in 1980-81 was approximately $795 million--$246 per student. The state and local share of this total rose from less than 1% prior to 1968 to almost 79% in 1980-81" (p. 33). Phelps (1985) also found extraordinary growth in special needs enrollment. "From 1972-73 to 1980-81, enrollment of special needs students grew from 1.8 million to 3.1 million, an increase of 73%. In 1980-81, disadvantaged, handicapped, and limited English proficient (LEP) students comprised 19.5% of the total vocational enrollment" (p. 24).

Various state legislatures have addressed similar concerns of special needs populations. In Michigan, for example, Public Act 198 (1971) mandated that vocational training be afforded to students in special education programs. This was followed in 1975 at the national level with PL 94-142, the Education for All Handicapped Children Act, which mandated appropriate education for every child in the least restrictive setting possible. Through mainstreaming, as the process became known, handicapped children were placed in regular classroom settings. All of these measures, in varying degrees, helped increase the number of special populations in vocational education programs. Bottoms and Copa (1983) indicated that vocational education served more than 16.5 million Americans, representing individuals from widely diverse age, race, economic, and ability levels. They estimated that minorities comprised 24% of all vocational students in a variety of programs, low-socioeconomic-status students represented 32%, and females comprised more than 50%. In addition, approximately 400,000 students with handicaps were mainstreamed into regular vocational programs. Of particular note was the fact that this figure had more than doubled in the 10 years since 1974, before the passage of PL 94-142.

After studying the results of federal vocational education policy, authors of the Vocational Education Study (National Institute of Education, 1981) concluded that more effective means had to be found to overcome sexual discrimination and to "provide programs and services for populations with special needs" (p. 51).

These goals of federal vocational education policies were reflected in major provisions of the Carl Perkins Vocational Education Act of 1984 (PL 98-524), which identified policies specifically requiring greater access, support, and improved programs for special populations. The Perkins Act mandated that 57% of all funds be allocated to six special needs areas: disadvantaged, handicapped, sexual equity, single homemakers, adult learners, and correctional programs. Consistent with PL 42-142, the law contained provisions for supplemental services for special students in regular vocational programs and used funds for costs that exceeded the pupil expenditure for non-special needs services.

Because of problems inherent in serving a "different" population, many individuals have become embroiled in the controversy surrounding this topic and have questioned the effects of vocational education on these special populations. The Vocational Education Act of 1963 and subsequent amendments in 1968 and 1976, the Education for All Handicapped Children Act of 1975, Michigan Public Act 198, the Carl Perkins Vocational Education Act of 1984, and its recent 1990 Amendments specifically addressed these concerns and have served to increase and ensure the enrollment of special needs students in secondary vocational programs. Many new programs have been developed and others changed, with new services added to include special students. As vocational education continues to be expanded to serve special populations, it is necessary to ascertain what has happened to the special needs students served in those programs and to compare the outcomes of

special needs students with those of other (regular) students enrolled in vocational education programs offered at the high school level.

Importance of the Study

It is intended that the findings derived from this study will expand the understanding of the extent to which public secondary vocational education programs have benefited students with special needs who have completed such programs. Further, the results of this study can be used to:

1. Assist state and local decision makers with short- and long-range policy planning for vocational education as they affect the employment patterns of students with special needs.

2. Assist state and local decision makers with the implementation, expansion, and modification of vocational education to address more effectively the needs of students with special needs.

3. Assist in the development of strategies for more effective training of students with special needs in the vocational occupations.

4. Assist in the guidance and placement of students with special needs in vocational education programs.

5. Contribute to future related studies at the state and national levels.

6. Assist other states in the examination of comparable follow-up data.

Definition of Terms

The following terms are defined in the context in which they are used in this dissertation. Whenever possible, Michigan Department of Education definitions are paraphrased to provide continuity of meaning.

Area vocational center: A specialized high school primarily supported financially by two or more school district, and used to provide vocational education in preparation for entering the labor market.

Career education planning district (CEPD): A group of educational agencies (K-12 districts, community colleges, and intermediate school districts in geographical proximity to each other) organized to increase work and life opportunities for individuals and to provide a comprehensive, cohesive, and coordinated career education delivery system. There are 53 CEPDs in Michigan.

Classification of instructional programs (CIP): A National Center for Educational Statistics codification system used in describing and coding all instructional programs.

Completer: Any student who was enrolled in a reimbursed secondary vocational program and completed all requirements for the vocational program of the institution he/she attended.

Completer type: A codification system used in this study to describe aggregated individual respondents according to completer status, gender, ethnicity, special needs status, participation in co-op, and CEPD.

Cooperative education: A vocational education program for individuals who, through a written cooperative arrangement between the school and employers, receive instruction including required academic courses and related vocational instruction by alternating study in school with a job in any occupational field. These two experiences must have been planned and supervised by the school and employers so that each contributes to the student's education and to his/her employability.

Disadvantaged: Persons (other than handicapped) who have academic and/or economic disadvantages and require special services, assistance, or programs to enable them to succeed in vocational education programs.

Employment pattern: Defined by the following indicators: post-high school activity, employment, job satisfaction, salary (hourly wages), and job classification. (A complete description of each index is contained in Chapter III.)

Ethnicity/race: Designated in school records as American Indian/Alaskan, Asian, Black, Hispanic, or White.

Handicapped: Persons who, because of a physical, mental, and/or emotional impairment, require special education and related services and who could not succeed in the regular vocational education program without special educational assistance or who require a modified vocational education program.

Limited English proficient: Individuals whose native tongue is a language other than English or who come from an environment in

which a language other than English is dominant and therefore have difficulty speaking and understanding instructions in English.

Regular/non-special needs: Individuals not classified as special needs.

Special needs: Individuals identified as handicapped, limited English proficient, and/or disadvantaged.

Special populations: Persons with special needs, especially the disadvantaged, handicapped, and limited English proficient.

Vocational education: Educational programs organized for preparation of individuals for employment or additional preparation for a related career requiring other than a baccalaureate or advanced degree.

Vocational program: A program of study specifically designed to prepare individuals for employment in specific occupations or clusters of closely related occupations, or for a career requiring further education.

Organization of the Study

Chapter II contains a review of related literature. The review begins with a discussion of the merits of the follow-up procedure and includes the findings of several noted national studies, pertinent Michigan studies, and other state and regional follow-up investigations of former secondary vocational students. Although somewhat limited, research on former special needs students in regular vocational programs was located and is presented.

The design and procedures used in the study are explained in Chapter III. The population, survey instrument, and data-collection procedures are discussed. Data-aggregation and statistical-analysis techniques are also described.

Chapter IV is devoted to analyzing the data and presenting the findings. The data are displayed in charts and graphs, as well as in narrative form.

A summary of the study, conclusions, recommendations, limitations, and suggestions for further research are presented in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Introduction

An extensive review of the literature revealed that no statewide studies specifically comparing regular and special needs completers of public secondary vocational education programs have been conducted. Therefore, this review was designed to identify the relationship of vocational education to employment primarily by reviewing the results of previous studies. The literature review is focused on (a) the use of the follow-up study as an assessment tool and (b) the results of previous research involving former vocational and special needs students from secondary-level programs.

As background information for this investigation, the merits of the follow-up study are discussed first. Several current issues involving the use of follow-up studies in research are presented, illustrating the ongoing nature of the disagreements and agreements. This discussion is followed by the main body of the review, which is devoted to findings of studies of vocational education outcomes. These studies were primarily limited to the secondary level. Because of the important changes affecting vocational education as a result of legislation, the review begins with studies conducted after the Vocational Education Act of 1963, although a few important

earlier studies are included. Also included in the review are documents and other pertinent information that were considered particularly relevant to this study.

It should be noted that, due to the extensive nature of the review, the complexity of research designs, and the diversity of samples and populations, some studies did not fit exclusively into any given category and may appear out of place. However, the writer believed the aforementioned division would present the broadest coverage and help minimize any limitations that may result. Because the review covers a wide spectrum of research conducted over a 25-year period, the summary may contain conflicting findings that were a result of conditions separate from the educational process.

Use of the Follow-Up Study as an Assessment Tool

The task of accumulating information to assist in planning and improving vocational education can appear monumental. From keeping abreast of graduate employment to making necessary programmatic changes, vocational educators find themselves in ever-changing situations. Many types of decisions must be made, and decision makers need the best information available to them. The collection and use of information have often been associated with evaluation. Darcy (1979) suggested that vocational education could be evaluated through the use of (a) contextual factors, (b) student characteristics, (c) qualitative and quantitative measures, (d) program goals and objectives, (e) instructional processes, and (f) vocational consequences or outcomes.

Stufflebeam (1973) offered the CIPP Evaluation Model to help explain the structure of evaluation design. He identified four evaluation strategies, corresponding to four decision-making needs: context evaluation for planning decisions, input evaluation for decisions regarding resource use, process evaluation for program-operation decisions, and product evaluation for goal- and achievement-assessment decisions. He believed that, through product evaluation, much information is received that assists in the adjustment and/or modification of a vocational program or its components.

Critical to discussions on evaluation in vocational education is the effect of legislation. The Vocational Education Act of 1963 and its subsequent amendments stressed that vocational education programs must be realistic in terms of opportunities for gainful employment. The Carl Perkins Vocational Education Act of 1984 continued this theme by requiring that planning processes be outcome oriented. This means that decision makers in vocational education must frequently assess the product of vocational programs (the students) to modify the program to fulfill these legislative requirements.

If decision-making needs are viewed in the context of a systems approach of input-process-product, it becomes evident that decisions are interrelated and that an accurate feedback system is needed (Copa, 1980). In the educational system, as in many businesses and industries, what happens to the product or service is of great concern to the leaders. Erickson (cited in Cross, 1980) asserted

that "if one is interested in obtaining an assessment of the general efficiency and effectiveness of all the vocational instruction included in a particular program, then product-oriented areas of concern and key questions are the way to go" (p. 259). Such feedback is important because it gives the organization an opportunity to adjust or correct certain processes and thereby achieve a more acceptable product.

Perhaps one of the most recognizable examples of a product-oriented feedback system or outcome evaluation used in vocational education is the annual follow-up survey of graduates. Wentling and Barnard (1984a) defined outcomes as changes in individuals or groups as a result of experiences provided by the vocational delivery system. Franchak and Spirer (1979) described vocational follow-up as "a subsystem of a comprehensive evaluation system perceived as having methods and techniques for assessing the outcomes of a vocational education program" (p. 3). Follow-up studies are often designed to gather information and to evaluate the graduate, which is the product of career programs. These studies

> involve contacting graduates and dropouts from an educational or training program to gain input for program planning and assessment. Perceptions of past training success in subsequent employment and further education are examples of information pertinent to the maintenance and improvement of the programs. (Wentling, 1980, p. 140)

The follow-up of vocational education graduates, completers, and leavers has been the focus of extensive research, particularly in the late 1970s. This focus can be attributed in

large part to passage of the Education Amendments of 1976 (PL 94-482), which specifically required that state vocational education programs be evaluated at least once during a five-year period. The areas to be evaluated were: (a) planning and operational processes, (b) student achievement, (c) additional services to special populations, and (d) student employment success (Federal Register, 1977). The last evaluation criterion has been given most attention by the states and is an important foundation of the present study. Wentling and Barnard (1984a) believed that requirements of federal legislation have been one of the primary criteria for follow-up studies in vocational education but stressed that informational needs of local schools must also be addressed in the follow-up.

Therefore, one begins to understand the importance of the follow-up study as a useful evaluation tool in vocational education. But can accurate information be gathered by means of a follow-up study?

The use of the follow-up study as an evaluative tool has been both praised and criticized. Most supporters have seen follow-up studies as fulfilling many goals. Paul (1975) believed that

> In any information system in which planning and evaluation of vocational education are essential parts, follow-up of former students occupies a central position. It provides a periodic feedback mechanism for evaluation and accountability of vocational programs, establishes trends for planning, helps to determine manpower supply, and provides an important input for resource allocation decisions. (p. 1)

Wentling (1980) considered follow-up studies to be more than statistical placement reports. He insisted that such investigations aid program planning and assessment and provide necessary

information for program maintenance and improvement. Grasso (1979) did not think the potential for follow-up studies has been exhausted; he saw them as providing "promising opportunities for impact evaluation" (p. 18).

Others have considered the source of data a unique strength of the follow-up evaluative process. Finch and Crunkilton (1984) maintained that former students are in the best position to provide information about program strengths and weaknesses. Paul (1975) stated that data collected directly from students are "comprehensive, extensive, and reliable" (p. 5).

Conversely, some critics have claimed that follow-up studies lead to false conclusions, whereas others have questioned the predictive potential of such studies (Sobel, 1979). Several authors (Mertens, McElwain, Garcia, & Whitmore, 1980; Woods & Haney, 1981) have avoided using the term "effects" when reviewing vocational education studies, preferring to use the term "outcomes" instead. They have cited the lack of cause-effect relationships and pre-posttesting controls in follow-up studies and thought many differences could be partially a result of unmeasured background variables of the participants.

Shermis (1982) addressed four research-design issues affecting the quality of survey data after obtaining information from 14 Michigan school districts during the annual follow-up survey of completers and leavers of vocational programs. He found that (a) the telephone mode of data collection yielded the highest response

rate, (b) neither systematic training of interviewers nor changes in the interview schedule were effective in increasing response rates, and (c) proxy ratings were significantly lower than target students' ratings on attitudinal items.

A topic of considerable disagreement is the designation of former students' high school curricula. Some authors (Flanagan et al., 1964; Flynn, cited in Lynch, Kiernan, & Stark, 1982; Nolfi et al., 1983) have addressed the use of self-report versus school-related data as means of identifying student curriculum. In many studies no clear-cut and acceptable definition was given of what constituted a program of studies, thereby leaving the interpretation to former students.

Desy, Campbell, and Gardner (1984) noted that approximately four out of every five high school students took at least one vocationally oriented course while in school. They maintained that traditional methods used in many studies to classify students to curricula were not altogether appropriate. They believed that research should be based on the amount of course work completed, as documented by school records of the extent of students' participation in vocational education and the degree of concentration in a service area.

Mertens et al. (1980) concluded that neither student self-reports nor administrative reports adequately described student classification. However, they found that high school transcripts rarely were used in research to identify student curriculum because of time and expense. Many national studies have relied on either

data given by respondents about their curriculum and specialties or reviews of school reports. Although both methods have advantages and disadvantages, no clear-cut method prevailed. As important a variable as curricular designation is, the review of literature reflected continued use of all of these methods and disagreement among writers concerning their use in research.

The use of student response has engendered disagreement in other areas of follow-up research, as well. Ollis (1983) reviewed Michigan state records of 1,336 completers from six vocational instructional programs to compare two methods of measuring relatedness of the job to instructional programs: (a) graduates' self-assessments and (b) matching job titles and instructional program titles. He found that the two measures did not produce comparable results. In contrast, Rossmann (1977) compared four measures of relatedness for 1,550 graduates of the Minnesota Area Vocational Technical Institute. She found that the follow-up process using the graduates' own assessments yielded information very similar to that of other measures used in assessing vocational education.

In discussing employment related to training, Lewis and Pratzner (1984) perceived problems in both of these methods. They thought that with student self-assessments, the subjective ratings tended to be lenient. At the same time, they claimed that cross-walks and other cross-classification systems often produced low levels of correspondence between some educational and occupational

codes. However, after reviewing ten major follow-up studies of former vocational students, the authors noted with interest the similarities in their results, regardless of the method employed in the studies.

Mertens et al. (1980) reviewed 232 follow-up studies, conducted from 1968 through 1976, concerning the effects of participating in vocational education. They found similar results on several variables, including the relationship of training to employment.

A second and perhaps equally complex issue when assessing former vocational students is the concept of time. The literature suggested much of the disagreement concerns (a) when to evaluate and (b) how often to evaluate. A variety of opinions exist about the optimum time(s) to conduct follow-up studies of former students. These positions are discussed in the following paragraphs.

Franchak and Spirer (1978) provided a useful framework with which to examine the time issue. They classified follow-up studies within four major categories: (a) three- to six-month follow-up studies that complied with federal requirements and in which data were obtained for state planning; (b) one-year to 15-month follow-up studies that provided data on occupational mobility, job adjustment, and work-related areas; (c) three-year follow-up studies that provided comprehensive student data; and (d) longitudinal follow-up studies in which assessment was done continually over an extended period. The authors maintained that each category had particular strengths and served specific research purposes.

Pucel (1973) distinguished two types of information collected from follow-up as (a) those pertaining to initial employment and (b) those conducted after six months of employment. He believed that initial employment data are collected to comply with federal funding regulations, but he regarded follow-ups conducted at less than six-month intervals as insufficient. He also suggested that information derived after six months of employment is more important to program evaluation than is earlier information. Supporters of shorter-term follow-ups have pointed to the traditional definition of vocational education as providing training for entry-level jobs and have believed that evaluations conducted less than one year after graduation were sufficient. Pucel also expressed concern about the great amount of data in existence and saw a need to relate these follow-up data.

Wenrich and Wenrich (1974) insisted that studies conducted shortly after students graduate fail to consider the students who take time off, go on vacations or trips, move, take temporary positions, or simply choose to delay full-time employment. Borus and Tash (1970) argued that evaluations conducted less than one year after program completion raise problems of seasonality and unduly emphasize programs having short-term biases.

Wentling (1980) perhaps summarized the focus of debate, maintaining that time itself plays a crucial part and frequently presents many difficulties, regardless of when the evaluation occurs. He asserted that the role of follow-up is influenced by the time at which the evaluation occurs--whether it be weeks, months, or

years after instruction--and this makes follow-up difficult to operationalize and employ. Likewise, Franchak and Spirer (1978) believed that most evaluators generally accept the relevancy of conducting assessments approximately one year after graduation and the potential value of such assessments to vocational educators in the school setting. The literature revealed that the preponderance of studies that have been conducted, as well as state data-collection techniques, have borne out this belief.

A number of researchers have advocated using repetitive measurements or longitudinal studies of former students. Grasso (1980) and Flanagan (1979) were highly critical of one-time studies and voiced many of the previously stated criticisms in their charges. They believed that the "one shot" evaluation or "point-in-time" studies (a) report initial employment that was available, (b) neglect long-term vocational effects, and (c) do not evaluate effects of programs. In reviewing the literature, the writer found that most proponents of longitudinal methods tended to believe that two or three follow-ups were necessary.

Pucel (1979) contrasted two types of longitudinal studies: (a) pure longitudinal and (b) cross-sectional. In the pure longitudinal study, the same graduate was followed one, three, and five years after graduation, and the same information was collected each time. In the cross-sectional approach, the researcher gathered the same information on different groups (first-year graduates, third-year graduates, and fifth-year graduates) at the same time. Pucel saw

disadvantages in both methods and thought the pure longitudinal study entailed problems in obtaining and storing information. The cross-sectional model, though, may have shown differences among groups because the composition of the groups was actually different. In an attempt to overcome these perceived limitations, Pucel expanded the definition of longitudinal studies as "involving the development and analysis of a data base over time that pertains to a given individual, class, program, school, or other unit that one wishes to evaluate" (p. 3).

Franchak and Spirer (1978) pointed out the added expense entailed in conducting multiple-year studies because of storage and student-location problems. They believed that although such studies may be beneficial in providing meaningful trend data and information, they also have several serious drawbacks, such as time and money costs and difficulties in maintaining the representative sample throughout the study.

Some proponents of long-term studies like Borus and Tash (1970) thought that three- and five-year intervals were sufficient to demonstrate program effects. Wentling (1980) suggested one-, three-, and five-year intervals as optimum. Oberlander (1980) developed a three-year model and compared one-year state data to longitudinal local data. Using data from the Mt. Pleasant Area Center, he concluded that the three- to five-year study was a better base of information than was the annual follow-up.

Lewis and Burrows's (1984) review of ten major follow-up studies showed that a majority of the investigations relied on data

collected approximately one year after program completion and were conducted as a one-time effort. Mertens et al. (1980) reviewed more than 230 studies on outcomes of vocational education. They found that more than 80% of those studies had been conducted one year after program completion and as a one-time process.

In a national survey, O'Reilly and Asche (1979) attempted to identify, review, and analyze common features of student and employer follow-up studies conducted between 1970 and 1979. After reviewing approximately 300 related articles and reports in vocational education, they concluded:

1. The majority of follow-up studies focused on students or on both students and their employers.

2. Most follow-up efforts were about completers of secondary or postsecondary vocational programs.

3. Evaluation was the most common objective for conducting follow-ups, followed by planning and in-compliance reporting.

4. The majority of follow-up studies used a census approach.

5. Mailed questionnaires were the most common method used to obtain data, and students were the primary source of information.

6. Most follow-up studies were conducted approximately one year after program completion, and very few were done as longitudinal efforts.

7. Employment status of former students was described in most follow-up studies.

8. Although data were collected at the local level, the information reported most often focused on the state level.

Summary

The use of follow-up studies has been and continues to be a major part of vocational education evaluation. This has not been without criticism. The issues highlighted in the literature review illustrated some but not all of the concerns surrounding the follow-up approach. Writers discussing the relative merits of this approach asserted that the follow-up study is a useful and frequently used tool in evaluation. Responses of former secondary students to questionnaires concerning their employment status are the primary sources of information in follow-up studies. Several authors preferred the use of school records over the self-report method to designate student curriculum. Although many writers advocated following-up several years after graduation and employing a longitudinal method, the literature revealed that the overwhelming number of follow-ups were conducted approximately one year after graduation and as a one-time measurement. Storage costs and student location seemed to be barriers to more frequent use of traditional longitudinal methods. Little research using combinations of methodologies has been conducted to connect one-year data bases except for those in review or synopsis formats.

Arguments about issues such as long-term accuracy of follow-ups and use of self-assessments will likely continue. Erickson (cited in Cross, 1980) asserted that properly devised follow-up studies

"can provide overall data and information that are useful in validating the instruction with regard to its ultimate impact upon program completers" (p. 259). Many issues regarding follow-up studies in outcome evaluation remain unanswered. The reader is urged to refer to the cited sources for more detailed discussions.

Findings of Studies

The frequent use of follow-up techniques in educational research attests to both the acceptability and the versatility of this method. Literally thousands of studies using follow-ups have been conducted by educators, using a diversity of applications, approaches, and subjects too numerous to list. In an effort to keep the review of the literature manageable, the writer did not consider studies that were completed before 1960 or those that were not concerned with former secondary vocational education students. Only those studies that were germane to the objectives and purpose of the present research are discussed here. The central ingredient in all the studies reviewed is the connection between secondary vocational education programs and employment.

National Studies

Although much of the impetus for vocational follow-up of former students can be attributed to legislative mandates, other research has been conducted on graduates at the secondary level. National studies have tended to draw the most attention and were cited most frequently in the literature. One of the earliest major research projects of national importance was conducted in 1960 to obtain an

inventory of American youths' ability and potential. In Project TALENT (Flanagan et al., 1962, 1964), data were gathered from approximately 440,000 high school students from 1,353 schools across the nation before graduation and in several periodic surveys after graduation. In presenting findings of student aspirations and vocational needs, Flanagan (1978) indicated that many students had unrealistic plans for future vocations. An important implication of Project TALENT was the need for curriculum evaluators to take into account the remarkably different socioeconomic and academic-ability backgrounds of the students within the programs. Project TALENT has generated a number of studies yielding data pertaining to such factors as school characteristics, curricular enrollments, dropout rates, and student outcomes. Evans and Herr (1978) praised the importance and ongoing nature of Project TALENT.

Lewis (1984) identified two major periods of national research activity on labor-market outcomes of secondary students from various programs. He believed the two periods differed with regard to sources of data and sophistication of analyses. Lewis used 1976 as the separation point to distinguish between the two periods, to demonstrate the influence of the Education Amendments of 1976 on vocational education research. Studies conducted in the earlier period include the research of Eninger (1965); Kaufman, Schaefer, Lewis, Stevens, and House (1967); and Sharp, Myint, and Meives (1971).

Eninger (1965) conducted a comprehensive follow-up of trade and industrial graduates. He surveyed a sample of 5,327 vocational and 1,780 academic graduates who attended 100 public schools in the United States. Eninger's purpose was to describe the experiences of male trade and industrial graduates and to compare the differences between vocational and academic graduates. His findings showed no significant difference between academic and vocational graduates in terms of the number of full-time jobs held, although vocational graduates required less time to obtain full-time positions, had fewer unemployment periods, and fewer job changes. He also found no significant differences between academic and vocational graduates in terms of job satisfaction, although higher degrees of job satisfaction were reported by vocational graduates, especially those in occupations related to their employment training, than by graduates of other curricula. Vocational graduates also had higher present earnings in the first several years immediately after graduation than did academic graduates, but that advantage appeared to diminish over time.

Kaufman et al. (1967) interviewed 5,181 graduates from the preceding five-year period and contacted 3,342 graduates by mail to determine the effects of high school curriculum on manpower and related employment experiences in the labor market and the graduates' attitudes toward their high school experiences. The researchers compared randomly selected vocational-technical, college preparatory, and general curriculum graduates from nine communities of various sizes in four states. They noted few differences among

the three groups in terms of earnings, job tenure, reasons for leaving jobs, and job satisfaction. Less than one-third of the trade and industrial graduates reportedly obtained jobs that were directly related to their training. Although females appeared to do as well as males on all measures, the study revealed that most females were often limited to training in office occupations while in school and may not have displayed their actual abilities. The authors also found variations in characteristics between vocational and nonvocational students and suggested that blacks benefited more from vocational education than from other curricula.

In another national follow-up survey, Somers, Sharp, Myint, and Meives (1971) surveyed the 1966 graduates of public vocational education programs from high schools, postsecondary schools, and junior colleges three years after leaving school. The purpose of the survey was to determine the effectiveness of vocational-technical programs, using multiple-regression techniques. The authors noted the difficulties and time expenditures due to inadequate address information and the high mobility of the age group surveyed, which resulted in low response rates. They reported that (a) junior college graduates enjoyed labor-market advantages over high school graduates; (b) a smaller percentage of high school graduates (50%) than junior college and vocational technical school graduates (75%) took jobs in related fields of vocational training, although this had no effect on employment or earnings; and (c)

vocational education was often used as a stepping stone to additional education.

The second group of studies addressed by Lewis and Burrows (1984), those conducted after 1976, represented a period of activity that differed greatly in statistical techniques and sources of data from the earlier period. In this later period, researchers usually obtained their data from one of several national longitudinal studies of young people. In addition to Project TALENT, Franchak, Franken, and Suisak (1980) identified three well-known, large-scale national studies on which much subsequent research has been based. These studies are Youth in Transition, The National Longitudinal Study of the High School Class of 1972, and The National Longitudinal Study of Labor Market Experiences. Smith (1980), Woods and Haney (1981), and Little (1970) included these three sources in their research as major national data bases for many longitudinal research endeavors pertaining to outcomes associated with vocational training.

Youth in Transition (Bachman, Kahn, Mednick, Davidson, & Johnson, 1967) was a longitudinal research study of adolescence conducted by researchers at the Survey Research Center of the University of Michigan beginning in 1966. The study focused on the changes in attitudes, plans, and behaviors related to educational and occupational aspirations and achievement. The sample comprised a national cross-section of 2,213 tenth-grade boys from 87 public high schools that designated the curricular classifications of College Preparatory, General, Vocational, Commercial, Agriculture,

or Other. Data were collected through interviews and questionnaires at regular intervals beginning in fall 1966--each of the three years until graduation and one and five years after graduation. Approximately 71% of the original sample participated in the last stage of the study. Information pertaining to the study was presented in a six-volume report: Volume I--Research Design (Bachman et al., 1967), Volume II--Influences of Family Background (Bachman, 1970), Volume III--Dropouts (Bachman, Green & Wirtanen, 1971), Volume IV--Procedures for Longitudinal Analyses (Davidson, 1972), Volume V--Military Service (Johnston & Bachman, 1972), and Volume VI--Young Adulthood (Bachman, O'Malley, & Johnston, 1978). The last report presented a summary spanning eight years of youths in transition. The researchers found that educational attainment was related to the high school program of studies and predicated by student background, ability, and aspirations as measured in tenth grade; and occupational outcomes were linked to educational attainment where there was a strong association between educational level and job status. However, no relationship was found between increased education and job satisfaction. Two noticeable weaknesses of the study were that (a) the sample contained a noticeably larger number of college-preparatory students than students in other curricula; and (b) vocational, commercial, agriculture, and other were treated as separate curricula. Therefore, the findings of that study should be interpreted with caution.

Several well-known studies have used data generated by the National Longitudinal Survey of the High School Class of 1972 (NLS 72) as the primary source of their data. Peng, Stafford, and Talbert (1977) listed more than 182 studies in which the NLS 72 data were used during the five years immediately following the initial study. The NLS 72 was initiated by researchers at the National Center for Educational Statistics. An original sample of approximately 18,000 seniors from 1,044 public, private, and church-affiliated high schools completed questionnaires and batteries of tests in spring 1972. The first follow-up survey was conducted in October 1973 and included an additional 5,000 students from 150 randomly selected schools not previously included in the base-year data. The Bulletin (1975) of the National Center contained selected results on educational experiences and occupational attainment from the initial survey. Sixty-four percent of the Class of 1972 attended some kind of school or college after high school. Sixty-four percent of the individuals were working (76% from vocational/technical programs compared with 54% from academic programs). Those employed were most satisfied with working conditions and least satisfied with promotion and advancement.

In a reanalysis of the NLS 72 baseline data, Creech (1974) noted that minor biases were present in the study sample because certain schools and students did not participate. These biases were particularly evident in the black and vocational groups. According to Creech, these limitations might have presented an accumulative effect. Thus, he emphasized that care was needed in analyzing and

interpreting the data. Fleming, Maroney, and Straser (1974) found similar biases in the procedures when they reevaluated NLS 72 data.

Tabler (1976) examined the survey responses of 21,350 individuals from the NLS 72 and presented a tabular summary of the data, focusing primarily on employment and postsecondary education experiences of the survey participants. He tabulated and cross-tabulated these data for various subgroups classified by gender, race, socioeconomic status, ability, type of high school program, and region. This same tabular presentation was made available for the second survey (Peng & Holt, 1977) and the third survey (Peng, Wisenlaker, Bailey, & Marnell, 1978).

Creech, Freeberg, Rock, Wilson, and Young (1977) conducted an in-depth analysis of the Class of 1972 to compare the postsecondary occupational and educational outcomes, using the baseline data. They found that vocational curriculum graduates were employed at a higher rate than graduates of nonvocational curricula. The researchers used surveys of 23,000 individuals 18 months after graduation, classifying graduates within vocational, general, and academic curricula. They employed tabular analysis, univariate comparisons, and several multivariate analyses. Creech et al. found that 65% of the Class of 1972 were employed, 8% were out of work, and 64% had some type of postsecondary training. Black graduates were employed at a lower rate than white graduates (58% versus 66%) and experienced higher rates of unemployment (15.4% versus 7.5%). Earnings during the period were similar for blacks and whites but

were greater for males than females. Seventy-seven percent of the vocational graduates were employed, which was a higher rate than that for graduates of either the general curriculum (68%) or the academic curriculum (56%). Forty-two percent of the Class of 1972 were enrolled in college; a higher number of whites were enrolled in academic programs and a higher proportion of blacks in vocational programs. Creech et al. suggested that graduates of high school vocational programs were least likely to be involved in postsecondary education and most likely to drop out of school.

A second survey of the High School Class of 1972 was conducted two years after the initial follow-up study. Eckland and Bailey (1976) reported a noticeable drop in attendance in postsecondary training and in college. They also found that two-thirds of the Class of 1972 were working full or part time, 6% were unemployed, and twice as many blacks as whites who were unemployed during the first survey were still out of work.

Nolfi et al. (1978) presented an updated study of the transition from school to work or postsecondary education of the NLS 72 sample. Their study contained the results of the second follow-up survey, which was conducted in 1974. In addition to assessing the influence of the high school curriculum, the authors conducted separate analyses of males and females as well as of blacks and whites, using multiple-regression techniques with controlling variables. Nolfi et al. found that, in general, curricular considerations had no overall effect on employment. They believed that factors such as gender, race, and family background

were more important predictors than was high school curriculum. Forty percent of the graduates failed to fulfill the plans they had reported as high school seniors. Women with vocational training did do better than women following academic and general curricula, and they also had higher wages. Of particular interest to the present study is the fact that Nolfi et al. were among the few researchers who attempted to address students with special needs. They found that physical impairments and language deficiencies had little or no influence on graduates' employment or unemployment. However, they noted that impaired individuals received a 13.5% lower wage than nonimpaired graduates.

In 1965 the United States Department of Labor initiated the National Longitudinal Surveys. The purpose of this effort was to investigate the influences of various economic, sociological, and psychological variables on the labor-market experiences and behaviors of the United States population. The Center for Human Resources Research at The Ohio State University and the United States Bureau of the Census collaborated in a nationwide longitudinal study that was the basis for what became the National Longitudinal Study of Labor Market Experiences (NLS LME). Data were gathered from participants primarily through personal interviews. Other information on procedures is contained in The National Longitudinal Survey: Handbook (Tabler, 1977, 1979).

The NLS LME contained four subsets of the civilian population, based on national probability samples of the American population.

These subsets included men (45 to 59 years old), women (30 to 44 years old), young men (14 to 24 years old), and young women (14 to 24 years old). The study was undertaken to identify characteristics important to explaining the labor-market experiences of these groups. Many of the findings have been reported separately, addressing various labor-market problems such as early withdrawal or reentry into the labor force, employment, and unemployment of adults and are, therefore, not pertinent to this study. However, in a separate report on the labor-market experiences of the younger group of males, Parnes, Miljus, Spitz, and associates (1969) asserted that the labor-market activities of 14- to 24-year-old males tended to be very similar and clearly depended on environmental factors as well as personal characteristics. They found that students who reported their curriculum as vocational, commercial, or general had high and comparable rates of participation in the labor force. Parnes et al. found large differences between blacks and whites on socioeconomic variables that had an effect on educational and labor-market experiences and behaviors. Race had an important influence on young men's occupation and length of service but little influence on the industry in which they were employed. The number of years of school completed had a substantial effect on many aspects of labor-market experiences, and graduates of an academic curriculum were less likely than others to be unemployed.

Numerous reanalyses have been conducted with NLS LME data or in conjunction with a variety of other data. Some researchers used a simple sample from the data base, others included related

information on the participants, and still others introduced a comparable data base to expand the research. Sproat, Churchill, and Sheets (1985) identified 989 studies in which NLS LME data were used as the primary source of data.

Grasso (1975) used data from the 1966-1969 NLS LME young male cohort and specifically compared graduates who reported they were in the general, vocational, commercial, and college preparatory high school curricula and who had had no college experience. Using multivariate analysis of variance (MANOVA) techniques, he concluded that the high school vocational curriculum was not superior to other curricula in terms of preparation for work for male high school graduates not going on to college.

In an expansion and refinement of earlier work, Grasso and Shea (1979) combined NLS LME data for both young male (1966-1973) and young female (1968-1972) cohorts, including dropouts and those with one to three years of college but less than a baccalaureate degree. They separated the cohorts into occupational, general, and college preparatory curricula, as reported by the students themselves. The researchers also attempted to investigate the benefits of vocational studies for disadvantaged and handicapped students. Using tabular techniques and multiple linear regression analyses, Grasso and Shea found that (a) high school curriculum was not a factor in employment; (b) female graduates of vocational programs evidenced advantages over graduates of other curricula in terms of hourly rate of pay and annual earnings; and (c) two-thirds of the males and

one-half of the females reported having some post-high-school training, which was associated with higher wages for both genders. Because of the small number of special needs students in the sample, conclusions regarding the relationship of curriculum and training to rates of pay, earnings, and other employment-related questions could not be drawn for these individuals.

The last survey of the original sample was conducted in 1979. Since then, a new group has emerged: the National Longitudinal Survey of Labor Market Experience--Youth Cohort (NLS Youth). An entirely new sample of more than 12,000 young women and men between the ages of 14 and 24 years was surveyed and scheduled for annual interviews over a five-year period. The survey included a supplemental sample of blacks, Hispanics, and economically disadvantaged whites. In addition, the high school transcripts of the respondents were collected to expand and improve the data base.

Borus (1984) examined data from the 1979, 1980, and 1981 national surveys regarding the youth labor market experience of 12,686 youths 14 through 22 years old. He found that both academic and vocational curricula had a positive effect on labor-market success. The incidence of unemployment, as indicated by multivariate analyses of the NLS Youth data, was concentrated among certain groups of youths, particularly dropouts, minorities, and the poor. Among Borus's findings was that vocational programs taken in conjunction with a planned program had a more significant bearing on labor-market income than did a random series of vocational courses in unrelated areas. For youths who did not go on to college, Borus

found that vocational training assisted women in terms of increased earnings, reduced unemployment, and increased annual hours worked. He found no difference in the effects of vocational and academic curricula on unemployment or hours worked between disadvantaged and nondisadvantaged youths.

In many of the national studies, former students' self-reports were used as the measure of curriculum. In response to criticisms about the self-report process, Campbell, Orth, and Seitz (1981) sought to minimize these effects. They did not accept the use of traditional curriculum categories and self-report. Instead, they redefined the sample according to amount of participation in vocational education programs, as indicated on students' high school transcripts. The patterns of vocational participation into which they classified students, starting from the highest participation, were: Concentrators, Limited Concentrators, Concentrator/Explorers, Explorers, Incidental/Personals, and Graduates with no vocational credit.

Using this conceptual pattern of vocational participation in their study, Gardner, Campbell, and Seitz (1982) investigated the extent to which students not enrolled in postsecondary education were active in the labor force. Using data from the NLS Youth, they found that concentration in vocational education was highly related to participation in the labor market. Individuals with higher levels of participation in vocational education were more likely to be in jobs for which they were trained, to be more satisfied, and to

have higher wages than those with lower levels of participation. Women with vocational backgrounds received higher hourly wages than those with no vocational backgrounds. Conversely, males with no vocational background received higher hourly wages, although Concentrators had higher annual wages.

Desy et al. (1984) provided further information on the long-range outcomes of vocational education. Using a sample of 1,539 individuals between the ages of 20 and 34 years, they concluded that (a) the long-term value of vocational programs in terms of increased earnings exceeded the marginal costs of providing vocational education; (b) vocational education had positive long-term outcomes in terms of earnings, employment, education, and aspirations; and (c) men had a significant earning advantage over women, who were found in traditionally lower-paying women's jobs, although vocational education helped encourage them to seek nontraditional roles.

Summary. The national studies reviewed in this section have initiated much discussion concerning the accuracy of their findings, appropriateness of research methods, and exactness of meanings and definitions. The debate surrounding these studies, as well as continuations and refinements of those projects, continues. The important variable in most studies was curriculum and its effects on employment. At question was how the curricular variable was measured. Parnes et al. (1969), Grasso (1975), and Grasso and Shea (1979) relied on student self-report of curriculum, whereas Eninger (1965), Kaufman et al. (1967), Somers et al. (1971), Campbell et al.

(1981), and Mertens et al. (1980) used school and/or student records. Campbell et al. (1981) and Gardner (1982), on the other hand, proposed comparison within vocational categories. Caution in the interpretation of the data is therefore advised.

A critical aspect of the research conducted at the national level was its comprehensive coverage. Many of these national studies had similar findings, in part because many of the researchers used a limited number of data bases.

With respect to the importance of vocational education there appeared to be two major camps: Eninger (1965), Creech (1974), Lewis and Burrows (1984), and Kaufman et al. (1967) believed that vocational education is more effective than academic curricula in leading to employment of students upon graduation and that vocational graduates have higher rates of employment than nonvocational graduates. Grasso (1975), Grasso and Shea (1979), Nolfi et al. (1978), and others tended to disagree. In general, the findings showed that both academic and vocational curricula had positive effects on youths' labor-market experience.

The review of major national studies indicated that:

1. Vocational education had positive effects on the employment and earnings of women and some minorities. The evidence was mixed on the effects of vocational education on earnings of male vocational and nonvocational graduates.

2. Longitudinal methods presented a clearer picture of graduates' experiences than did one-time studies.

3. National studies included questions on wage rates, hours of work, employment/unemployment, job satisfaction, and postsecondary training.

4. More recent studies used student records for curriculum classification and showed greater benefits of vocational programs than did less current investigations.

Clearly missing from the national studies was any focus on or identification with special populations. Many authors recognized these shortcomings of the NLS data. Grasso and Shea (1979) called for more research on the outcomes of special needs students. Borus (1984) and Mertens concurred on the need for more research with special populations.

The debate surrounding these national studies and their refinements continues. Lewis (1984) questioned the relevance of some national studies:

> The interest in the labor market outcomes associated with participation in the high school vocational education . . . seems to stem from a widespread skepticism about the value of training for occupations at the high school level. (p. 66)

State Studies

As noted in the preceding section, although many studies of former vocational education students have been conducted at the national level, much of the information gleaned from those investigations was based on a relatively and surprisingly limited number of data bases. Thus, similar and in many instances virtually the same data have frequently been analyzed and reanalyzed. Lewis (1984) implied that as a result of this reanalysis of the same data,

the findings and conclusions of various national studies of vocational education students tend to be similar.

Much research has also been conducted on former vocational students at the state and local levels. In addition to Lewis (1984) and O'Reilly and Ashe (1979), whose research findings were summarized in Chapter I, several other writers have presented comprehensive accounts of research on former vocational students (Committee on Vocational Education Research and Development, 1976; Sparks, 1977; Wentling & Barnard, 1984a; Woods & Haney, 1981).

Little (1970) examined efforts to determine the effects of vocational education programs in his survey of follow-up studies of vocational and technical program graduates. In his review, he included approximately 100 studies from the national, regional, state, and local school levels. These studies, conducted after 1965, were concerned with vocational-technical students at the secondary, postsecondary, and adult levels. Little intended to discover significant trends in the job histories of graduates and to provide baseline data for program evaluation. He grouped the studies according to three types: (a) administrative reports in which occupational-status information was gathered; (b) comparative studies in which graduates were compared by programs within and/or between schools, states, and so on; and (c) benefit-cost studies in which the economic effectiveness of vocational education programs was established.

Little found that (a) follow-up studies continued to show inherent weaknesses, and therefore programmatic research and replication were worthwhile; (b) few state departments and school systems possessed cost-effectiveness information; and (c) very few studies had dealt with placement activities. He also found that vocational-technical education (a) served individuals who otherwise would have received no help; (b) graduates had a slight advantage in earnings; (c) graduates liked their jobs, especially if related to their training; (d) graduates often found jobs in or near the community where they had received training; (e) graduates often found jobs through their own efforts or through the assistance of a friend or relative; (f) graduates' occupational career variations were associated with variations in the labor market; (g) graduates from fields in which post-high-school training was emphasized had a clear advantage; and (h) programs were probably worth their costs.

Mertens et al. (1980) summarized 232 relevant studies conducted between 1968 and 1979 on the effects of participating in vocational education. They noted the lack of research conducted on special needs individuals. The researchers summarized the 232 studies according to 17 variables. Among their findings regarding secondary vocational programs were:

Employment

1. No difference was found in unemployment rates for vocational and nonvocational high school graduates, although vocational graduates had a higher percentage of employment.

2. The majority of vocational graduates obtained training-related jobs.

3. Mixed earning results were reported: Differences in earnings ranged from no difference to advantages in initial earnings, and trade and industrial graduates had higher earnings than graduates of other vocational specialties.

4. The majority of graduates were satisfied with their jobs.

Education

1. In terms of skill attainment and academic abilities, vocational students rated below academic-curriculum students and above or the same as general-curriculum students.

2. Approximately one-half of the vocational graduates pursued their education beyond high school.

3. Vocational graduates were satisfied with their training.

Ancillary Effects

1. Fewer vocational than nonvocational students planned to attend college.

2. Vocational graduates felt good about themselves.

3. Both vocational and nonvocational students infrequently engaged in civic activity.

Lewis and Mertens (cited in Greenwood, 1981) reviewed and synthesized 13 previous syntheses on the effects of vocational education. Nine of these reviews included 520 unduplicated studies that pertained to the secondary level. Lewis and Mertens summarized the findings of these studies and reported that (a) no difference or

mixed differences were found in the employment experiences of vocational and nonvocational graduates; (b) the majority of secondary-level vocational graduates found jobs in occupational areas related to their training; (c) vocational graduates had a slight earnings advantage over nonvocational graduates, with inconsistent results for other variables; (d) employers tended to be satisfied with vocational students' attitudes toward work and skill preparation; (e) vocational graduates expressed satisfaction with their jobs, (f) no differences in self-employment were found between groups; and (g) male vocational graduates tended to have craft or operative jobs, whereas females entered clerical positions.

Lewis and Mertens also found that (a) a larger percentage of nonvocational than vocational graduates attained more formal school or post-school institutional training, (b) vocational graduates were satisfied with their training, (c) vocational education seemed to prevent dropout for specific types of vocational students, and (d) female vocational graduates knew more than their peers about a variety of occupations, whereas the reverse was true for young males. The writers also found (a) occupational and educational aspirations and curriculum were congruent, (b) vocational graduates appeared positive toward the value of their courses and the content, (c) no difference in feelings of success, and (d) low rates of voting behavior. Lewis and Mertens pointed out that very few studies indicated detrimental effects of vocational education. They concluded their summary by asserting that most of the evidence from the syntheses of the effects of vocational education was either

conflicting or insufficient, thereby leading to more questions than answers.

The present literature review was not intended to duplicate these major efforts. Therefore, the remainder of this section contains a summary of pertinent state studies, some of which used state-generated data, to give the reader a better understanding of research conducted at the state level and of the findings regarding selected variables that were important in this study.

A variety of processes and criteria have been used to identify outcomes of vocational education at the state level. Early information collected on former vocational students was derived primarily from state-initiated data-collection efforts that were necessary to fulfill legislative mandates. The Florida State Advisory Council on Vocational and Technical Education (1984) found that much information was collected for state agencies reporting statistical counts for compliance or procedural purposes, as required by state and federal statutes. Mertens et al. (1980) and Wentling (1982) made the same observation. Franchak and Spirer (1979) maintained that the purpose of follow-up research was to provide information to improve programs and report "the status and effectiveness of vocational education to Congress" (p. 19).

Before the Educational Amendments of 1976 were passed, evaluation systems for vocational programs in the public schools began to be developed in Michigan and other states, and models were devised for these systems. Starr, Dieffenderfer, Archer, and Ernst

(1970) proposed a model state evaluation system designed to assess the effectiveness of vocational education; this model was tested in several states, including Michigan. Starr et al. believed their model would help administrators in state divisions satisfy state and federal accountability requirements, provide a basis for state-level planning, and advise policy-making bodies.

Mailey (1966) had addressed these concerns earlier in his follow-up system for former vocational students in Washington. He thought the results should give federal, state, and local administrators information on vocational education. Mailey believed the follow-up should be designed to generate needed information to conduct studies and make valid statistical reports on the effectiveness of vocational training. Similar projects were undertaken in Vermont (Fuller & Winn, 1975), Indiana (Goodman, 1975), Pennsylvania (Kapes, 1973), and Minnesota (Pucel, 1973). Kiefer and Brown (1978) identified the following states, in addition to Michigan, that had extensive evaluation systems: Florida, Illinois, Indiana, Minnesota, Ohio, and Oklahoma. Recognizing the importance of cooperation within educational systems, they reported that states with effective delivery systems were those that had "a close match between the delivery and evaluation systems" (p. 9).

In general, state data were available in a variety of formats. Two outputs commonly associated with state-generated data were (a) summary data and (b) informational and formalized reports. Ohio State Department of Education (1984) researchers presented their findings for the follow-up of secondary and postsecondary vocational

completers in state data charts, tabulations of average hourly wages and employment/unemployment figures, placement trends, and so on. A follow-up study of 79,812 completers for the 1981-1982 school year showed economic benefits from completing a vocational training program. Of the secondary vocational program completers who were available for work, 83.9% obtained jobs. Stressing the severity of the economic depression in Ohio (23.9% youth unemployment), the researchers noted the more favorable 16.1% unemployment rate among vocational completers.

Researchers in the Colorado Vocational Research Coordinating Unit (1966) presented tabular data on a 386-member sample of all Colorado high school graduates of 1963. Sample members were surveyed two years after graduation to determine their occupational and educational needs. Less than 8% of the group had pursued a vocational major while in high school. Approximately half of the sample members were employed at the time of the study, more than half did not consider their high school program helpful in obtaining employment, and nearly one-third expressed interest in attending a local vocational program.

In a published study of 1978-1980 Oregon high school vocational students and early leavers (Oregon Department of Education, 1982), only 23% of whom responded to the state vocational questionnaire, the findings for completers were as follows: an 8% unemployment rate, 55% employed or pursuing further education related to their technical/vocational preparation, and general satisfaction with

their high school vocational education program. It was also found that although more females than males were in related employment or education, males had higher monthly incomes than females. Of special note was that academically disadvantaged youths reported the highest unemployment rate and the lowest employment rate among the sample members.

Similar reports were available for Connecticut and Utah. Connecticut Department of Education (1967) researchers presented placement data for 1966 vocational graduates from schools and colleges. Of the 5,066 graduates, 4,139 had completed a secondary-level vocational program. Of the graduates available for work, 82% were employed in occupations using skills obtained from their vocational courses, and 12% were employed in nonrelated occupations; the mean hourly wage was $1.91. Twenty percent of the vocational students continued in full-time education.

A survey of records from the office of the Utah State Superintendent of Public Education (1966) for high school vocational students who terminated their education after graduation in 1966 showed that 2,132 students were employed or available for work. Of that number, approximately 48% were employed in jobs for which they had been trained, whereas 27% were employed full-time in unrelated occupations.

In evaluating Michigan secondary vocational education programs, Kiefer and Brown (1978) used state follow-up information in conjunction with several other sources to obtain the necessary data for their report. The researchers examined vocational programs in

terms of 16 evaluative questions, divided into three categories: (a) student participation in and access to vocational education programs, (b) program process concerns, and (c) follow-up concerns. The last category contained four questions directly concerned with former vocational education students and related to employment/unemployment, relatedness of employment to training, wage rates of employed graduates, and participation in further education. Using 1977 state follow-up data, Kiefer and Brown found that 87% of the graduates available for work were employed, 44% of them in full-time employment in areas for which they had been trained or in related fields. For the graduates who were not continuing their education, no significant differences were found among those from different vocational areas. Of all graduates who completed the survey, 33% reported they were in continuing education; of that number 63% were in a field related to their vocational training. Kiefer and Brown found significant differences among students from various vocational areas for students continuing their education; however, no difference was found among groups in the proportion who elected to continue their education in the same or related fields. More than half (51%) earned above the minimum wage; Trade and Industrial graduates reported the highest wages among graduates employed full time.

Other research efforts that involved the follow-up of former students used state-generated data, were conducted entirely independent of state agencies, or were combinations of state and

independent research. Weberg (1984) used Illinois follow-up data in his investigation of the relationship between selected student characteristics, occupational programs, and delivery modes and the employment and educational outcomes of secondary vocational education completers. The chi-square procedure was used in analyzing the data. Weberg found small differences between students from area centers and comprehensive high schools, except students from comprehensive high schools had a higher continuing education rate. Race significantly affected employment and continuing education outcomes, but this finding was influenced by the Chicago survey results. No difference was found between males and females in terms of general employment or educational outcomes, but females did enjoy significant advantages over males in related employment. Enrollment in a business or health program had a significant positive effect on employment, whereas enrollment in an agriculture or industrial program had no significant effect, and enrollment in home economics had a negative effect on employment. Students who had been enrolled in agriculture, business, and health programs had the highest related employment rates of all the groups surveyed. Former business students were found to have the only consistently high rate of continuing education outcomes. Weberg also found that special needs completers did poorly in general employment and continuing education but not in related employment outcomes. Vocational completers who had taken part in cooperative education had higher rates of employment and related placement than those who had not taken part but had lower rates in continuing education.

Reimer (1976) considered the factors of unemployment times, starting and current wages, and supervisory experiences for a sample of 493 cooperative and noncooperative education graduates not attending college full time for the years 1969 through 1971 in Indiana. Reimer found no significant differences between cooperative and noncooperative education graduates, although he noted some positive trends in the above-mentioned factors for the cooperative education graduates.

Lawrence (1973) studied 1,207 cooperative vocational education graduates in Louisiana. He found that cooperative trainees entered employment soon after high school, and many continued to work with their cooperative education employers. He found a wide variation in salaries within and among vocational programs, although males received a significantly higher weekly salary than did females. In general, cooperative trainees were satisfied with their employment except for pay and promotional opportunities. Most trainees found jobs through informal means and thought the school should have provided more assistance in job placement. Lawrence noted that the trainees had favorable opinions of their high school training and did not think their vocational education programs had prevented them from continuing their education.

Lewis and Burrows (1984) investigated the educational and employment status of 1976 through 1980 vocational program completers from selected area vocational-technical schools in Pennsylvania. They found that: (a) completers' unemployment rate was almost 25%

lower than the 1982 state figure for a similar age group; (b) approximately 25% were enrolled in or had taken postsecondary training, half of them in fields related to their high school training; (c) the majority of completers obtained employment near where they had received their training; (d) more than three-fourths thought secondary vocational programs had given them good to excellent preparation for their current jobs; (e) more than half were employed in fields related to their training; (f) high placement rates were related to on-the-job training and apprenticeship opportunities; and (g) male vocational completers earned $4,000 per year more than did female completers.

Harris (1975) also found no significant difference in starting salaries between program completers and noncompleters of 14 area vocational-technical schools in Kansas. However, he reported differences in starting salaries among racial groups and significant differences among age categories and between males and females.

Copa and Forsberg (1980) used data the Minnesota Secondary School Follow-Up Systems gathered from members of the class of 1978. Their study involved the follow-up of 68,000 students approximately one year after they had left school. The sample included 16,000 (25%) former students from 98 high schools and 4,000 graduates of private high schools. The data collected from students was combined with those from the permanent high school records. The authors found that more than 77% of the vocational graduates were involved in some postsecondary education activity one year after leaving school (either paid employment or postsecondary vocational

schooling). Approximately 68% of the class of 1978 who had taken vocational education reported paid employment; 6.5% were unemployed. Copa and Forsberg concluded that expectations of employment and postsecondary education were tempered by the adverse conditions under which effects took place, resulting in restricted choices. They believed that the total program must be considered when evaluating vocational effects because vocational versus nonvocational labels were often found to be misleading. They found that 77% of the students had taken at least one vocational course in school and that vocational students did differ from those who had not had vocational education.

Smith (1982) used 1978/79 and 1979/80 enrollment, completion, and follow-up data in a comparative follow-up. Using more than 164,000 observations from State Department of Vocational and Technical Education data, she attempted to assess nontraditional vocational training efforts in Oklahoma. Smith found that women in nontraditional training achieved less success than did traditional students. Overall, females earned less than males but significantly more than females in traditional jobs. Males, however, earned higher wages in female occupations but less than those in traditional male occupations.

The same earning differences were discovered when Frey (1977) sampled 306 completers from Kansas vocational-technical education programs in 1976. The purpose of the study was to determine the job satisfaction, satisfactoriness, and salaries of completers who were

employed in stereotypical occupations. Frey found that 61.3% of the completers were employed full time in the same or training-related occupations. He found significant differences in success factors of salaries between males and females in male jobs and between male and female completers of the training program; males' earnings were higher than females' wages. Frey also reported no differences in the success factors of job satisfaction and general satisfactoriness between males and females in traditional and nontraditional occupations.

In a six-year study, Conroy and Diamond (1976) examined the effect of secondary occupational education programs in Massachusetts. Among their findings were that: (a) labor-market gender bias was not affected by high school programs; (b) labor-market advantages of the occupational students were short-lived; (c) male Trade and Industrial students who were not attending postsecondary programs earned significantly more than nonoccupational students who were not attending postsecondary schools and other male students from two-year public colleges and state universities; and (d) Trade and Industrial students were usually employed longer than those from other programs and held positive attitudes toward high school experiences and employment.

Wardlaw (1983) used state department records pertaining to the 26 public high schools in Delaware. He noted that vocational graduates showed superior performance in the labor market. About 74% of the vocational graduates entered the labor market, whereas

more than 60% of the nonvocational graduates enrolled in postsecondary training.

Crim and Ross (1976) sampled 1,266 vocational graduates from New Hampshire's Region 8 during 1969, 1970, 1972, and 1974, interviewing 66% of the graduates. The researchers found that 73% of the graduates were employed. Sixty-three percent held full-time jobs, and 16% were pursuing additional education. Of the 26% unemployed, only 7% were actively looking for employment.

Wilson (1966) studied 2,736 vocational graduates of the previous year from 48 Connecticut schools and institutions. He found that 85% were employed in occupations for which they were trained and received a mean wage of $1.98 per hour; 1.6% were unemployed, 10.2% were in the military, and 12.6% were continuing full-time schooling. Wilson reported that in comparison to the previous ten years, there had been an increase in the numbers of students graduating, a rise in the number but not in the percentage of individuals employed in related trades, and an increase in the percentage of continuing full-time students.

In Michigan, Robinson (1984) conducted a study of 1980 graduates and leavers from a vocational education center to determine their post-high-school activities. Using data gathered from interviews with 73 graduates and leavers and 57 employers, he found that the majority of former students found jobs within 18 months of graduation and that the groups were equally successful in securing jobs related to their vocational programs. Robinson also found that most graduates and leavers continuing in postsecondary

education attended community colleges; few attended technical schools or four-year institutions.

Paquette (1979) compared vocational education graduates and nonvocational education graduates from one city in Michigan. She used a stratified random sample of 1975 graduates from the two city high schools; the sample included 29 vocational and 62 nonvocational graduates. Data were gathered by means of a telephone interview protocol; the chi-square technique was used for analysis. Paquette found (a) a high degree of similarity existed in job titles, tasks, machines, and equipment for both vocational and nonvocational graduates; (b) fewer than half the vocational graduates had jobs related to their vocational training; and (c) more nonvocational than vocational graduates entered postsecondary education, and a higher percentage of the nonvocational than vocational graduates actually received a degree or certificate.

Carreras (1972) surveyed 555 graduates of five Michigan area vocational centers to examine their employment experiences and opinions. Using chi-square analysis, Carreras compared graduates of the centers with two other groups: graduates who had received vocational education from a comprehensive high school and those who had followed an academic program. Of the area vocational center graduates who returned the questionnaire, more than 75% had successfully obtained employment, more than half of them (51.4%) in trades the same as or related to those in which they had received training. Most graduates were satisfied with their jobs and the

quality of their vocational training and said they would recommend the area center to other students interested in occupational training. Although Carreras found no significant differences among the three groups of graduates, graduates in the two vocational groups were higher on all the tested measures than were those in the academic group.

Kushner (1970) interviewed 1968 graduates from ten Detroit high school business education programs. From student responses, he found that 50% of the jobs reported were in clerical and sales classifications and that 51% of those jobs were in companies employing 100 or more persons. Typewriting was the most frequently demanded skill for entry-level employment; skills in operating a most other office machines were learned on the job. From the interviews Kushner also found that 51% of the graduates rated the cooperative education program as helpful for employment.

Several of the Michigan studies of vocational completers were conducted using state data collected from the annual vocational survey conducted by the Michigan State Department of Education. Some of these studies (Kiefer & Brown, 1978; Ollis, 1983; Shermis, 1982) were reviewed earlier in the dissertation and will not be discussed here.

Roberts (1979) used state follow-up information on a sample of approximately 5,000 first-year graduates from local and area vocational programs. He found no significant difference between graduates of the two programs in terms of proportion employed, hourly wages, or job satisfaction. He did find a significantly

higher proportion of local than area vocational program graduates pursuing postsecondary programs. Special needs students were not identified in Roberts's study.

Two similar studies that focused on individual vocational centers were conducted by Oberlander (1980) and Burke (1980). In a five-year longitudinal study of 1,285 graduates of the Mt. Pleasant Area Center, Oberlander sought to compare data on those graduates to State of Michigan data on first-year graduates during the same years. Although he limited his statistical analysis to comparisons based on frequency distribution and cross-tabulation, Oberlander found that the area center graduates tended to have higher overall percentages in terms of employment and continuation of education than did graduates of programs reported in the state data. However, the area center and state data generally were similar in terms of increases and decreases. Because this study lacked significance levels, the findings might be open to question.

Burke (1980) used chi-square tests of independence to analyze the data from 1976 and 1978 Michigan state follow-up surveys for 195 former students from one high school associated with a regional vocational center. He found no significant differences among graduates according to gender, race, or year of graduation in terms of their low ratings for course preparation and relevance of training for their present jobs and general dissatisfaction with their employment. Burke also found that a significantly higher percentage of blacks than whites indicated they were continuing

their education as apprentices, whereas a significantly higher percentage of whites than blacks chose to attend business schools.

Jeffries-Jackson (1980) examined 1976, 1977, and 1978 state data on approximately 5,000 first-year vocational program graduates to analyze differences in percentages of males and females employed. She found that females tended to earn lower hourly wages than did males for each of the years studied. She also found that males were more satisfied with their jobs than were females in two of the three years studied.

Woloszyk (1982) used 1979 state follow-up data in his study to identify variables related to the job placement and job satisfaction of 5,701 completers of 265 Michigan general merchandising programs. The majority of program completers who responded to the survey were female (56.7%) and white (90%). Using Pearson product-moment correlation coefficients and multiple-regression analysis, Woloszyk found that the existence of a Distributive Education Clubs of America chapter and the percentage of female completers were the only variables that had a significant positive relationship to related placement. He also found that job placement rates were significantly related to job satisfaction rate. Projected job openings had a significant negative relationship to job satisfaction and job placement rates.

Summary. The review of state-level research on former vocational education students revealed that a wide variety of approaches and methodologies have been used in such studies. The primary purpose of data-collection efforts at the state level has

been to comply with legislative requirements. Most states have developed extensive systems to collect the required data. Some private-sector efforts used state data; others did not. Most studies were conducted at a single time approximately one year after students had graduated, although several longitudinal studies were undertaken. Diverse statistical techniques were used to analyze the data; more researchers relied on chi-square analysis than on regression analysis or other elaborate techniques. The data were presented in a variety of formats, from simple tabular and summary statistics to more complex research reports.

The data obtained in the Michigan state annual follow-up of vocational completers have been used in a variety of research projects comparing former vocational students in state, in-school and between-school, and program studies. The findings of the Michigan research reflected those of nationwide studies in terms of such variables as curriculum, gender, race, and type of facilities and programs. A summary of findings for state studies indicated that, in general, most vocational graduates did not differ significantly across selected variable. Most vocational graduates were employed at the time of the studies; usually, more than half were in occupations related to their high school programs. Vocational graduates also seemed to have lower unemployment rates than nonvocational graduates, earned more than the minimum wage (males tended to earn more than females), and were satisfied with their employment and their high school training. Cooperative

education programs seemed to have helped some graduates. A growing number of graduates was pursuing further education, with a concentration in community colleges. Conspicuous in their absence were state-level studies, including Michigan research, focusing on special needs students.

Special Needs Studies

The review of the literature revealed a noticeable lack of research on special needs graduates of regular secondary vocational programs at the national, state, regional, and/or local levels. Several other writers noted similar absences in their literature reviews. The lack of studies on special populations suggested a major void in the research. Mertens et al. (1980) asserted in their review of studies on the effects of vocational education that "too little evidence is available to comment on the effects of vocational education for individuals with special needs" (p. 84). Grasso and Shea (1979) suggested that research on the appropriateness of vocational education for youths with special needs was an area that needed exploration. Franchak and Spirer (1979) remarked that most of the research that was focused on special populations was conducted on handicapped individuals.

Some of the following studies involved special needs individuals in situations other than mainstreamed vocational education programs. However, the writer thought the presentation would shed light on special populations in regular vocational education programs by indicating the types of outcomes special needs

graduates are experiencing. In national studies, special populations have been viewed only tangentially. Borus (1984) maintained that the lack of special needs individuals in the national longitudinal data was a serious flaw and that corrections should be made to address that problem. Grasso and Shea echoed this concern, noting that "the NLS LME samples of youth are by no means ideal for assessing the implications of job related education and training for groups with special needs. [The] information from interviews is very limited concerning disadvantaged or handicapped" (p. 116). Mertens and Seitz (1982) noted the same limiting data base for special populations in the new youth cohorts.

In several of the national studies reviewed earlier, results for special populations were discussed. Nolfi et al. (1978) noted that physical impairments and language differences had little or no influence on employment and unemployment. They pointed out that special needs individuals received 13.5% lower wages than regular persons. Parnes and associates (1969) found large socioeconomic differences between blacks and whites, which affected their educational and labor-market experiences and behaviors. Stressing the insufficient number of special needs respondents, Grasso and Shea were uncertain about whether vocational education was helpful for such individuals. Borus found no difference between disadvantaged and nondisadvantaged youths in terms of the effects of vocational and academic curricula on unemployment and hours worked.

Mertens and Seitz (1982) used the Youth Cohort Survey (NLS Youth) of the National Longitudinal Survey of Labor Force Behavior

to examine the labor-market experiences of 73 handicapped youths. Citing the limitations in the NLS Youth data base, they suggested that handicapped vocational graduates had higher rates of participation in the labor force, higher employment rates, and lower unemployment rates than did their handicapped nonvocational peers.

Kulachci (1981) sampled 1,321 young men with special needs from the National Longitudinal Survey of Labor Market Experiences. Included in his special needs category were educationally and socially or culturally disadvantaged and the handicapped. Kulachci used analysis of variance, Pearson product-moment correlation coefficient, and regression analysis to test the data. He found that the type of high school curriculum did not affect labor-market experiences for special needs males. He also found that years of schooling and postschool occupational training had a significant effect on special needs males' average wages/salary and the number of weeks employed.

Schoka (1980) compared 39 mainstreamed special needs graduates to 40 regular vocational school graduates from a vocational-technical school in New Jersey. The response rate was a little more than 50%. Schoka found that (a) mainstreamed graduates obtained employment in areas related to training as well as did regular graduates, (b) there were no significant differences between mainstreamed graduates' and regular graduates' employment records, and (c) regular graduates pursued postsecondary education more often than did mainstreamed graduates. Michie (1968) interviewed 60

disadvantaged youths who graduated from high school. He found that respondents' levels of success, as measured by the Employee Rating Scale, were influenced by vocational classes and individual interest shown by some "significant other" educator.

Several investigators focused on different methods of vocational training associated with the labor-market environment for educable mentally impaired students. In a study comparing vocational education and on-the-job training for 364 educable mentally retarded students from five districts in Michigan, Baxter (1977) found no significant difference due to gender, race, or level of intelligence with regard to income or rate of employment. He indicated that educable mentally impaired students who completed vocational training had higher employment rates than work study graduates. Baxter believed that, considering the dropout rate of special needs students from on-the-job training, there was substantial benefit in terms of earnings for students who completed a vocational education program.

Benjamin (1968) compared 1966 graduates of work-study programs. He categorized the sample into three ability groups as follows: 30 average/above average, 22 slow learners, and 20 educable mentally handicapped. He found that graduates in the average/above average ability group earned significantly higher hourly wages, had been employed for a significantly longer time, and had had a shorter time elapse before employment than graduates in the other two ability groups.

Perotti (1984) examined three methods of vocational training for educable mentally retarded students two to six years after they had completed their high school program. He found higher unemployment and underemployment for educable mentally handicapped individuals than for the general population. Perotti thought that a combined approach including both specific vocational-technical training and work-study was the optimum program for educable mentally retarded students.

Rogers (1981) compared 146 educable mentally retarded graduates from two North Carolina high schools and found the combination of work study and vocational rehabilitation programs did not significantly affect levels of employment. However, IQ, gender, and participation in a vocational rehabilitation program were significant predictors of levels of employment. Rogers also found that male graduates had higher hourly wages and length of employment than did females.

Brolin, Duranel, Kromer, and Miller (1975) conducted a follow-up of 80 educable mentally retarded students and grouped them as either academic or having had at least one vocational course. The results showed that the students who had received work study had better overall rates of vocational adjustment (employed 50% of the time since high school) than those who had not received work study.

Wilson (1984) studied the first-year outcomes of learning disabled high school graduates. He surveyed high school teachers of the learning disabled in Colorado and found that learning disabled graduates from the vocational education curriculum were more likely

to obtain employment but less likely to continue their education than were learning disabled graduates from the academic curriculum. Wilson noted that learning disabled students tended to enroll in nontechnical occupation programs. He also found that a significantly smaller percentage of learning disabled graduates than regular students went on to college.

Hodell (1984) compared 71 learning disabled and 67 nonhandicapped individuals from the 1979 graduating class in Arizona five years after graduation. Using chi-square and t-test procedures, she found that learning disabled adults had an unemployment rate four times greater than the nonhandicapped adults. She found no significant differences between the two groups in months worked for the last two years, hourly wages, or job satisfaction. Hodell also reported that nonhandicapped individuals enrolled in postsecondary programs and attended school while working more frequently than did the learning disabled adults.

Lewis and Tar (1979) presented a summary of the 1974-1976 follow-up of physically handicapped vocational education graduates in Pennsylvania. They found the handicapped and nonhandicapped students did not differ significantly upon admission to the vocational programs or in the ratio of job placement. They also found that handicapped and nonhandicapped graduates had similar starting salaries, less that 50% first-time employment in an occupation related to their training, and no adjustment problems in

their places of employment. The cooperative education experience appeared to improve current salaries and length of employment.

Jensen (1982) studied the influence of secondary vocational education on the postsecondary and employment activities of physically handicapped graduates in Minnesota. He conducted a comparative analysis with a similar group of nonhandicapped graduates over a three-year period from 1976 to 1979, cautioning about the effect of the low response rate (39%) among physically handicapped graduates. Jensen found that significantly more nonhandicapped nonvocational graduates than nonhandicapped vocational graduates continued their education in the third year after graduation. Significantly more handicapped than nonhandicapped graduates pursued further education the first year after graduation. Jensen also found that a significantly higher percentage (approximately 10%) of nonhandicapped than handicapped graduates were employed each year after graduation.

Ulthe (1980) discussed the findings of a follow-up of physically handicapped graduates/completers of vocational programs in 1976, 1977, and 1978 for four regions in Kentucky. She, too, remarked on the low response rate (18.4%). Ulthe found that approximately one-third of the graduates were employed full time, one-third were unemployed, and more than half of the total respondents were in school or employed.

Summary. The lack of research on special populations in regular vocational education programs suggests a major void in the informational resources upon which many individuals rely. Numerous

writers remarked on the limited amount of research conducted on special populations and recommended that concerted efforts be made in this direction. The research on special needs graduates from secondary vocational education programs also reflected these limitations.

Writers frequently mentioned an insufficient number of special needs respondents in national, state, and local research, which made it impossible to draw conclusions about the outcomes of vocational education for special populations. The results of studies on special populations were considered mixed, at best; in some instances the findings were confusing. The majority of studies focused on handicapped individuals; researchers used a variety of definitions for categorizing the special needs respondents.

In several studies, special needs vocational graduates were found to be active participants in the labor force and in postsecondary education. Some special needs vocational graduates benefited from vocational education programs by having higher employment and lower unemployment rates than did special needs students who had not been involved in vocational education. The review also showed that some special needs individuals did as well as non-special-needs regular and vocational graduates. Participation in an actual work-experience program seemed to improve the chances of labor market success for certain special needs individuals.

Conclusions

The follow-up study is a valuable instrument for determining the outcomes of vocational education programs. Many authors agreed that the follow-up is an effective tool for outcome evaluation. Its flexibility has been demonstrated in a variety of situations and is limited only by the creativity of the researcher. Most follow-up efforts reviewed in this chapter were conducted approximately one year after the individuals graduated and at a single time because of the expense and data-storage difficulties associated with longitudinal efforts. Many authors thought that data from the follow-up help decision makers at all levels make programmatic and policy decisions. Most states use an annual follow-up procedure for compliance reporting, as required by state and federal mandates. The accrued data have been used separately from, as well as in conjunction with, other research endeavors.

Many studies have been conducted on graduates of vocational programs at the secondary level. A variety of variables were tested, including gender, race, and type of program in which graduates had been enrolled. Other factors of interest were employment/unemployment status, continuing education, job satisfaction, salary, and ancillary effects. A wide variety of statistical procedures were used to analyze the data; these ranged from simple summary and tabular processes to ANOVA, MANOVA, chi-square, multiple regression, and other more elaborate techniques.

After reviewing the literature, it was clear that several voids exist in the research on vocational completers/graduates. One

critical area was in the lack of research pertaining to the accomplishments, outcomes, and present status of special needs completers as compared to regular completers of vocational education programs. In addition, research is lacking on whether those outcomes develop into established patterns over the years.

The purpose of the present study was to determine if the same outcomes evidenced in this review were reflected in the experience of special needs completers of vocational education programs in Michigan.

CHAPTER III

METHODOLOGY

Introduction

The researcher's purpose in this descriptive study was to determine the effects of participation in Michigan public secondary vocational education programs on the employment patterns of special needs completers as compared to regular (non-special needs) completers their first year after high school graduation in 1982, 1983, 1984, 1985, and 1986. The indicators used to define employment patterns were post-high school activity, full- or part-time employment, job satisfaction, average hourly wage rates, and program-related job classification. All completer data used in this research were contained in five unedited master data tapes for 1982, 1983, 1984, 1985, and 1986, which were obtained from the Michigan Department of Education. These state data and the collection system were typical of those of other states and governmental agencies, as noted in the Review of Literature.

This chapter contains a description of the population, the data-collection instrument and procedures, and the data-aggregation and analysis techniques.

The Population

The study population comprised 188,384 completers of public secondary vocational education programs approved by the Michigan Department of Education, Vocational-Technical Education Service, from 1981 (n = 37,474), 1982 (n = 38,219), 1983 (n = 39,342), 1984 (n = 37,890), and 1985 (n = 35,459). This population represented the vocational completers who responded to the Michigan Department of Education annual follow-up survey the first year after graduating from high school. In this study, a completer was defined as any student who was enrolled in a reimbursed secondary vocational program and fulfilled all requirements for the vocational program from the institution he/she attended.

The Initial Data Sort

The unedited Michigan Department of Education master data tapes contained records of well over 250,000 former students for the five years under investigation. Because many of these records were not within the scope of the study, an initial sorting of records was necessary. A computer program was written to transfer, sort, and group the appropriate records from the state tapes into a format that would be usable with the Michigan State University computers.

Data concerning nonvocational graduates and noncompleters of vocational programs were eliminated before the analyses were conducted. Although these were valid comparison groups, the researcher believed the condition of the data on those respondents did not support their inclusion in the study. During the annual

vocational survey process, former nonvocational students were surveyed, using Form VE-4045-D, in a process similar to that used in surveying former vocational students. However, the nonvocational students' records were omitted from this study because not enough surveys were collected from these individuals, and procedures followed in disseminating the survey and collecting data were uncontrolled.

Data on noncompleters (leavers) of vocational programs were also omitted, primarily because this group was so broadly defined. The State of Michigan defined a leaver as a student who had been enrolled in, but did not complete, a vocational program, as reported by the student's home school on an annual enrollment and termination report (Form VE-4301). Using this definition, a leaver could have been an individual with little or no vocational training or a dropout with extensive training time who had failed to fulfill all of the requirements for program completion. Because the researcher had no practical way to ascertain the precise times students left the programs and thus to distinguish among leavers with various amounts of training, this group was eliminated from consideration in the study. Thus, as a result of the initial data sort, the researcher focused only on vocational education program completers.

The Instrument

The instrument used for collecting data was the annual Follow-up Survey of Students, Form VE-40450A, for 1982, 1983, 1984, 1985, and 1986, from the Michigan Department of Education, Vocational-Technical Education Service (see Appendix A). The survey was first

developed in 1973, and various revisions of the instrument have been administered by the Michigan Department of Education during its annual follow-ups of secondary vocational graduates. Commitment by local districts to survey all vocational graduates has increased the response rate from 45% in 1973 to approximately 80% in 1985.

The underlying purpose of the annual survey has been to accumulate data pertaining to the status of former students for use by vocational education decision makers at the local, state, and federal levels. The Michigan Department of Education and an Ad Hoc Committee on Follow-up Studies have revised and/or modified the survey annually to gather pertinent data on vocational education graduates. Information is elicited on graduates' employment, post-high school training, pay rate, job satisfaction, use of vocational training, military status, homemaker status, and demographic data.

Data-Collection Procedures

The following general schedule (similar to that of other years' surveys) highlights the data-collection procedures for the 1985 follow-up survey of 1984 vocational students in Michigan. The schedule is included here to help the reader understand how the survey process took place.

1. February 15 to March 4: Inservice training programs were held to familiarize designated personnel with the survey instrument and instructions.

2. February 22 to March 4: Forms and instructions were distributed to local educational personnel.

3. March 18 to May 1: Local educational personnel . . .

   a. Prepared and duplicated cover letters.
   b. Coded survey forms.
   c. Mailed survey forms to graduates/completers.
   d. Processed data from the returned completed survey forms.
   e. Began initial follow-up of nonrespondents (2 weeks after first mailing).
   f. Sent processed forms to CEPDs for verification.

4. May 17: All forms were due at the Michigan Department of Education

5. May 20 to September 9: The Michigan Department of Education produced the data tape and edited, printed, and reproduced the final report.

6. September 9 and after: Three reports were generated for distribution: Item Analysis, Job Placement Summary, and Continuing Education Summary.

The information for the present study was derived from the Michigan Department of Education data tapes. The procedures the researcher used after obtaining the tapes are explained in the following section.

Aggregation of Data

The researcher applied an aggregation technique to the data that remained after the initial data sort. This procedure was used to compute sums and means across groups of cases. The 188,384 vocational completers' survey responses were aggregated for all continuous and categorical variables for each of the five years into

"completer types" at the CEPD level. Using the Statistical Analysis System (SAS) on the IBM 3090 VF mainframe computer, SAS data files were created for the aggregates for each of the survey years. The CEPD became the unit of statistical analysis and of inference. The aggregation process was an effective means by which to view and merge various portions of the data during the statistical analyses.

There were a possible 40 completer types each year for each of the 53 CEPDs in Michigan, yielding a maximum total of 2,120 possible completer types each year for the state (40 types x 53 CEPDs). However, the maximum number of completer types was never produced. The completer types were coded according to the following independent variables: (a) geographic location (CEPD), (b) completer status, (c) type of completer (special needs/regular), (d) gender (male/female), (e) ethnicity (white/minority), (f) type of special need (handicapped/limited English proficient (LEP)/disadvantaged/multiple/none), and (g) participation in cooperative education (yes/no). These data (except location) were derived from the "School Use Only" section of the survey (see Figure 3.1). School officials from the former students' home schools entered the information for this section, presumably using school records. (On the 1982 and 1983 surveys, former students indicated their gender and racial/ethnic group.) State personnel recorded this information on the master data tapes.

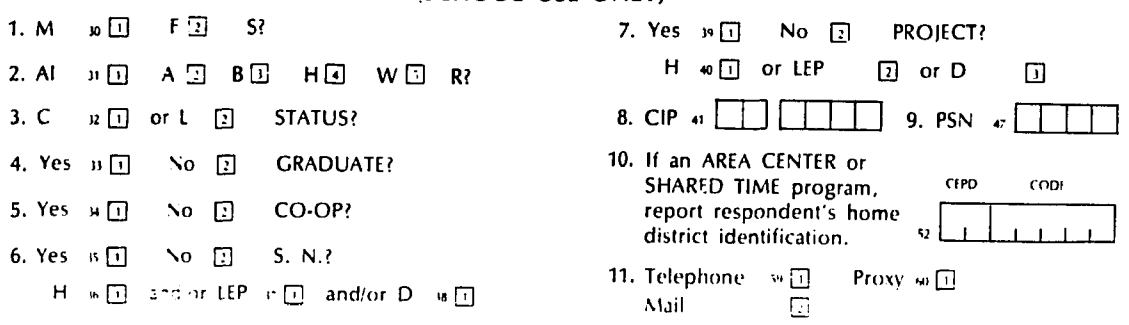


Figure 3.1.--Source of data for completer-type coding.

The coding process was a systematic means of arranging similar data, which facilitated the analytical processes used in the study. Figure 3.2 is an example of the coding of completer types used in this study and illustrates the coding strategies employed. The coding categories are explained in the following paragraphs.

CEPD	Completer Status	Type of Completer	Sex	Race	Type of SN	Co-op
		Special Regular	Male Female	White Minority	Handicap LEP Disadv. Multiple None	Yes No
01 53	1	1 2	1 2	1 2	1 2 3 4 0	1 2

Figure 3.2.--Coding of completer types.

CEPD location. The researcher noted the CEPD in which the student's home school was located. For each survey year, there were 53 CEPDs in Michigan. (See Appendix B for a full-size map showing the location and number of each CEPD.) However, for the purpose of this study, the results are reported in terms of four major geographic regions--1, 2, 3, and 4--rather than by individual CEPD. The pattern devised for selection of regions was based on an adaptation of geographic stratification done by Fisher (1974) using state mapping methods. Figure 3.3 shows the four major regions and the CEPDs included in each region.

REGION 1: CEPDs 1,2,3,4,5,6

REGION 2: CEPDs 7,8,9,10,11,12
13,14,15,16,17,18,19
20, 21

REGION 3: CEPDs 22,31,32,33,34,
35,36,37,46,47,48,49,
50,51,52,53

REGION 4: CEPDs 23,24,25,26,27,
28,29,30,38,39,40,41
42,43,44,45

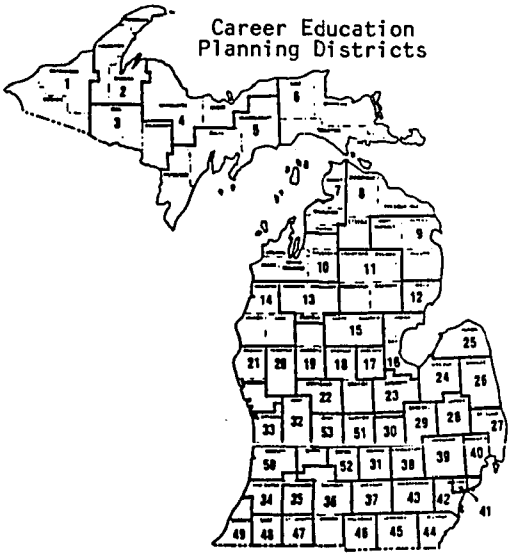


Figure 3.3.--Four major regions of Michigan and CEPDs in each region.

Completer status. Completer status was determined during the initial sorting process. After the initial sorting, all data retained for this study were from completers of vocational education programs.

Type of completer. Home school officials indicated whether the respondent was special needs or not. In this study, individuals reported as such on the survey form were considered to be special needs completers; all others were considered to be regular (non-special needs) completers.

Gender. The respondent's gender--male or female--was indicated on the survey.

Ethnicity. For this study, respondents were categorized into one of two racial/ethnic groups: white or minority. On the survey, school officials (and the respondents themselves in 1982 and 1983) reported the racial/ethnic group of the respondent as follows: Indian, Asian, Black, Hispanic, or White. The present writer believed that minority groups could be viewed as a single group for this study. Thus, he combined the four minority groups into a single category labeled "minority." Combining groups also compensated for insufficient numbers in certain groups and resulted in a single viable comparison group.

Type of special needs. School officials indicated the category of special needs in which such respondents belonged: handicapped, limited English proficiency (LEP), or disadvantaged. A fourth category, "multiple," was used in this study to denote respondents who were reported to have two or more types of special needs. Regular completers were included in a fifth category, labeled "none."

Cooperative education. School officials noted on the survey form whether respondents had participated in a vocationally reimbursed cooperative education program.

The SAS program identified survey forms that were missing information on particular independent variables. Surveys with incomplete information were not included in the statistical processing.

Data on the employment patterns of regular and special needs completers were aggregated by completer type. Survey responses of vocational education completers were analyzed to attain an accurate picture of their employment patterns. Two dependent variables--post-high school activity and employment information--were used in determining employment patterns. The subcategories of these two dependent variables are discussed in the following paragraphs.

Post-high school activity. The researcher determined the frequency with which respondents of the various completer types participated in some type of activity. Post-high school activity was divided into five subcategories (continued education, employment, military, homemaker, and idle). Continued education, employment, military, and homemaker tallies were later combined into a single category labeled as active. Respondents were assigned to at least one of the five activity categories. This categorization allowed the researcher to tabulate completers' responses and to determine the frequency of participation within each category. Each category is explained in the following paragraphs.

Continued education. Items 1 and 3 on the survey pertained to attendance or enrollment in a continued education program and distinguished among one, two-, and four-year colleges, apprenticeship training, business or trade schools, and other training. In this study, vocational completers were categorized by whether or not they had participated in one or more of the listed types of continued education.

Employed. Respondents indicated on Items 4 and 5 whether they received pay for work and indicated the number of hours per week they were employed. Military service was not included in the employment category but was designated as a separate activity category. Additional information was elicited from employed completers and is elaborated on in the discussion of employment information.

Military. Respondents indicated in survey Item 10 whether they were engaged in military service. Some researchers have included military personnel in the employed category. However, this investigator believed that including a separate category for military service would provide a more accurate accounting of these vocational completers.

Homemaker. The researcher thought some completers might have delayed entrance into the labor market and instead married and/or started families. These individuals were viewed as being involved in worthwhile and productive activities and were placed in a separate activity category.

Idle. Respondents were considered idle if they did not participate in continued education, did not receive pay for work, had not entered the military, or were not full-time homemakers.

Employment information. Responses from individuals who received payment for work were studied to present a comprehensive picture of the employment patterns of vocational completers. The employment information used in this study included full- or part-time employment, job satisfaction, hourly wage rates, and program-related job classification. Respondents who did not indicate hours of work or did not work for pay were excluded from these analyses to help minimize inappropriate responses and erroneous information. Likewise, responses from those in the military were omitted from further analyses. The researcher believed that, because of the lack of choice in military assignments, which are often based on military rather than individual needs, the responses from this group might have been misleading.

Full- or part-time employment. The number of hours per week the respondents reported working was used to determine full- or part-time employment status. Respondents who worked 30 or more hours per week were considered to be employed full time. Those who worked fewer than 30 hours per week were considered to have part-time employment.

Job satisfaction. Job satisfaction was determined from responses to Item 7 in the survey. Respondents were asked to

indicate whether they were very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied with their employment. In this study, responses of "very satisfied" and "somewhat satisfied" were considered to indicate job satisfaction, whereas answers of "not very satisfied" and "not at all satisfied" were considered to indicate dissatisfaction with employment.

Hourly wage rates. School officials converted wage figures reported by respondents (Item 8 on the survey) into hourly wages. In this study, the wages were totaled for each completer type, and the total was divided by the number of respondents in that classification, which yielded the mean hourly wage for each completer type.

Program-related job classification. Responses to Item 6 were used in determining the relatedness of completers' jobs to their previous high school training. Respondents indicated how much they used their high school vocational training on their jobs. Those who reported "a lot" or "some" were considered to have a related occupation, whereas those who responded "hardly any" or "none" were considered to have a nonrelated occupation. Responses were broken down further according to the high school programs in which respondents had been enrolled, as recorded by school officials in the "School Use Only" section of the survey. The Classification of Instructional Program (CIP) code (or OE code in earlier surveys) was used to designate the specific instructional program. Codes for the five years under investigation were updated and/or recoded according to A Guide to Michigan Secondary Vocational Education Programs

(Michigan Department of Education, 1986) to reflect any changes (omissions, additions, combinations) that were made during that time.

Data-Analysis Procedures

The entire population of 1981, 1982, 1983, 1984, and 1985 secondary vocational education completers, aggregated by CEPD, was included in this study. The following data-analysis procedures were used in answering the five research questions posed in this study.

Research Question 1: Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

Completers' responses to survey items pertaining to employment patterns (i.e., post-high school activity, full- or part-time employment, job satisfaction, average hourly wage rates, and program-related job classification) were used to answer Research Question 1. The chi-square statistic was used to determine whether significant differences existed between groups on all employment pattern components except average hourly wage rates, for which descriptive analysis was used. A significant difference was said to exist at the .001 level of confidence. This process was followed in analyzing data for each of the five years considered in this research.

Research Question 2: To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

The demographic information supplied by school officials in the "School Use Only" section of the survey was combined with the completers' survey responses to answer Research Question 2. Chi-square was used to determine whether significant differences existed at the .001 level of confidence between groups based on selected demographic characteristics for the employment pattern components (except average hourly wages). Descriptive statistics were used to clarify the findings for each year of survey data.

Research Question 3: Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

To answer this research question, the data regarding completers' employment patterns were analyzed according to the four geographic regions described earlier. Descriptive statistics were computed for each region for each of the five years. These data were used to highlight similarities and differences in the employment patterns of completers from the state's four regions. The chi-square statistic was used to determine significance. Significance was said to exist at the .001 level of confidence.

Research Question 4: To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

To answer Research Question 4, the researcher identified those vocational completers who had participated in a cooperative vocational program at the secondary level, as indicated by school

officials. These data were subdivided according to special needs completers and regular completers. The researcher used this information to determine the effect that participation in a cooperative education program had had on completers' employment patterns--at both the regional and state levels. The chi-square statistic was used to determine significance. Significance was said to exist at the .001 level of confidence.

Research Question 5: Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

To answer Research Question 5, survey data were analyzed according to the dependent (employment pattern) variables (post-high school activity, full- or part-time employment, job satisfaction, average hourly wage rates, and program-related job classification) and compared across years to discover whether longitudinal trends existed statewide, over the five-year scope of the study. Descriptive analyses were used to denote differences between regular and special needs completers of vocational programs.

Summary

The study population comprised 188,384 public secondary vocational completers from 1981, 1982, 1983, 1984, and 1985 who responded to the follow-up survey administered annually by the Michigan Department of Education, Vocational-Technical Education Service. The data came from five unedited data tapes obtained from the Michigan Department of Education.

Responses were aggregated to the CEPD level. The data were analyzed using tabulation and summary of responses, percentages, means, and chi-square. These methods were used to determine the magnitude and significance of difference in employment patterns among various groups of completers and the change that occurred over the five years included in this study. The results of the data analyses are presented and discussed in Chapter IV.

CHAPTER IV

RESULTS OF THE DATA ANALYSIS

Introduction

This chapter contains the results of the analysis of data that were gathered to answer the five research questions. The research questions are as follows:

1. Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

2. To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

3. Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

4. To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

5. Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

The source of information for this research was the data collected by the Michigan Department of Education, Vocational-Technical Education Service, from the various fiscal agents representing all the vocational education programs in Michigan from 1982 through 1986. This source was discussed in detail in Chapter III. The survey of former vocational students, Form VE-4045-A (see Appendix A), is distributed annually to graduates of Michigan's vocational education programs approximately one year after their high school graduation.

In this study, data collected on key subgroups of the vocational completer population were analyzed to answer the research questions. These subgroups were compared on a number of variables, as discussed in Chapter III. The chi-square statistic was used to test for statistically significant differences between groups at the .001 level. Descriptive analyses were also used to detect differences between regular and special needs completers of vocational programs.

In the following pages, the findings for regular and special needs completers of vocational education programs, with respect to the selected variables, are presented according to the research questions. The dates indicated in each table represent the year in which the completers were surveyed, and not their graduation date. Because the research questions are basically repeated for each subgrouping and for each of the five years for which data were analyzed, the following description of the tables is provided for the reader's convenience. This is intended to eliminate redundant

descriptions and to clarify the distinction between respondent groups and between tables. Special attention should be paid to the table numbering system, which is explained in the following paragraphs.

1. The first number refers to the chapter in which the table is located.

2. The second number corresponds to the research question to which the tabular data pertain.

3. The letter pertains to the variable considered in the analysis.

A. Tables whose numbers end in the letter A contain data on the post-high school activity of the vocational education completers. Respondents who indicated attendance in further training and/or education, engagement in full- or part-time employment, enlistment in the military, or considered themselves homemakers were classified as "active." All other respondents were categorized as "idle." Only those tables whose numbers end in the letter A contain data from every respondent to the annual survey. Tables with numbers ending in the letters B through E contain data on only those respondents who were considered employed (excluding those in the military).

B. Tables whose numbers end in the letter B contain data on completers' employment status. Employed completers were classified as being in either "full-time" or "part-time" work.

C. Tables whose numbers end in the letter C contain data on the related placement of vocational completers. Completers

were classified as "related" or "not related," based on their responses regarding the use of their high school vocational programs of study in their jobs.

D. Tables whose numbers end in the letter D contain data on the job satisfaction of completers, who were classified as "satisfied" or "not satisfied" with their jobs.

E. Tables whose numbers end in the letter E contain data on the average hourly wages for the designated completer groups.

Results

Research Question 1: Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

Table 4.1.A shows the percentages of regular and special needs completers in the two post-high school activity groups (active or idle).

The greatest percentage of regular completers (93.3%) was recorded as active in 1986. This group had their lowest level active (88.6%) in 1983. Special needs completers had their highest percentage active (90.5%) in 1984. Their lowest percentage active (78.8%) was in 1982. The greatest difference in active rates between the two completer groups occurred in 1982, when 89.1% of the regular completers were active, as compared to 78.8% of the special needs completers.

Using the chi-square test, a statistically significant difference in post-high school activity was found between regular and special needs completers in all five years under investigation.

Table 4.1.A.--Post-high school activity of regular and special needs completers, 1982 through 1986.

Completer Group	Post-High School Activity									
	1982		1983		1984		1985		1986	
	Active	Idle	Active	Idle	Active	Idle	Active	Idle	Active	Idle
Regular	29,843 89.1%	3,638 10.9%	30,000 88.6%	3,864 11.4%	29,605 92.4%	2,432 7.6%	28,546 91.5%	2,647 8.5%	28,632 93.3%	2,042 6.7%
Special needs	3,148 78.8%	845 21.2%	3,478 79.9%	877 20.1%	6,613 90.5%	692 9.5%	5,743 85.8%	954 14.2%	4,183 87.4%	602 12.6%
Chi-square =	359.10*		270.49*		28.81*		212.13*		210.50*	

*Significant at the .001 level.

Tables 4.1.B through 4.1.E and the related discussion pertain only to those regular and special needs completers who were considered employed, based on their responses to the follow-up survey. As noted earlier, these tables do not include data from completers who enlisted in the military.

Table 4.1.B shows the percentages of regular and special needs completers in two employment-status groups. "Full-time" employment was defined as working 30 or more hours per week in a wage-paying occupation. Employment in a wage-paying occupation for fewer than 30 hours per week was considered "part-time" employment.

In the five years under investigation, the highest percentage of regular vocational completers (63.5%) were employed full-time in 1986. The lowest percentage of regular vocational completers (53.8%) were employed full-time in 1983. The highest percentage of special needs completers (72.5%) also had full-time employment in 1986. In 1984, the lowest percentage of special needs completers (60.8%) had full-time employment. The largest percentage difference in full-time employment between the two completer groups occurred in 1983; the smallest percentage difference was in 1984.

Using the chi-square test, statistically significant differences were found in employment status between regular and special needs completers in all five years under investigation.

Table 4.1.C shows the percentages of regular and special needs completers who found employment related to their vocational programming after leaving high school. Completers who responded that they used vocational knowledge gained in high school on their

Table 4.1.B.--Employment status of regular and special needs completers, 1982 through 1986.

Completer Group	Employment Status									
	1982		1983		1984		1985		1986	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
Regular	11,363 58.3%	8,125 41.7%	10,375 53.8%	8,899 46.2%	11,320 55.4%	9,109 44.6%	11,933 60.6%	7,757 39.4%	12,584 63.5%	7,241 36.5%
Special needs	1,378 66.1%	708 33.9%	1,416 63.2%	824 36.8%	3,072 60.8%	1,979 39.2%	2,858 67.9%	1,354 32.1%	2,249 72.5%	855 27.5%
Chi-square =	46.83*		71.37*		48.19*		77.30*		94.74*	

*Significant at the .001 level.

Table 4.1.C.--Related placement of regular and special needs completers, 1982 through 1986.

Completer Group	Related Placement									
	1982		1983		1984		1985		1986	
	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel
Regular	10,915 56.6%	8,369 43.4%	10,685 56.0%	8,400 44.0%	11,444 56.7%	8,734 43.3%	11,939 61.2%	7,565 38.8%	11,741 59.9%	7,844 40.1%
Special needs	1,128 54.9%	927 45.1%	1,183 53.5%	1,030 46.5%	2,820 56.5%	2,167 43.5%	2,449 58.6%	1,732 41.4%	1,818 59.1%	1,256 40.9%
Chi-square =	2.21		5.14		0.05		10.05		0.72	

jobs "a lot" or "some" were considered to have a "related" occupation; those who responded "hardly any" or "none" were considered to have a "nonrelated" occupation.

Regular completers had their highest percentage of related placements (61.2%) in 1985. The lowest percentage of regular completers (56%) found related employment in 1983. Special needs completers had their highest and lowest percentages of related placements in 1986 (59.1%) and 1983 (53.5%), respectively. The largest percentage difference in related employment between the two completer groups was in 1985; the smallest percentage difference was in 1984.

Using the chi-square test, no statistically significant difference was found in related placement between regular and special needs completers for any of the five years under investigation.

Table 4.1.D shows the job satisfaction ratings for regular and special needs completers of vocational programs. These figures represent the total responses of employed completers. Respondents who gave a "very" or "somewhat" response to the survey question concerning job satisfaction were considered to be "satisfied" with their post-high school employment. Those who gave a response of "not very" or "not at all" were considered to be "not satisfied" with their employment.

In 1986, both regular and special needs vocational completers reported the highest satisfaction with their employment (83.8% and 85.3%, respectively). Both groups reported their lowest level of satisfaction in 1983: 80% for regular completers and 79.4% for

Table 4.1.D.--Job satisfaction of regular and special needs completers, 1982 through 1986.

Completer Group	Job Satisfaction									
	1982		1983		1984		1985		1986	
	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat
Regular	15,382 81.2%	3,568 18.8%	15,125 80.0%	3,774 20.0%	16,502 81.9%	3,644 18.1%	16,151 83.2%	3,260 16.8%	16,340 83.8%	3,156 16.2%
Special needs	1,622 80.0%	405 20.0%	1,715 79.4%	445 20.6%	4,005 80.6%	966 19.4%	3,467 83.6%	682 16.4%	2,605 85.3%	450 14.7%
Chi-square =	1.58		0.48		4.81		0.31		4.18	

special needs completers. The greatest percentage difference in job satisfaction between the two groups was in 1986; the smallest percentage difference was in 1985.

Using the chi-square test, no statistically significant difference in job satisfaction was found between regular and special needs completers for any of the years studied.

Table 4.1.E shows the average hourly wages for regular and special needs completers. Hourly wages reported by employed completers in each group were totaled and then averaged.

Regular vocational completers received the highest average wage--$4.55 per hour--in 1986; they were paid the lowest average wage in 1983--$4.05 per hour. Special needs completers also received their highest average wage in 1986--$4.57 per hour--and their lowest average wage in 1983--$4.07 per hour. In 1985, both regular and special needs vocational completers received the same average wage--$4.38 per hour. The greatest difference in average hourly wages between the two groups--$.19 per hour--occurred in 1984.

> Research Question 2: To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

The entire data bank was aggregated to reflect the responses of regular and special needs vocational completers according to selected demographic characteristics. As discussed in Chapter III, the researcher initially intended to consider three demographic characteristics: gender (male and female), ethnicity (white and minority), and special needs status (disadvantaged, handicapped,

Table 4.1.E.--Average hourly wages of regular and special needs completers, 1982 through 1986.

Completer Group	Average Hourly Wages									
	1982		1983		1984		1985		1986	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
Regular	15,879	$4.21	15,573	$4.05	17,021	$4.30	16,557	$4.38	15,993	$4.55
Special needs	1,645	$4.29	1,774	$4.07	4,228	$4.49	3,513	$4.38	2,520	$4.57
Difference		$ .08		$ .02		$ .19		$ .00		$ .02

Note: The federal minimum wage since 1981 = $3.35 per hour.

LEP, multiple, and none). However, upon completing the computer analysis for special needs status, it was found that some categories had very few respondents or none at all. Because it was believed that such a comparison would be incomplete or misleading, the researcher decided not to analyze according to special needs status. Tables 4.2.A through 4.2.E, therefore, contain information on gender and ethnicity of regular and special needs vocational program completers.

Table 4.2.A.1 shows the post-high school activity for regular and special needs completers, according to gender. The highest percentage of regular male completers (93.1%) was considered active in 1986. The lowest percentage of regular males (87.8%) was active in 1983. In 1984, the highest percentage of special needs males (90%) was active, whereas in 1982, the lowest percentage of special needs males (78%) was active. More regular than special needs male completers were active in each of the survey years. The largest percentage difference in active rates between regular and special needs males was in 1982; the smallest percentage difference was in 1984.

In 1986, the highest percentage of regular female completers (93.6%) was considered active; the lowest percentage (89.3%) reported being active in 1983. The special needs females had their highest level active in 1984 (91.3%), whereas their lowest percentage active (80.2%) occurred in 1982. More regular than special needs female completers were active each year of the study.

Table 4.2.A.1.--Post-high school activity of regular and special needs completers, 1982 through 1986, by gender.

Completer Group	Post-High School Activity									
	1982		1983		1984		1985		1986	
	Active	Idle	Active	Idle	Active	Idle	Active	Idle	Active	Idle
MALE										
Regular	14,064	1,811	13,749	1,918	13,471	1,167	12,804	1,251	13,173	979
	88.6%	11.4%	87.8%	12.2%	92.0%	8.0%	91.1%	8.9%	93.1%	6.9%
Special needs	1,934	546	2,165	568	3,937	438	3,269	591	2,581	348
	78.0%	22.0%	79.2%	20.8%	90.0%	10.0%	84.7%	15.3%	88.1%	11.9%
Chi-square =	215.67*		145.26*		18.12*		134.89*		83.44*	
FEMALE										
Regular	15,779	1,827	16,251	1,946	16,134	1,265	15,742	1,396	15,459	1,063
	89.6%	10.4%	89.3%	10.7%	92.7%	7.3%	91.9%	8.1%	93.6%	6.4%
Special needs	1,214	299	1,313	309	2,676	254	2,474	363	1,602	254
	80.2%	19.8%	80.9%	19.1%	91.3%	8.7%	87.2%	12.8%	86.3%	13.7%
Chi-square =	124.16*		103.14*		7.09		65.53*		131.89*	

*Significant at the .001 level.

The greatest percentage difference in active rates between regular and special needs females was in 1982; the smallest percentage difference was in 1984.

Using the chi-square test, statistically significant differences in post-high school activity were found between regular and special needs male completers for all five years, and between regular and special needs female completers for all years except 1984.

The post-high school activity for regular and special needs completers, according to ethnicity, is shown in Table 4.2.A.2. Completers were subgrouped into "white" and "minority" categories; the latter group included all ethnic respondents.

The largest percentage of regular white completers' involvement designated as active (94%) was reported in 1986; their lowest percentage active was 89.4% in 1983. The highest percentage of white special needs completers (91%) was active in 1984, whereas the lowest percentage (79.2%) was active in 1982. More white regular than special needs completers were active in all survey years. The largest percentage difference between white completer groups occurred in 1982; the smallest percentage difference was in 1984.

Minority regular completers reported their highest active level (89.6%) in 1984. Minority special needs completers reported their highest level active (88.2%) in 1984. Both minority completer groups had their lowest active levels in 1983--81.5% for regular

Table 4.2.A.2.--Post-high school activity of regular and special needs completers, 1982 through 1986, by ethnicity.

Completer Group	Post-High School Activity									
	1982		1983		1984		1985		1986	
	Active	Idle	Active	Idle	Active	Idle	Active	Idle	Active	Idle
WHITE										
Regular	27,475	3,200	27,156	3,220	26,845	2,112	25,182	2,107	25,732	1,649
	89.6%	10.4%	89.4%	10.6%	92.7%	7.3%	92.3%	7.7%	94.0%	6.0%
Special needs	2,848	747	2,999	714	5,631	560	5,053	806	3,604	471
	79.2%	20.8%	80.8%	19.2%	91.0%	9.0%	86.2%	13.8%	88.4%	11.6%
Chi-square =	338.05*		241.34*		22.28*		219.21*		172.95*	
MINORITY										
Regular	2,368	438	2,844	644	2,760	320	3,364	540	2,309	984
	84.4%	15.6%	81.5%	18.5%	89.6%	10.4%	86.2%	13.8%	88.1%	11.9%
Special needs	300	98	479	163	982	132	690	148	579	131
	75.4%	24.6%	74.6%	25.4%	88.2%	11.8%	82.3%	17.7%	81.5%	18.5%
Chi-square =	20.33*		16.54*		1.81		8.16		37.98*	

*Significant at the .001 level.

completers and 74.6% for special needs completers. The largest percentage difference in active rates between minority completer groups was in 1982; the smallest percentage difference was in 1984.

Using the chi-square analysis, statistically significant differences in post-high school activity were found between white regular and special needs completers in each of the five years. Statistically significant differences were found between minority regular and special needs completers in 1982, 1983, and 1986.

Table 4.2.B.1 shows the employment-status data for regular and special needs vocational completers, by gender. In 1986, regular males reported the highest percentage of full-time employment (71.5%), as did special needs males (78.5%). The lowest full-time employment figures for regular males were reported in 1983, when only 62% had full-time employment. The lowest figure for special needs males was 68.1% in 1984. The greatest percentage difference in full-time employment between male completer groups was in 1982; the smallest percentage difference was in 1984. In all years studied, a higher percentage of special needs than regular males reported full-time employment.

Both regular and special needs female vocational completers reported their highest percentages of full-time employment in 1986 (56.8% and 62.3%, respectively). Regular female completers reported their lowest full-time employment (47.3%) in 1983, whereas special needs females reported their lowest full-time employment (51.2%) in 1984. The largest percentage difference in full-time employment

Table 4.2.B.1.--Employment status of regular and special needs completers, 1982 through 1986, by gender.

Completer Group	Employment Status									
	1982		1983		1984		1985		1986	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
MALE										
Regular	6,005	3,120	5,303	3,244	5,647	3,336	5,982	2,712	6,422	2,556
	65.8%	34.2%	62.0%	38.0%	62.9%	37.1%	68.8%	31.2%	71.5%	28.5%
Special needs	978	351	994	436	1,961	918	1,824	591	1,526	418
	73.6%	26.4%	69.5%	30.5%	68.1%	31.9%	75.5%	24.5%	78.5%	21.5%
Chi-square =	31.67*		29.33*		26.13*		40.87*		39.15*	
FEMALE										
Regular	5,358	5,005	5,072	5,655	5,673	5,773	5,951	5,045	6,162	4,685
	51.7%	48.3%	47.3%	52.7%	49.6%	50.4%	54.1%	45.9%	56.8%	43.2%
Special needs	400	357	422	388	1,111	1,061	1,034	763	723	438
	52.8%	47.2%	52.1%	47.9%	51.2%	48.8%	57.5%	42.5%	62.3%	37.7%
Chi-square =	0.37		7.00		1.84		7.29		12.81*	

*Significant at the .001 level.

between female completer groups was in 1986; the smallest percentage difference was in 1982.

Using the chi-square test, statistically significant differences in employment status were found between regular and special needs male completers for each of the five years under investigation. However, a statistically significant difference in employment status between regular and special needs female completers was found only in 1986.

Employment-status data for regular and special needs completers, by ethnicity, are presented in Table 4.2.B.2. In 1986, regular and special needs white completers reported their highest percentages of full-time employment (64.3% and 74%, respectively). The lowest percentage of full-time employment for regular whites (54.9%) occurred in 1983, whereas special needs whites reported their lowest percentage (63.6%) in 1984. The greatest percentage difference in full-time employment between white completer groups was in 1983; the smallest percentage difference was in 1985. For all five years, a higher percentage of special needs than regular white completers had full-time employment.

Regular minority completers reported their highest percentage of full-time employment (54.1%) in 1986 and their lowest percentage (38.8%) in 1983. Of the special needs minority completers, 60.5% had full-time employment in 1985, which was that group's highest percentage. In 1984, this group reported the lowest percentage of full-time employment (43.6%). The largest percentage difference in full-time employment between minority completer groups occurred in

Table 4.2.B.2.--Employment status of regular and special needs completers, 1982 through 1986, by ethnicity.

Completer Group	Employment Status									
	1982		1983		1984		1985		1986	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
WHITE										
Regular	10,891	7,610	9,897	8,146	10,607	8,094	11,146	6,893	11,730	6,516
	58.9%	41.1%	54.9%	45.1%	56.7%	43.3%	61.9%	38.1%	64.3%	35.7%
Special needs	1,310	649	1,328	721	2,770	1,588	2,608	1,191	2,038	715
	66.9%	33.1%	64.8%	35.2%	63.6%	36.4%	68.6%	31.4%	74.0%	26.0%
Chi-square =	47.14*		74.03*		67.93*		61.52*		100.52*	
MINORITY										
Regular	472	515	478	753	713	1,015	787	894	854	725
	47.8%	52.2%	38.8%	61.2%	41.3%	58.7%	46.8%	53.2%	54.1%	45.9%
Special needs	68	59	88	103	302	391	250	163	211	140
	53.5%	46.5%	46.1%	53.9%	43.6%	56.4%	60.5%	39.5%	60.1%	39.9%
Chi-square =	1.47		3.62		1.09		24.95*		4.22	

*Significant at the .001 level.

1985; the smallest percentage difference was in 1984. In all five years, a higher percentage of special needs than regular minority completers reported full-time employment.

Using chi-square analyses, statistically significant differences in employment status were found between regular and special needs white completers for each year of the study. A statistically significant difference in employment status was found between regular and special needs minority completers only in 1985.

Table 4.2.C.1 contains data on the related placement of regular and special needs vocational completers, by gender. In 1985, the highest percentage of regular male completers (56.7%) reported employment in a field related to their vocational programs, whereas the highest percentage of special needs males (57.3%) reported such employment in 1986. The lowest percentages of both regular and special needs male completers (50.1% and 51.5%, respectively) reported employment related to their vocational programs in 1983. The largest percentage difference between the two male completer groups occurred in 1986; the smallest percentage difference was in 1984.

Both regular and special needs female completers reported their highest percentages of related placement (64.8% and 62.9%, respectively) in 1985. The lowest percentages of both regular and special needs females (60.7% and 56.9%, respectively) found related placement in 1983. The largest percentage difference in related placement between the two female completer groups was in 1983; the smallest percentage difference was in 1984.

Table 4.2.C.1.--Related placement of regular and special needs completers, 1982 through 1986, by gender.

Completer Group	Related Placement									
	1982		1983		1984		1985		1986	
	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel
MALE										
Regular	4,562	4,426	4,226	4,215	4,555	4,314	4,874	3,728	4,870	3,983
	50.8%	49.2%	50.1%	49.9%	51.4%	48.6%	56.7%	43.3%	55.0%	45.0%
Special needs	685	625	727	684	1,491	1,355	1,326	1,071	1,102	821
	52.3%	47.7%	51.5%	48.5%	52.4%	47.6%	55.3%	44.7%	57.3%	42.7%
Chi-square =	1.08		1.03		0.92		1.37		3.37	
FEMALE										
Regular	6,353	3,943	6,459	4,185	6,889	4,420	7,065	3,837	6,871	3,861
	61.7%	38.3%	60.7%	39.3%	60.9%	39.1%	64.8%	35.2%	64.0%	36.0%
Special needs	443	302	456	346	1,329	812	1,123	661	716	435
	59.5%	40.5%	56.9%	43.1%	62.1%	37.9%	62.9%	37.1%	62.2%	37.8%
Chi-square =	1.47		4.56		1.02		2.31		1.49	

Using the chi-square test, no statistically significant difference in related placement was found between regular and special needs male completers for any of the survey years. Likewise, no statistically significant difference was found between regular and special needs female completers in terms of related placement for any of the five years under investigation.

Table 4.2.C.2 presents the data regarding the related placement of regular and special needs vocational completers, by ethnicity. Regular white completers reported the highest percentage of related placement (61.5%) in 1985, whereas special needs white completers recorded the highest percentage (58.8%) in 1986. In 1983, both regular and special needs white completers recorded the lowest percentage of related placement (55.9% and 53.4%, respectively). The greatest percentage difference between the two white completer groups occurred in 1985; the smallest percentage difference was in 1984.

Regular minority completers recorded the highest percentage of related placement (59.8%) in 1984, and special needs minority completers reported the highest percentage (62.3%) in 1985. In 1982, regular minority completers had the lowest percentage of related placements (57.3%), whereas special needs minority completers had the lowest percentage (54.6%) in 1983. The greatest percentage difference between the minority completer groups occurred in 1985; the smallest percentage difference was in 1984.

Table 4.2.C.2.--Related placement of regular and special needs completers, 1982 through 1986, by ethnicity.

Completer Group	Related Placement									
	1982		1983		1984		1985		1986	
	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel
WHITE										
Regular	10,357	7,954	9,987	7,893	10,435	8,056	10,971	6,878	10,840	7,189
	56.6%	43.4%	55.9%	44.1%	56.4%	43.6%	61.5%	38.5%	60.1%	39.9%
Special needs	1,056	877	1,082	946	2,423	1,890	2,194	1,578	1,606	1,123
	54.6%	45.4%	53.4%	46.6%	56.2%	43.8%	58.2%	41.8%	58.8%	41.2%
Chi-square =	2.65		4.62		0.09		14.24*		1.61	
MINORITY										
Regular	558	415	698	507	1,009	678	968	687	901	655
	57.3%	42.7%	57.9%	42.1%	59.8%	40.2%	58.5%	41.5%	57.9%	42.1%
Special needs	72	50	101	84	397	277	255	154	212	133
	59.0%	41.0%	54.6%	45.4%	58.9%	41.1%	62.3%	37.7%	61.4%	38.6%
Chi-square =	0.12		0.73		0.16		2.02		1.46	

*Significant at the .001 level.

Using the chi-square test, the only statistically significant difference in related placement that was found between groups was between regular and special needs white completers in 1985.

Table 4.2.D.1 presents the data regarding the job satisfaction of regular and special needs vocational completers, by gender. Both regular and special needs male completers indicated the highest percentage of satisfaction with their present employment in 1986 (83.3% and 85.3%, respectively). The two groups' lowest job satisfaction was in 1983 (78.4% and 78.3%, respectively). The greatest percentage difference in job satisfaction between the male groups was in 1986; the smallest percentage difference was in 1983.

The highest percentage of job satisfaction for regular female completers was 84.3% in 1985 and 1986, whereas for female special needs completers the highest percentage of job satisfaction (85.2%) was reported in 1986. The lowest percentage of job satisfaction for regular females was 81.3% in 1983, and for special needs females the low was 79.2% in 1982. The largest percentage difference in job satisfaction between the two female completer groups was in 1982; the smallest percentage difference was in 1983.

Based on the chi-square analysis, no statistically significant difference in job satisfaction was found between male or female completer groups for any of the years studied.

Data on job satisfaction for regular and special needs completers, by ethnicity, are shown in Table 4.2.D.2. In 1986, both regular and special needs white completers had the highest percentages of job satisfaction (84.3% for regular whites and 85.9%

Table 4.2.D.1.--Job satisfaction of regular and special needs completers, 1982 through 1986, by gender.

Completer Group	Job Satisfaction									
	1982		1983		1984		1985		1986	
	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat
MALE										
Regular	6,980	1,858	6,547	1,806	7,129	1,728	6,999	1,551	7,339	1,475
	79.0%	21.0%	78.4%	21.6%	80.5%	19.5%	81.9%	18.1%	83.3%	16.7%
Special needs	1,041	252	1,076	299	2,275	566	1,967	412	1,635	282
	80.5%	19.5%	78.3%	21.7%	80.1%	19.9%	82.7%	17.3%	85.3%	14.7%
Chi-square =	1.61		0.01		0.23		0.85		4.71	
FEMALE										
Regular	8,402	1,710	8,578	1,968	9,373	1,916	9,152	1,709	9,001	1,681
	83.1%	16.9%	81.3%	18.7%	83.0%	17.0%	84.3%	15.7%	84.3%	15.7%
Special needs	581	153	639	146	1,730	400	1,500	270	970	168
	79.2%	20.8%	81.4%	18.6%	81.2%	18.8%	84.7%	15.3%	85.2%	14.8%
Chi-square =	7.44		1.87		4.10		0.27		0.74	

Table 4.2.D.2.--Job satisfaction of regular and special needs completers, 1982 through 1986, by ethnicity.

Completer Group	Job Satisfaction									
	1982		1983		1984		1985		1986	
	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat
WHITE										
Regular	14,602	3,384	14,204	3,500	15,120	3,339	14,854	2,904	15,133	2,810
	81.2%	18.8%	80.2%	19.8%	81.9%	18.1%	83.6%	16.4%	84.3%	15.7%
Special needs	1,524	380	1,579	405	3,475	821	3,144	596	2,325	382
	80.0%	20.0%	79.6%	20.4%	80.9%	19.1%	84.1%	15.9%	85.9%	14.1%
Chi-square =	1.47		0.47		2.44		0.39		4.32	
MINORITY										
Regular	780	184	921	274	1,382	305	1,297	356	1,207	346
	80.9%	19.1%	77.1%	22.9%	81.9%	18.1%	78.5%	21.5%	77.7%	22.3%
Special needs	98	25	136	40	530	145	323	86	280	68
	79.7%	20.3%	77.3%	22.7%	78.5%	21.5%	79.0%	21.0%	80.5%	19.5%
Chi-square =	0.11		3.53		3.62		0.05		1.25	

for special needs whites). In 1983, both white completer groups reported the lowest percentage of job satisfaction (80.2% for regular completers and 79.6% for special needs completers). The largest percentage difference in job satisfaction between regular and special needs white completers was in 1986; the smallest percentage difference was in 1985.

Regular minority completers reported the highest percentage of job satisfaction (81.9%) in 1984. Special needs minority completers reported the highest job satisfaction (80.5%) in 1986. During 1983, both groups of minority completers reported the lowest percentage of satisfaction with their employment (77.1% for regular minority completers and 77.3% for special needs completers). The greatest percentage difference in job satisfaction between the minority groups was in 1984; the smallest percentage difference was in 1983.

Using the chi-square test, no statistically significant difference in job satisfaction was found between the white or the minority regular and special needs completers in any of the years under investigation.

Table 4.2.E.1 shows the average hourly wages for regular and special needs vocational completers, by gender. Male completers received the highest average hourly wages in 1986. Regular male completers reported an average hourly wage of $4.91, and special needs males had an average hourly wage of $4.85. Both male groups received the lowest average hourly wage in 1983, when regular males received $4.28 per hour and special needs males were paid $4.27 per hour. The largest difference in average hourly wages between

Table 4.2.E.1.--Average hourly wages of regular and special needs completers, 1982 through 1986, by gender.

Completer Group	Average Hourly Wages									
	1982		1983		1984		1985		1986	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
MALE										
Regular	7,324	$4.51	6,742	$4.28	7,400	$4.52	7,165	$4.73	7,070	$4.91
Special needs	1,036	$4.50	1,127	$4.27	2,381	$4.63	1,999	$4.63	1,573	$4.85
Difference		$ .01		$ .01		$ .11		$ .10		$ .06
FEMALE										
Regular	8,555	$3.96	8,831	$3.87	9,621	$4.13	9,392	$4.11	8,923	$4.26
Special needs	609	$3.92	647	$3.73	1,847	$4.31	1,514	$4.05	947	$4.11
Difference		$ .04		$ .14		$ .18		$ .06		$ .15

Note. The federal minimum wage since 1981 = $3.35 per hour.

regular and special needs males was $.11 in 1984; the smallest difference was $.01 in 1982 and 1983.

The highest average hourly wage for regular female completers was $4.26 in 1986. Special needs females received the highest average hourly wage ($4.31) in 1984. Both regular and special needs females received the lowest average hourly wage in 1983 ($3.87 and $3.73, respectively). The greatest difference in average hourly wages between regular and special needs females was $.18 in 1984; the smallest difference was $.04 in 1982.

Average hourly wages for regular and special needs completers, by ethnicity, are shown in Table 4.2.E.2. Both white completer groups received their highest average hourly wages in 1986. Regular whites received $4.55 per hour on average, and special needs whites received $4.61 per hour on average. In 1983, both groups received their lowest average hourly wage ($4.06 for regular whites and $4.10 for special needs whites). The largest difference in average hourly wages for white completers was $.21 in 1984; the smallest difference was $.01 in 1985.

The highest average hourly wage for minority completers was in 1984, when regular minority completers received $4.59 and special needs minority completers received $4.54. In 1983, both groups received their lowest average hourly wage--$3.93 for regular minority completers and $3.84 for special needs minority completers. The largest difference in average hourly wages between minority completer groups was $.30 in 1982; the smallest difference was $.03 in 1985.

Table 4.2.E.2.--Average hourly wages of regular and special needs completers, 1982 through 1982, by ethnicity.

Completer Group	Average Hourly Wages									
	1982		1983		1984		1985		1986	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
WHITE										
Regular	15,042	$4.21	14,503	$4.06	15,587	$4.27	15,104	$4.38	14,680	$4.55
Special needs	1,544	$4.31	1,609	$4.10	3,651	$4.48	3,150	$4.37	2,231	$4.61
Difference		$ .10		$ .04		$ .21		$ .01		$ .06
MINORITY										
Regular	837	$4.22	1,070	$3.93	1,434	$4.59	1,453	$4.38	1,313	$4.52
Special needs	101	$3.92	165	$3.84	577	$4.54	363	$4.41	289	$4.30
Difference		$ .30		$ .09		$ .05		$ .03		$ .22

Note. The federal minimum wage since 1981 = $3.35 per hour.

Research Question 3: Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

Completer data for the state were divided into four geographic regions (see Figure 3.3). In the following pages, the data are presented by year and region for both the regular and special needs completer groups. Data for each employment pattern variable are displayed in separate tables to show any differences that existed between completer groups within regions across the state.

Table 4.3.A shows the post-high school activity data for regular and special needs vocational program completers, according to region. In Region 1, the highest percentage active for regular completers was 91.9% in both 1984 and 1986. The regular completers had a low of 87.2% in both 1983 and 1985. Special needs completers in Region 1 indicated a high active rate of 89.4% in 1984 and a low of 79.9% in 1985. The greatest percentage difference in rates active between regular and special needs completers in Region 1 was in 1982; the smallest percentage difference was in 1984.

In Region 2, the highest percentage active for regular completers was 91.1% in 1986. The lowest level active for this group was 87.8% in 1983. In contrast, the highest active rate for special needs completers was 82.7% in 1986. This group had their lowest level active (74.5%) in 1982. The greatest percentage difference in rates active between regular and special needs completers in Region 2 was in 1982; the smallest percentage difference was in 1984.

Table 4.3.A.--Post-high school activity of regular and special needs completers, 1982 through 1986, by region.

Completer Group	Post-High School Activity									
	1982		1983		1984		1985		1986	
	Active	Idle	Active	Idle	Active	Idle	Active	Idle	Active	Idle
REGION 1										
Regular	1,314	171	841	124	1,072	95	1,025	151	1,059	93
	88.5%	11.5%	87.2%	12.8%	91.9%	8.1%	87.2%	12.8%	91.9%	8.1%
Special needs	175	41	202	47	470	56	227	57	168	24
	81.0%	19.0%	81.1%	18.9%	89.4%	10.6%	79.9%	20.1%	87.5%	12.5%
Chi-square =	9.64		5.94		2.80		9.79		4.06	
REGION 2										
Regular	3,707	474	3,547	492	3,751	442	3,159	346	3,524	346
	88.7%	11.3%	87.8%	12.2%	89.5%	10.9%	90.1%	9.9%	91.1%	8.9%
Special needs	537	184	478	163	848	185	1,077	265	656	137
	74.5%	25.5%	74.6%	25.4%	82.1%	17.9%	80.3%	19.7%	82.7%	17.3%
Chi-square =	106.45*		80.66*		42.61*		85.90*		49.25*	
REGION 3										
Regular	6,928	910	6,935	942	6,545	588	7,113	700	7,019	514
	88.0%	12.0%	88.0%	12.0%	91.8%	8.2%	91.0%	9.0%	93.2%	6.8%
Special needs	688	160	721	185	1,579	140	923	165	956	164
	81.1%	18.9%	79.6%	20.4%	91.9%	8.1%	84.8%	15.2%	85.4%	14.6%
Chi-square =	37.32*		52.00*		0.02		41.92*		82.56*	
REGION 4										
Regular	18,146	2,083	18,677	2,306	18,237	1,307	17,249	1,450	17,030	1,089
	89.7%	10.3%	89.0%	11.0%	93.3%	6.7%	92.2%	7.8%	94.0%	6.0%
Special needs	1,748	460	2,077	482	3,716	311	3,516	467	2,403	277
	79.2%	20.8%	81.2%	18.8%	92.3%	7.7%	88.3%	11.7%	89.7%	10.3%
Chi-square =	219.91*		134.48*		5.60		66.90*		71.19*	

*Significant at the .001 level.

In Region 3, regular completers reported the highest rate active (93.2%) in 1986. They indicated the lowest active levels (88%) in both 1982 and 1983. Special needs completers reported the highest level active (91.9%) in 1984, whereas their lowest level active (79.6%) occurred in 1983. The largest percentage difference between regular and special needs completers in active rates was in 1983; the smallest percentage difference was in 1984.

In Region 4, the highest rate active for regular completers was 94% in 1986; conversely, the lowest level active (89%) occurred in 1983. For special needs completers from Region 4, the highest active level was 92.3% in 1984; the lowest was 79.2% in 1982. The greatest percentage difference in levels active between regular and special needs completers in Region 4 was in 1982; the smallest percentage difference was in 1984.

A higher percentage of regular than special needs completers was active every year and in every region with the exception of Region 3 in 1984.

Using the chi-square test, no statistically significant difference in post-high school activity was found between regular and special needs completers in Region 1 in any of the years studied. In Region 2, statistically significant differences in activity were found between completer groups for every year included in the study. In Regions 3 and 4, statistically significant

differences in activity were found between the two completer groups for all years but 1984.

Table 4.3.B shows the data on the employment status of regular and special needs vocational completers, by region. In Region 1, the highest percentage of full-time employment for regular completers after finishing their vocational program was 50% in 1985. In 1983, regular completers reported the lowest full-time employment level (42.3%). Special needs completers reported the highest full-time employment level (63.1%) in 1986, and the lowest percentage of full-time employment (50.8%) occurred in 1984. The greatest percentage difference in full-time employment between regular and special needs completers in Region 1 was in 1983; the smallest percentage difference was in 1984.

In Region 2, regular completers reported the highest percentage of full-time employment (63.1%) in 1986 and the lowest percentage (50.3%) in 1984. Special needs completers reported the highest percentage of full-time employment (70.7%) in 1986, whereas they reported the lowest level (57.5%) in 1984. The greatest percentage difference in full-time employment between regular and special needs completers in Region 2 was in 1982; the smallest percentage difference was in 1984.

In Region 3, both regular and special needs completers reported the highest full-time employment level in 1986 (66% and 72.5%, respectively). The lowest level of full-time employment for regular completers was 57.6% in 1983, and for special needs completers it

Table 4.3.B.--Employment status of regular and special needs completers, 1982 through 1986, by region.

Completer Group	Employment Status									
	1982		1983		1984		1985		1986	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
REGION 1										
Regular	344	352	181	247	283	334	279	279	333	342
	49.4%	50.6%	42.3%	57.7%	45.9%	54.1%	50.0%	50.0%	49.3%	50.7%
Special needs	60	37	64	48	180	174	91	60	77	45
	61.9%	38.1%	57.1%	42.9%	50.8%	49.2%	60.3%	39.7%	63.1%	36.9%
Chi-square =	5.26		7.90		2.24		5.02		7.86	
REGION 2										
Regular	1,280	1,075	1,179	965	1,190	1,178	1,137	922	1,436	841
	54.4%	45.6%	55.0%	45.0%	50.3%	49.7%	55.2%	44.8%	63.1%	36.9%
Special needs	214	108	187	95	315	233	472	266	325	135
	66.5%	33.5%	66.3%	33.7%	57.5%	42.5%	64.0%	36.0%	70.7%	29.3%
Chi-square =	16.84*		12.98*		9.31		16.97*		9.60	
REGION 3										
Regular	2,810	1,691	2,712	1,994	2,830	1,835	3,145	1,892	3,263	1,684
	62.4%	37.6%	57.6%	42.4%	60.7%	39.3%	62.4%	37.6%	66.0%	34.0%
Special needs	330	156	319	156	742	452	487	220	493	187
	67.9%	32.1%	67.2%	32.8%	62.1%	37.9%	68.9%	31.1%	72.5%	27.5%
Chi-square =	5.63		16.14*		0.87		11.08*		11.52*	
REGION 4										
Regular	6,929	5,007	6,303	5,693	7,017	5,762	7,372	4,664	7,552	4,374
	58.1%	41.9%	52.5%	47.5%	54.9%	45.1%	61.2%	38.8%	63.3%	36.7%
Special needs	774	407	846	525	1,835	1,120	1,808	808	1,354	488
	65.5%	34.5%	61.7%	38.3%	62.1%	37.9%	69.1%	30.9%	73.5%	26.5%
Chi-square =	24.85*		41.53*		50.39*		56.79*		72.43*	

*Significant at the .001 level.

was 62.1% in 1984. The greatest percentage difference in full-time employment between the two completer groups in Region 3 was in 1983; the smallest percentage difference was in 1984.

In Region 4, both regular and special needs completers reported the highest percentages of full-time employment in 1986 (63.3% and 73.5%, respectively). Both groups also reported the lowest percentages of full-time employment in 1983, when 52.5% of regular completers and 61.7% of special needs completers were employed full-time. The greatest percentage difference in full-time employment between regular and special needs completers in Region 4 was in 1986; the smallest percentage difference was in 1984.

As shown in the table, a greater percentage of special needs than regular completers was employed full-time in all regions across all years. Using the chi-square procedure, no statistically significant difference in employment status was found between regular and special needs completers in Region 1 for any year in the study. In Region 2, statistically significant differences in employment status were found between completer groups in 1982, 1983, and 1985. In Region 3, statistically significant differences in employment status were found between completer groups in 1983, 1985, and 1986. As well, statistically significant differences in employment status were found between completer groups in Region 4 in each year under investigation.

Table 4.3.C shows data on the related placements of regular and special needs vocational completers within each region. In

Table 4.3.C.--Related placement of regular and special needs completers, 1982 through 1986, by region.

Completer Group	Related Placement									
	1982		1983		1984		1985		1986	
	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel
REGION 1										
Regular	334	345	207	219	312	305	310	246	368	304
	49.2%	50.8%	48.6%	51.4%	50.6%	49.4%	55.8%	44.2%	54.8%	45.2%
Special needs	56	39	42	69	187	163	86	65	64	58
	58.9%	41.1%	37.8%	62.2%	53.4%	46.6%	57.0%	43.0%	52.5%	47.5%
Chi-square =	3.17		4.09		0.73		0.07		0.22	
REGION 2										
Regular	1,305	999	1,121	987	1,246	1,067	1,177	863	1,255	995
	56.6%	43.4%	53.2%	46.8%	53.9%	46.1%	57.7%	42.3%	55.8%	44.2%
Special needs	183	131	139	134	270	264	353	382	244	210
	58.3%	41.7%	50.9%	49.1%	50.6%	49.4%	48.0%	52.0%	53.7%	46.3%
Chi-square =	0.30		0.50		1.91		20.42*		0.63	
REGION 3										
Regular	2,538	1,915	2,661	2,006	2,797	1,828	3,263	1,736	3,127	1,778
	57.0%	43.0%	57.0%	43.0%	60.5%	39.5%	65.3%	34.7%	63.8%	36.2%
Special needs	253	225	238	232	657	527	404	296	412	260
	52.9%	47.1%	50.6%	49.4%	55.5%	44.5%	57.7%	42.3%	61.3%	38.7%
Chi-square =	2.91		7.07		9.72		15.29*		1.52	
REGION 4										
Regular	6,738	5,110	6,696	5,188	7,089	5,534	7,189	4,720	6,991	4,767
	56.9%	43.1%	56.3%	43.7%	56.2%	43.8%	60.4%	39.6%	59.5%	40.5%
Special needs	636	532	764	595	1,706	1,213	1,606	989	1,098	728
	54.5%	45.5%	56.2%	43.8%	58.4%	41.6%	61.9%	38.1%	60.1%	39.9%
Chi-square =	2.53		7.98		5.04		2.07		0.30	

*Significant at the .001 level.

Region 1, the highest percentage of related placements for regular completers occurred in 1985, when 55.8% found employment related to their high school vocational programs. For special needs completers, the highest level of related placements was 58.9% in 1982. Both groups reported the lowest percentages of related placements in 1983--48.6% for regular completers and 37.8% for special needs completers. The greatest percentage difference in related placements between regular and special needs completers was in 1983; the smallest percentage difference was in 1985.

In Region 2, regular completers reported the highest percentage of related placement (57.7%) in 1985. They reported the lowest percentage (53.2%) in 1983. Special needs completers reported the highest percentage of related placement (58.3%) in 1982 and the lowest percentage (48%) in 1985. The greatest percentage difference in related placement between regular and special needs completers in Region 2 was in 1985; the smallest percentage difference was in 1982.

In Region 3, 65.3% of the regular vocational completers found related employment in 1985--their highest related-placement level. The lowest level for this group was 57% in 1982 and 1983. The highest related-placement level for special needs completers was 61.3% in 1986, and the lowest level for this group was 50.6% in 1983. The greatest percentage difference in related-placement levels between regular and special needs completers in Region 3 was in 1985; the smallest percentage difference was in 1986.

In Region 4, both regular and special needs vocational completers had the highest percentage of related placements in 1985 (60.4% and 61.9%, respectively). Regular completers reported the lowest related-placement level (56.2%) in 1984, whereas special needs completers reported the lowest level (54.5%) in 1982. The greatest percentage difference in related-placement levels between regular and special needs completers in Region 4 was in 1982; the smallest percentage difference was in 1983.

Using the chi-square analysis, statistically significant differences in related placements were found between regular and special needs completers in Regions 2 and 3 only in 1985. In all other comparisons, no statistically significant differences were found between groups.

Table 4.3.D presents the job satisfaction data for regular and special needs vocational completers according to geographic region. In Region 1, regular completers reported the highest percentage of job satisfaction (87.1%) in 1983. They reported the lowest percentage (81.9%) in 1982. The highest percentage of job satisfaction for special needs completers was 86.1% in 1986; their lowest level was 77.3% in 1983. The greatest percentage difference in job satisfaction between completer groups in Region 1 was in 1983; the smallest percentage difference was in 1982.

In Region 2, regular completers reported the highest level of job satisfaction (85.8%) in 1986. Special needs completers reported the highest job satisfaction level (86.6%) in 1982. Both groups had the lowest job satisfaction level in 1984--82.9% for regular

Table 4.3.D.--Job satisfaction of regular and special needs completers, 1982 through 1986, by region.

Completer Group	Job Satisfaction									
	1982		1983		1984		1985		1986	
	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat
REGION 1										
Regular	547	121	363	54	523	81	473	77	565	107
	81.9%	18.1%	87.1%	12.9%	86.6%	13.4%	86.0%	14.0%	84.1%	15.9%
Special needs	75	18	85	25	279	73	124	26	105	17
	80.6%	19.4%	77.3%	22.7%	79.3%	20.7%	82.7%	17.3%	86.1%	13.9%
Chi-square =	0.08		6.53		8.84		1.04		0.31	
REGION 2										
Regular	1,910	343	1,725	338	1,920	395	1,695	331	1,914	316
	84.8%	15.2%	83.6%	16.4%	82.9%	17.1%	83.7%	16.3%	85.8%	14.2%
Special needs	266	41	221	42	433	107	604	125	391	63
	86.6%	13.4%	84.0%	16.0%	80.2%	19.8%	82.9%	17.1%	86.1%	13.9%
Chi-square =	0.74		0.03		2.29		0.25		0.03	
REGION 3										
Regular	3,711	733	3,697	869	3,907	718	4,207	770	4,150	746
	83.5%	16.5%	81.0%	19.0%	84.5%	15.5%	84.5%	15.5%	84.8%	15.2%
Special needs	395	85	353	92	967	209	572	121	590	81
	82.3%	17.7%	79.3%	20.7%	82.2%	17.8%	82.5%	17.5%	87.9%	12.1%
Chi-square =	0.46		0.71		3.53		1.82		4.67	
REGION 4										
Regular	9,214	2,371	9,336	2,513	10,152	2,450	9,776	2,082	9,711	1,987
	79.5%	20.5%	78.8%	21.2%	80.6%	19.4%	82.4%	17.6%	83.0%	17.0%
Special needs	886	261	1,056	286	2,326	577	2,167	410	1,519	289
	77.2%	22.8%	78.7%	21.3%	80.1%	19.9%	84.1%	15.9%	84.0%	16.0%
Chi-square =	3.33		7.64		0.28		4.02		1.12	

completers and 80.2% for special needs completers. The greatest percentage difference in job satisfaction between regular and special needs completers in Region 2 was in 1984; the smallest percentage difference was in 1986.

In Region 3, both groups indicated their highest percentage of job satisfaction in 1986--84.8% for regular completers and 87.9% for special needs completers. The lowest job satisfaction level for both groups occurred in 1983--81% for regular completers and 79.3% for special needs completers. The greatest percentage difference in job satisfaction levels between the two groups in Region 3 was in 1986; the smallest percentage difference was in 1982.

In Region 4, regular vocational completers reported the highest percentage of job satisfaction (83%) in 1986. They reported the lowest percentage of job satisfaction (78.8%) in 1983. Special needs vocational completers reported the highest percentage of job satisfaction (84.1%) in 1985 and the lowest percentage (77.2%) in 1982. The greatest percentage difference in job satisfaction between regular and special needs completers in Region 4 was in 1982; the smallest percentage difference was in 1983.

Using the chi-square procedure, no statistically significant difference in job satisfaction was found between regular and special needs vocational completers in any of the regions in any of the years under investigation.

Table 4.3.E shows the average hourly wage data for regular and special needs vocational completers, by region. In Region 1, the highest average hourly wage for regular completers was $4.55 in

Table 4.3.E.--Average hourly wages of regular and special needs completers, 1982 through 1986, by region.

Completer Group	Average Hourly Wages									
	1982		1983		1984		1985		1986	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
REGION 1										
Regular	585	$3.95	376	$3.85	537	$4.55	504	$4.07	630	$4.26
Special Needs	82	$4.29	100	$3.89	317	$4.39	140	$4.40	121	$4.13
Difference		$ .34		$ .04		$ .16		$ .33		$ .13
REGION 2										
Regular	1,882	$4.11	1,600	$3.92	1,929	$4.11	1,678	$4.19	1,809	$4.25
Special needs	236	$4.30	178	$4.02	442	$4.37	544	$4.26	363	$4.31
Difference		$ .19		$ .10		$ .26		$ .07		$ .06
REGION 3										
Regular	3,597	$4.26	3,741	$4.03	3,829	$4.40	4,330	$4.41	3,993	$4.48
Special needs	362	$4.32	355	$4.08	892	$4.75	602	$4.39	548	$4.64
Difference		$ .06		$ .05		$ .35		$ .02		$ .16
REGION 4										
Regular	9,815	$4.23	9,856	$4.08	10,726	$4.28	10,045	$4.41	9,561	$4.65
Special needs	965	$4.27	1,141	$4.10	2,577	$4.43	2,227	$4.40	1,488	$4.65
Difference		$ .04		$ .02		$ .15		$ .01		$ .00

Note. The federal minimum wage since 1981 = $3.35 per hour.

1984. The highest average hourly wage for special needs completers was $4.40 in 1985. Both groups reported their lowest average hourly wages in 1983--$3.85 for regular completers and $3.89 for special needs completers. The greatest difference in average wages between regular and special needs completers in Region 1 was $.34 per hour in 1982; the smallest difference was $.04 in 1983.

In Region 2, the highest average hourly wage for regular completers was $4.25 in 1986; the lowest was $3.92 in 1983. For special needs completers, the highest average hourly wage was $4.37 in 1984, and the lowest was $4.02 in 1983. The greatest difference in wages between completer groups in Region 2 was $.26 per hour in 1984; the smallest difference was $.06 per hour in 1986.

In Region 3, the highest average hourly wage for regular completers was $4.48 in 1986, whereas the highest average hourly wage for special needs completers was $4.75 in 1984. In 1983, both groups received the lowest average hourly wages--$4.03 for regular completers and $4.08 for special needs completers. The greatest difference in average hourly wages between regular and special needs completers in Region 3 was $.35 per hour in 1984; the smallest difference was $.02 per hour in 1985.

In Region 4, regular and special needs vocational completers had the same highest average hourly wage of $4.65 in 1986. In 1983, regular completers reported their lowest average hourly wage--$4.08. That same year, special needs completers also received their lowest average hourly wage--$4.10. The largest difference in average

hourly wages between these two completer groups in Region 4 was $.15 per hour in 1984.

Research Question 4: To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

Tables 4.4.A through 4.4.E show the survey results for regular and special needs vocational completers according to whether or not they had had cooperative education while in high school. Table 4.4.A contains data on the post-high school activity of regular and special needs completers, according to their cooperative education status. For individuals with cooperative education, the highest percentage of regular vocational completers (95.1%) was active in 1984; the highest percentage of special needs completers (94.2%) was also active in 1984. Both groups experienced their lowest rates active in 1982--91.6% for regular completers and 85.3% for special needs completers. The largest percentage difference in rates active between the two groups was in 1982; the smallest percentage difference was in 1984.

For individuals without cooperative education, the highest percentage of regular completers (92.8%) was active in 1986; the highest percentage of special needs completers (89.8%) was active in 1984. The lowest active rate for regular completers without cooperative education was 87.3% in 1983; for special needs completers, the lowest active rate was 77.2% in 1982. The largest percentage difference in active rates between the two groups was in 1982; the smallest percentage difference was in 1984.

Table 4.4.A.--Post-high school activity of regular and special needs completers, 1982 through 1986, by cooperative education status.

Completer Group	Post-High School Activity									
	1982		1983		1984		1985		1986	
	Active	Idle	Active	Idle	Active	Idle	Active	Idle	Active	Idle
COOPERATIVE EDUCATION										
Regular	8,059	741	7,921	662	7,474	389	6,970	460	7,150	383
	91.6%	8.4%	92.3%	7.7%	95.1%	4.9%	93.8%	6.2%	94.9%	5.1%
Special needs	681	117	618	79	1,178	72	1,185	99	702	62
	85.3%	14.7%	88.7%	11.3%	94.2%	5.8%	92.3%	7.7%	91.9%	8.1%
Chi-square =	35.01*		11.51*		1.48		4.21		12.55*	
NO COOPERATIVE EDUCATION										
Regular	21,784	2,897	22,079	3,202	22,131	2,043	21,576	2,187	21,482	1,659
	88.3%	11.7%	87.3%	12.7%	91.5%	8.5%	90.8%	9.2%	92.8%	7.2%
Special needs	2,467	728	2,860	798	5,435	620	4,558	855	3,481	540
	77.2%	22.8%	78.2%	21.8%	89.8%	10.2%	84.2%	15.8%	86.6%	13.4%
Chi-square =	305.20*		224.59*		19.28*		205.13*		180.45*	

*Significant at the .001 level.

In all comparisons, a higher percentage of regular than special needs completers was active. Using the chi-square test, differences in post-high school activity between regular and special needs completers with cooperative education were found to be statistically significant in three of the five years under investigation: 1982, 1983, and 1986. In addition, statistically significant differences were found each year between regular and special needs completers who had not had cooperative education, with regard to their post-high school activity.

Table 4.4.B shows the employment-status data for the regular and special needs completers, according to their cooperative education status. Special needs completers had a higher percentage of full-time employment than regular completers in all comparisons for all years under investigation.

In 1986, both regular and special needs completers who had had cooperative education reported the highest percentage of full-time employment: 63.7% for regular completers and 70.6% for special needs completers. In 1983, both groups reported the lowest percentage of full-time employment--54.6% for regular completers and 60.4% for special needs completers. The greatest percentage difference in full-time employment between regular and special needs completers with cooperative education was in 1986; the smallest percentage difference was in 1982 and 1984.

Regular and special needs completers who had not had cooperative education also reported their highest percentage of full-time employment in 1986--63.4% and 72.9%, respectively.

Table 4.4.B.--Employment status of regular and special needs completers, 1982 through 1986, by cooperative education status.

Completer Group	Employment Status									
	1982		1983		1984		1985		1986	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
COOPERATIVE EDUCATION										
Regular	3,381	2,384	3,084	2,566	3,126	2,469	3,191	2,024	3,400	1,936
	58.6%	41.4%	54.6%	45.4%	55.9%	44.1%	61.2%	38.8%	63.7%	36.3%
Special needs	317	182	278	182	607	391	644	311	403	168
	63.5%	36.5%	60.4%	39.6%	60.8%	39.2%	67.4%	32.6%	70.6%	29.4%
Chi-square =	4.52		5.88		8.45		13.39*		10.58	
NO COOPERATIVE EDUCATION										
Regular	7,982	5,741	7,291	6,333	8,194	6,640	8,742	5,733	9,184	5,305
	58.2%	41.8%	53.5%	46.5%	55.2%	44.8%	60.4%	39.6%	63.4%	36.6%
Special needs	1,061	526	1,138	642	2,463	1,588	2,214	1,043	1,846	687
	66.9%	33.1%	63.9%	36.1%	60.8%	39.2%	68.0%	32.0%	72.9%	27.1%
Chi-square =	44.44*		68.94*		40.04*		64.75*		85.16*	

*Significant at the .001 level.

Regular completers had their lowest percentage of full-time employment (53.5%) in 1983; special needs completers had their lowest level (60.8%) in 1984. The greatest percentage difference in full-time employment between completer groups was in 1983; the smallest percentage difference was in 1984.

Using the chi-square test, a statistically significant difference in employment between regular and special needs completers who had had cooperative education was found in 1985. A statistically significant difference in employment status was found between regular and special needs completers who had not had cooperative education, for each year of the study.

Table 4.4.C presents the related-placement data for regular and special needs completers, based on their cooperative education status. The highest percentage of related placements for regular completers with cooperative education was 74.4% in 1985; the lowest percentage was 70.9% in 1983. For special needs completers with cooperative education, the highest percentage of related placements was 75.5% in 1985, and the lowest was 68.8% in 1982. The greatest percentage difference in related placements between regular and special needs completers with cooperative education was in 1982; the smallest percentage difference was in 1984.

The highest percentage of related placements for regular completers without cooperative education was 56.5% in 1985; their lowest percentage was 49.8% in 1983. The highest percentage of related placements for special needs completers was 56.1% in 1986, and the lowest was 48.7% in 1983. The greatest percentage

Table 4.4.C.--Related placement of regular and special needs completers, 1982 through 1986, by cooperative education status.

Completer Group	Related Placement									
	1982		1983		1984		1985		1986	
	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel	Rel	NRel
COOPERATIVE EDUCATION										
Regular	4,104	1,606	3,973	1,629	3,932	1,604	3,845	1,321	3,913	1,357
	71.9%	28.1%	70.9%	29.1%	71.0%	29.0%	74.4%	25.6%	74.3%	25.7%
Special needs	342	155	328	128	702	286	716	232	412	155
	68.8%	31.2%	71.9%	28.1%	71.1%	28.9%	75.5%	24.5%	72.7%	27.3%
Chi-square =	2.11		0.21		2.89		0.51		0.67	
NO COOPERATIVE EDUCATION										
Regular	6,811	6,763	6,712	6,771	7,512	7,130	8,094	6,244	7,822	6,487
	50.2%	49.8%	49.8%	50.2%	51.3%	48.7%	56.5%	43.5%	54.7%	45.3%
Special needs	786	772	855	902	2,118	1,881	1,773	1,500	1,406	1,101
	50.4%	49.6%	48.7%	51.3%	53.0%	47.0%	53.6%	46.4%	56.1%	43.9%
Chi-square =	0.04		0.78		3.46		5.63		1.73	

difference in related placements between regular and special needs completers who had not had cooperative education was in 1985; the smallest difference was in 1982.

Using the chi-square test, no statistically significant difference in related placements was found between regular and special needs completers who had or those who had not had cooperative education, for any of the years considered in the study.

Table 4.4.D presents the data on job satisfaction for regular and special needs completers who had had cooperative education and those who had not had cooperative education. In 1986, both regular and special needs completers with cooperative education had the highest percentages of job satisfaction--87.5% for regular completers and 88.5% for special needs completers. In 1983, both groups recorded their lowest levels of job satisfaction--85.1% for regular completers and 82.2% for special needs completers. The greatest percentage difference in job satisfaction between regular and special needs completers with cooperative education was in 1982; the smallest percentage difference was in 1985.

Both regular and special needs completers without cooperative education had the highest percentages of job satisfaction in 1986--82.4% and 84.5%, respectively. In 1983, the two groups had the lowest percentages of job satisfaction--77.9% for regular completers and 78.7% for special needs completers. The greatest percentage difference in job satisfaction between regular and special needs completers who had not had cooperative education was in 1986; there was no difference in 1982.

Table 4.4.D.--Job satisfaction of regular and special needs completers, 1982 through 1986, by cooperative education status.

Completer Group	Job Satisfaction									
	1982		1983		1984		1985		1986	
	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat	Sat	NSat
COOPERATIVE EDUCATION										
Regular	4,863	770	4,727	829	4,756	768	4,497	655	4,609	656
	86.3%	13.7%	85.1%	14.9%	86.1%	13.9%	87.3%	12.7%	87.5%	12.5%
Special needs	409	83	370	80	827	153	830	112	493	64
	83.1%	16.9%	82.2%	17.8%	84.4%	15.6%	88.1%	11.9%	88.5%	11.5%
Chi-square =	3.87		2.65		2.00		0.49		0.44	
NO COOPERATIVE EDUCATION										
Regular	10,519	2,798	10,398	2,945	11,746	2,876	11,654	2,605	11,731	2,500
	79.0%	21.0%	77.9%	22.1%	80.3%	19.7%	81.7%	18.3%	82.4%	17.6%
Special needs	1,213	322	1,345	365	3,178	813	2,637	570	2,112	386
	79.0%	21.0%	78.7%	21.3%	79.6%	20.4%	82.2%	17.8%	84.5%	15.5%
Chi-square =	9.33		0.47		0.97		0.43		6.66	

Using the chi-square statistic, no statistically significant difference in job satisfaction was found between regular and special needs completers who had had cooperative education or between regular and special needs completers who had not had cooperative education, for any of the years under investigation.

Average hourly wages are shown in Table 4.4.E for regular and special needs vocational completers, based on their cooperative education status. The highest average hourly wage for regular completers with cooperative education was $4.62 in 1986. Special needs completers with cooperative education received their highest average hourly wage ($4.59) in 1984. Both groups received their lowest average hourly wage in 1983--$4.14 for regular completers and $4.18 for special needs completers. The greatest difference between the two groups was $.23 per hour in 1984; the smallest difference was $.03 per hour in 1985.

Both groups of completers without cooperative education received their highest average hourly wage in 1986--$4.52 for regular completers and $4.57 for special needs completers. In 1983, both groups received their lowest average hourly wage--$4.01 for regular completers and $4.05 for special needs completers. The greatest difference in average wages for regular and special needs completers without cooperative education was $.19 per hour in 1984; the smallest difference was only $.01 per hour in 1985.

Table 4.4.E.--Average hourly wages of regular and special needs completers, 1982 through 1986, by cooperative education status.

Completer Group	Average Hourly Wages									
	1982		1983		1984		1985		1986	
	Number	Mean	Number	Mean	Number	Mean	Number	Mean	Number	Mean
COOPERATIVE EDUCATION										
Regular	4,810	$4.28	4,703	$4.14	4,748	$4.36	4,472	$4.43	4,364	$4.62
Special needs	421	$4.21	369	$4.18	838	$4.59	832	$4.46	485	$4.57
Difference		$ .07		$ .04		$ .23		$ .03		$ .05
NO COOPERATIVE EDUCATION										
Regular	11,069	$4.18	10,870	$4.01	12,273	$4.27	12,085	$4.36	11,629	$4.52
Special needs	1,224	$4.31	1,405	$4.05	3,390	$4.46	2,681	$4.35	2,035	$4.57
Difference		$ .13		$ .04		$ .19		$ .01		$ .05

Note. The federal minimum wage since 1981 = $3.35 per hour.

Research Question 5: Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

The data used to answer this research question were the yearly summaries for each group of vocational completers on each employment pattern variable. This analysis highlighted the year-to-year changes in proportions that existed between regular and special needs vocational completers. Tables 4.5.A through 4.5.E present the data for each of the five employment pattern variables for each completer group across the five years of the study.

The first employment pattern variable was post-high school activity. Table 4.5.A contains summary data on the post-high school activity of regular and special needs vocational completers. Across the five years of the study, the active levels reported by regular completers increased from 89.1% in 1982 to 93.3% in 1986. The special needs completers had a larger increase in active levels, from 78.8% in 1982 to 87.4% in 1986. For each group studied, the largest percentage difference occurred from 1983 to 1984, when the active level of special needs completers increased from 79.9% to 90.5% and the active level of regular completers increased from 88.6% to 92.4%. The following year (1985), the active level for special needs completers fell to 85.8%. Conversely, special needs completers had a higher idle rate than did regular completers in each of the five years; a high of 21.2% were idle in 1982, and a low of 9.5% were idle in 1984. Regular completers' highest idle level occurred in 1983, when 11.4% were idle; a low of 6.7% were idle in 1986.

Table 4.5.A.--Post-high school activity data for regular and special needs completers, by year.

Year	Post-High School Activity			
	Regular Completers		Special Needs Completers	
	Active	Idle	Active	Idle
1982	29,843	3,638	3,148	845
	89.1%	10.9%	78.8%	21.2%
1983	30,000	3,864	3,478	877
	88.6%	11.4%	79.9%	20.1%
1984	29,605	2,432	6,613	692
	92.4%	7.6%	90.5%	9.5%
1985	28,546	2,647	5,743	954
	91.5%	8.5%	85.8%	14.2%
1986	28,632	2,042	4,183	602
	93.3%	6.7%	87.4%	12.6%

Table 4.5.B contains summary data on the employment status of regular and special needs completers across the five years under study. Regular completers had a decrease in full-time employment from 58.3% to 53.8% between the first (1982) and second (1983) years of the study. This decline was followed by a steady increase each year from the 1983 low of 53.8% employed full-time to the 1986 high of 63.5% employed full-time. Special needs completers had a longer steady decline in full-time employment, from 66.1% in 1982 to 60.8% in 1984. During the next two years, special needs completers had a rapid increase from their lowest full-time employment level of

60.8% in 1984 to their highest full-time employment level of 72.5% in 1986.

Table 4.5.B.--Employment status data for regular and special needs completers, by year.

Year	Employment Status			
	Regular Completers		Special Needs Completers	
	Full-Time	Part-Time	Full-Time	Part-Time
1982	11,363 58.3%	8,125 41.7%	1,378 66.1%	708 33.9%
1983	10,375 53.8%	8,899 46.2%	1,416 63.2%	824 36.8%
1984	11,320 55.4%	9,109 44.6%	3,072 60.8%	1,979 39.2%
1985	11,933 60.6%	7,757 39.4%	2,858 67.9%	1,354 32.1%
1986	12,584 63.5%	7,241 36.5%	2,249 72.5%	855 27.5%

Table 4.5.C contains summary data on the related placements of both regular and special needs completers for each of the five years in the study. During the first three years of the study (in 1982 with 56.6%, in 1983 with 56%, and in 1984 with 56.7%), regular completers had very little change in their levels of obtaining employment related to their vocational training. In 1985, the related placements of regular completers increased to a high of 61.2% and then declined to the 1986 level of 59.9%. Special needs

completers had an initial decline from 1982 to their lowest related-placement level of 53.5% in 1983. From 1983 there was a modest but steady increase each year until this group reached its highest related-placement level of 59.1% in 1986. Special needs completers had a slightly smaller percentage of related placements than did the regular vocational completers in each of the five years studied.

Table 4.5.C.--Related-placement data for regular and special needs completers, by year.

Year	Related Placement			
	Regular Completers		Special Needs Completers	
	Rel	NRel	Rel	NRel
1982	10,915 56.6%	8,369 43.4%	1,128 54.9%	927 45.1%
1983	10,685 56.0%	8,400 44.0%	1,183 53.5%	1,030 46.5%
1984	11,444 56.7%	8,734 43.3%	2,820 56.5%	2,167 43.5%
1985	11,939 61.2%	7,565 38.8%	2,449 58.6%	1,732 41.4%
1986	11,741 59.9%	7,844 40.1%	1,818 59.1%	1,256 40.9%

Table 4.5.D contains summary data on the job satisfaction of regular and special needs vocational completers. Both completer groups reported their highest job satisfaction level in 1986 and

their lowest level in 1983. Regular completers had an increase from a low of 80% satisfied with their employment to a high of 83.8% satisfied. The lowest job satisfaction level for special needs completers was 79.4% in 1983, and the highest was 85.3% in 1986. However, the percentage difference in job satisfaction between regular and special needs completers remained fairly close in all of the years under investigation. The figures for the two groups followed the same general pattern of increases and decreases each year.

Table 4.5.D.--Job satisfaction data for regular and special needs completers, by year.

Year	Job Satisfaction			
	Regular Completers		Special Needs Completers	
	Sat	NSat	Sat	NSat
1982	15,382 81.2%	3,568 18.8%	1,622 80.0%	405 20.0%
1983	15,125 80.0%	3,774 20.0%	1,715 79.4%	445 20.6%
1984	16,502 81.9%	3,644 18.1%	4,005 80.6%	966 19.4%
1985	16,151 83.2%	3,260 16.8%	3,467 83.6%	682 16.4%
1986	16,340 83.8%	3,156 16.2%	2,605 85.3%	450 14.7%

Table 4.5.E contains a summary of the average hourly wage data for both regular and special needs vocational completers for the five years of the study. Special needs completers received a higher average hourly wage than regular vocational completers for each year except 1985, when both groups received the same average hourly wage ($4.38). Both groups received the highest average hourly wage in 1986 ($4.55 for regular completers and $4.57 for special needs completers). Both completer groups received the lowest average hourly wage in 1983--$4.05 for regular completers and $4.07 for special needs completers. The largest difference in average hourly wages between the two groups was $.19 in 1984. For each completer group, the range in average wage within the five-year period was $.50 per hour.

Table 4.5.E.--Average hourly wage data for regular and special needs completers, by year.

Year	Average Hourly Wages			
	Regular Completers		Special Needs Completers	
	Number	Mean	Number	Mean
1982	15,879	$4.21	1,645	$4.29
1983	15,573	$4.05	1,774	$4.07
1984	17,021	$4.30	4,228	$4.49
1985	16,557	$4.38	3,513	$4.38
1986	15,993	$4.55	2,520	$4.57

Note. The federal minimum wage since 1981 = $3.35 per hour.

Summary

In this chapter, the researcher presented data to investigate differences in the employment patterns between regular completers and special needs completers of public secondary vocational education programs in Michigan. The survey data were collected on completers one year after their high school class graduation and covered the survey period 1982 through 1986. The indices used to describe employment patterns were post-high school activities, employment status, program-related job classification, job satisfaction, and average hourly wage.

The statistics used to describe the frequency of responses by each employment-pattern component were descriptive statistics and chi-square. Twenty-five tables were presented to illustrate the completer data and to answer the five research questions of the study. Significant differences were found to exist among some of the variables addressed by each employment-pattern component. A detailed summary of the findings is presented in Chapter V.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

In recent years, major strides have been made to expand efforts to include and serve special populations in vocational education. The Vocational Education Act of 1963 and subsequent amendments, the Education for All Handicapped Children Act of 1975, Michigan Public Act 198, as well as the latest legislation, the Carl Perkins Vocational Education Act and its recent amendments were enacted in an attempt to provide solutions to the increasing requirements of students with special needs. There is a paucity of data on the results of these mandates. Likewise, little research has focused primarily on the follow-up of special needs students. The present study was undertaken for that purpose.

Chapter V contains a summary of the problem, procedures, and findings of the study; conclusions based on the major findings; and recommendations based on the findings and conclusions. The findings are summarized for each employment-pattern component across the five research questions of the study, to provide a basis for the conclusions.

Summary

The Problem

The researcher's purpose in this descriptive study was to determine the effects of participation in Michigan public secondary vocational education programs on the employment patterns of special needs completers as compared to regular completers their first year after high school graduation in 1982, 1983, 1984, 1985, and 1986. Specifically, the study was undertaken to compare regular and special needs vocational completers in terms of (a) post-high school activity, (b) employment status, (c) training-related employment, (d) job satisfaction, and (e) average hourly wages. Comparisons between groups were made according to special needs status, gender, ethnicity, geographic location, and participation in cooperative education.

Research Procedures

The study population comprised all 188,384 completers of public vocational education programs approved by the Michigan Department of Education, Vocational-Technical Education Service, from 1981, 1982, 1983, 1984, and 1985. These individuals responded to the state's annual follow-up survey their first year after graduation; the surveys covered the period from 1982 through 1986.

The data used in this study were derived from Michigan Department of Education data tapes from the responses of former vocational students to the annual Follow-Up Survey of Students (Form VE-40450-A) for 1982, 1983, 1984, 1985, and 1986. Completers'

survey responses were aggregated for all continuous and categorical variables for each of the five studied years into 40 "completer types" at the Career Education Planning District (CEPD) level.

To compare employment patterns, two central variables were used: post-high school activity (active or idle) and employment information (employment status, related placement, job satisfaction, and average hourly wages). The Statistical Analysis System (SAS) on the IBM 3090 VF mainframe computer was used to analyze the data that were collected for this study. The measures used in the study to determine outcomes were descriptive statistics (frequency counts, means, and percentages) and chi-square. Statistically significant differences (at the .001 level) were determined by using the chi-square statistic; when the results were not statistically significant, descriptive statistics were used to draw conclusions.

Research Objectives

The researcher had the following five objectives in conducting this study:

1. To determine the extent, if any, to which employment patterns of regular completers are congruous with employment patterns of special needs completers of vocational education programs.

2. To determine whether selected student characteristics affect the employment patterns of regular and special needs vocational program completers.

3. To determine whether the employment patterns of regular and special needs vocational program completers differ among four geographic regions within the state.

4. To determine whether participation in cooperative education affects the employment patterns of regular and special needs vocational program completers.

5. To determine year-by-year trends in the employment patterns of regular and special needs vocational program completers.

Research Questions

The following research questions were posed in this study:

1. Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

2. To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

3. Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

4. To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

5. Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

Findings

In this section, the findings are presented for each research question posed in the study. Significant differences with regard to each variable for the five research questions are presented in the following paragraphs. The chi-square values were calculated at the .001 level of significance for each variable except average hourly wage. The variables used to describe employment patterns were post-high school activity, employment status, program-related job classification, job satisfaction, and average hourly wage.

Post-High School Activity

Significant differences were found between regular and special needs completers with regard to post-high school activity for all five years of the study. The chi-square values for the years studied ranged from 28.8 to 359.1; all were significant at the .001 level. In four of the five years, noticeably higher percentages of regular than special needs vocational completers were active approximately one year after graduation. In 1984, a slightly higher percentage of the regular completers were active than special needs completers. When the "active" component of post-high school activity was analyzed more closely, it was found that much higher proportions of regular completers than special needs completers were engaged in continued educational activities one year after high school (see Appendix C).

Further analysis of the variable post-high school activity according to gender, ethnicity, geographic region, and participation

in cooperative education supported the overall finding. Both regular male and female completer groups had higher percentages active than special needs male and female completer groups in all five years. A significant difference was found between male regular and special needs completers in all years, and a significant difference was found between female regular and special needs completers in all years except 1984, when no significant difference was recorded. However, the percentages reported for each category according to gender were fairly close to the percentages for the main completer groups. Special needs males were less active than the overall special needs group, and special needs females were slightly more active than the overall special needs group.

Significant differences in post-high school activity were found between white regular and special needs completers for all years. Similarly, significant differences in post-high school activity were found for minority regular and special needs completers for all years except 1984 and 1985, when no significant differences were discovered. White regular completers had higher percentages active than white special needs completers, and minority regular completers had higher percentages active than minority special needs completers. When the vocational completer groups were further investigated according to ethnicity, white regular and special needs completers continued to have proportions similar to their overall completer group. Minority completer percentages did not follow the comparisons made between the main completer groups, although

significant differences were found in three of the five years and lower percentages of special needs completers than regular completers were active. The minority completer percentage differences for all years but 1986 were closer than for overall completer comparisons; minority special needs vocational completers had the lowest percentage active in all ethnicity groups for all years.

In Region 1 (refer to map in Figure 3.3, p. 95), no significant differences were found in the post-high school activity of regular and special needs completers. However, the differences were significant in all other regional comparisons except in 1984 in Regions 3 and 4. A closer look at the data revealed that special needs vocational completers continued to have a lower percentage active than regular vocational completers in all regions each year of the study (except Region 3 in 1984) including Region 1, where the chi-square statistic did not reveal a significant difference. Region 2 annually had the largest differences between groups active.

Significant differences in post-high school activity were found each year between regular and special needs completers who had not participated in a high school cooperative education program. Between regular and special needs completers who had participated in cooperative education, significant differences were found in their post-high school activity in three of the five years under investigation (1982, 1983, and 1986). Regular completers in both groups had higher percentages active than their special needs completer comparison groups. The proportions of both regular and

special needs vocational completers who had participated in cooperative education were higher than those of their overall comparison groups with regard to the rates active. In addition, for each year of the study the differences in active rates between regular and special needs completers who had had cooperative education were almost half of what the differences were for their counterparts who had not participated in a cooperative education program. Also, in 1983, 1984, and 1985, special needs completers who had participated in cooperative education had higher percentages active than even the regular vocational completers who had not participated in cooperative education.

Employment Status

Significant differences in employment status were found between regular and special needs vocational completers for all years; the chi-square values ranged from a low of 48.2 to a high of 94.7. Both completer groups had higher proportions of full-time than part-time employment status for every year under investigation. Special needs vocational completers also had higher percentages (nearly two-thirds of the group) of those classified as full-time employed each year of the study.

When the data were analyzed according to gender, significant differences in employment status were also found each year between male regular and special needs completers. Again, noticeably higher percentages of male special needs than male regular completers had full-time employment in each year studied. Approximately 75% were

employed full time for three of the five years of the study; more than 67% were employed full time for the other two years. When analyzing the data for female completers, a significant difference in employment status was found only between female regular and special needs completers in 1986. Although female special needs completers had higher percentages of full-time employment status each year of the study than did female regular completers, both groups remained near the 50% level of full-time employment each year.

Significant differences in employment status were also found between white regular and special needs completers for all years in the study. However, for minority regular and special needs completers, a significant difference in employment status was found only in 1985. The percentages of white regular and special needs completers who were employed full time more nearly paralleled those of the overall completer groups. In contrast, fewer minority regular and special needs completers were employed full time, as compared to their respective overall completer groups. Much higher percentages of white and minority special needs completer groups were employed full time than their corresponding regular completer groups for each year of the study.

No significant differences in employment status were found for Region 1 for any of the five years, whereas significant differences in employment status were found for Region 4 for all years. Significant differences in employment status were found for Region 2

in 1982, 1983, and 1985, and for Region 3 in 1983, 1985, and 1986. Special needs completers again had higher rates of full-time employment in every comparison and in all five years of the study. Completers from Region 1 also had lower percentages of full-time employment than their overall comparisons. Percentages for completers from Regions 2, 3, and 4 more closely resembled those for their corresponding overall group.

Significant differences in employment status were found for each year between regular and special needs completers who had not participated in cooperative education programs. A significant difference was found for 1985 between regular and special needs completers who had participated in cooperative education. However, the percentages of special needs and regular completers who were employed full time appeared fairly close. The differences in percentages for completers who had not participated in cooperative education were slightly greater than for participants. Special needs completers in both comparisons continued to have higher percentages of full-time employment than regular completers for all five years.

Related Placement

The chi-square statistic was used to test whether there were significant differences in the related placement of regular as compared to special needs completers of vocational education programs. Differences between groups were tested at the .001 level of significance for each of the five years under investigation.

Whereas regular completers had higher percentages of related placements for each year studied, no significant differences in related placement were found between regular and special needs completers in any year. More than one-half of both completer groups reported finding employment in an area related to their secondary vocational training. In 1984, the related-placement percentages for each group were nearly identical.

Similar results were found when comparing the related placement of regular and special needs completers according to gender and ethnicity. No significant differences in related placement were found between male and female regular and special needs completers or between minority regular and special needs completers. Male special needs completers tended to have slightly higher percentages of related placement than did male regular completers. At the same time, both male completer groups' results were below the overall completer group averages. Female regular completers, however, had higher percentages of related placement than did female special needs completers. In contrast to the male groups, both female completer groups' percentages were noticeably above the overall completer group averages.

A significant difference in related placement was found only in 1985 between white regular and special needs completers. However, a closer look at the data showed that the percentages for both completer groups were very close to those for the overall completer groups that same year. Also, white regular completers had their highest percentage of related placements that year, whereas white

special needs completers did not. White regular completers had higher percentages of related placements than white special needs completers all five years. More than half the members of both ethnicity groups were employed in an occupation that was related to their high school vocational program.

No significant differences in related placement were found between regular and special needs completers in any regional comparisons except in Regions 2 and 3 in 1985, when regular completers had significantly higher percentages of related placements than special needs completers. Completers in Regions 1 and 2 consistently had lower related-placement levels than did those in Regions 3 and 4. In most of the completer groups (36 out of the 40), higher percentages of individuals were in related placements than in nonrelated placements.

No significant differences in related placements were found between regular and special needs completers who had participated in cooperative education or between regular and special needs completers who had not participated in cooperative education, in any year. However, of the regular and special needs completers who had had cooperative education, nearly 75% reported finding employment in a job related to their vocational training. About 50% of the completers who had not had cooperative education found related placements each year under investigation.

Job Satisfaction

The chi-square statistic was used to test for significant differences in job satisfaction between completer groups for all years of the study. Comparisons were made between the overall completer groups, as well as for gender, ethnicity, region, and participation in cooperative education.

No significant differences in job satisfaction were found in any year between regular and special needs completers, between male and female regular and special needs completers, between white and minority regular and special needs completers, between regular and special needs completers from the four geographic regions, or between regular and special needs completers who had or had not participated in cooperative education.

Average Hourly Wage

The chi-square statistic was not used to analyze the differences in average hourly wages between regular and special needs completers.

Special needs completers received slightly higher average hourly wages than did regular vocational completers in each year except 1985, when both regular and special needs completers recorded the same average hourly wage--$4.30 per hour. Special needs male completers received a slightly lower average hourly wage than did regular male completers each year except 1984, when they received an average of $.11 per hour more. In general, females earned a lower average hourly wage than males. Special needs females earned a

lower average hourly wage than regular females in all years except 1984, when they earned an average of $.18 per hour more. White special needs completers received a higher average hourly wage than white regular completers in all years except 1985, when they were paid $.01 per hour less than regular completers. Minority special needs completers received lower average hourly wages than minority regular completers except in 1983, when they were paid $.03 per hour more than minority regular completers.

In Region 1, special needs completers received a higher average hourly wage than regular completers in three of the five years under investigation. However, in 1984 they received $.16 per hour less, and in 1986 they received $.13 per hour less than regular completers from that region. In Region 2, special needs completers received higher average hourly wages each year than did regular completers. Special needs completers in Region 3 received higher average hourly wages than regular completers except in 1985, when they received $.02 per hour less than regular completers. In Region 4, special needs completers received higher average hourly wages in 1982, 1983, and 1984 than did regular completers from the region. In 1986, regular completers from Region 4 received a $.01 per hour higher average hourly wage, and in 1985 both groups were paid the same average hourly wage.

Special needs completers who had participated in cooperative education received a higher average hourly wage in 1983 through 1985 and a lower average hourly wage in 1982 and 1986 than did regular completers who had participated in cooperative education. Special

needs completers who had not participated in cooperative education received a higher average hourly wage in 1982, 1983, 1984, and 1986 and a lower average hourly wage in 1985 than did regular completers who had not participated in cooperative education.

Limitations

Before presenting conclusions based on the study findings, important limitations are discussed that might have influenced the interpretation of those findings. In the course of this investigation, the researcher was concerned about certain irregularities existing in the study that could affect future replications and/or hinder generalization of the findings. Those concerns are discussed in this section.

1. Approximately one-third of the responses to the survey each year were derived from second-party (proxy) sources. Shermis (1982) addressed the factors affecting the quality of data gathered during the annual follow-up survey process. He found that the proxy ratings on attitudinal items differed significantly from those of the target students. The present researcher also believes that some of the data collected from these sources are suspect and might indeed limit the study findings. Although categorical data for post-high school activity (i.e., that a completer was continuing his/her education, was employed in a wage-earning occupation, was enlisted in the military) can be accurately determined by secondary sources, some items regarding employment-pattern components required that secondary sources guess or assume a completer's response (i.e.,

interpreting their perception of the completer's job satisfaction, expressing their understanding of the completer's related placement, or specifying their knowledge of the completer's remuneration).

2. Although the state surveying techniques achieved consistently high return rates for the five years under investigation, the researcher is concerned about the percentages of nonreturns, especially from special needs completers. A lack of respondents in certain completer-type categories precluded analysis of data according to special needs status (limited English proficiency, disadvantaged, and handicapped). Likewise, a disproportionately large percentage of any specific special needs group could have falsely influenced the findings and/or conclusions.

3. During the actual data analysis, the researcher noticed that about 80%, and in some instances more, special needs and regular completers consistently came from the same 12 to 14 vocational programs. Some of these same programs accounted for extremely large numbers of returns each year. This led the researcher to question whether having such large numbers of completers from relatively few programs would skew the results of the study. For instance, the responses from several thousand regular completers who were enrolled in clerical areas might mask the results or might differ from the responses of several smaller groups of completers in other vocational areas.

4. Average hourly wages might not reflect the typical hourly wages of regular and special needs completers. After aggregating

the data, it was not feasible for the researcher to reaggregate the figures using a different statistic regarding hourly wage, so the average hourly wage calculations were retained. The mean is a measure of central tendency, achieved as the sum of values for each case divided by the number of cases, and is affected by extreme values. The average hourly wage, therefore, might not actually represent the correct distribution of wages for completers. Perhaps the mode wage would better indicate the hourly wages for the completer groups in the study. The mode wage would represent the more frequently achieved and perhaps most realistic wage received by first-year completers.

5. Data for 1984 completers did not appear to be consistent with those for the other years under investigation. This led the researcher to believe that different data-collection techniques were applied to these data. Although the researcher found no evidence to support this suspicion, the tallies recorded for 1984 continued to be somewhat different in nearly all analyses from the data for other years.

6. The reader is also reminded that some differences found in this study may have been a result of the data-collection process occurring at five different times, at which differing economic conditions may have prevailed.

Conclusions

Differences as well as similarities in the employment patterns of regular and special needs completers of public secondary

vocational education programs in Michigan were identified in this study. The preponderance of real differences between the regular and special needs completer groups would appear to indicate that variables other than vocational programs were affecting special needs completers. Although vocational education appears to have been successful in helping many students, the researcher concluded that the needs of a sizable number of students (those termed idle in this study) are still not being recognized.

The following major conclusions, which are related to the specific objectives and questions of this research, were drawn from the study findings.

> Research Question 1: Are there differences between the employment patterns of regular completers and those of special needs completers of vocational programs?

The data indicated that special needs vocational completers consistently were less able to gain access to alternative activities to employment than regular vocational completers. Special needs completers' employment patterns did not completely parallel those of regular completers. Whereas significantly higher active rates were recorded for regular completers, it appears that, after gaining employment, both groups shared similar employment experiences.

> Research Question 2: To what extent, if any, do selected demographic characteristics (gender and ethnicity) of regular and special needs completers of vocational programs affect the employment patterns of those groups?

The data indicated that neither gender nor ethnicity had a major effect on the employment-pattern comparisons. The same

problems in employment identified in other research as related to gender and ethnicity were reflected in the special needs and regular completer comparisons.

> Research Question 3: Are the employment patterns of regular and special needs completers of vocational programs similar among four geographic regions within the state?

The data indicated that, on the whole, the vocational completers' geographic location did not affect their employment-pattern comparisons. Geographic location did, however, play an important role in the employment patterns of individual vocational completers and might have been based on the availability of jobs in the local economies.

> Research Question 4: To what extent, if any, does participation in cooperative education affect the employment patterns of regular and special needs completers of vocational programs?

The data indicated that involvement in high school cooperative education programs greatly influenced the employment-pattern comparisons of regular and special needs completers of vocational programs. Participation in a cooperative education program while in high school seemed to help special needs completers achieve results more closely associated with those of regular vocational completers who had cooperative education.

> Research Question 5: Do the employment patterns of regular and special needs completers of vocational programs evidence change over the five-year period from 1982 through 1986?

The data strongly indicated that one can expect few changes in the entry-level employment patterns of secondary special needs and

regular vocational completers. Year-by-year analyses revealed few changes in the employment patterns established in this study.

Recommendations

Based on the results of this investigation, the following recommendations are presented:

1. The Michigan Department of Education should modify its current data-collection requirements to ensure accuracy of completer responses and usefulness of the accumulated information.

2. Michigan public high schools should require that cooperative education experiences be part of all secondary vocational education special needs students' individualized education plans to expand the alternatives available to them when they complete the program.

3. Michigan local, regional, and state secondary and postsecondary agencies and professional organizations should collaborate to establish alternative placement programs for special needs vocational completers.

4. Michigan teacher-preparation institutions should revise their current curricula to prepare future vocational educators in the pedagogical methodologies required to address the needs of special populations within their classes and/or programs.

5. Michigan secondary schools should revise their curricular offerings so that special needs students can successfully complete the high school academic requirements while enrolled in vocational education programs.

6. Michigan public high schools and community colleges should reestablish or strengthen the linkages, as stated in articulation agreements between secondary and postsecondary vocational programs, to ensure that capable special needs vocational completers have opportunities to continue their vocational education at the post-secondary level.

7. The Michigan Department of Education should continue to make available to university communities the raw data from the annual follow-up surveys, but in a more convenient format, for future researchers to explore.

The following topics are suggested for further research:

1. This study could be replicated with future data to develop a longitudinal analysis to determine whether the patterns identified over the five-year period continue for the long term.

2. An investigation could be conducted to develop an alternative sampling technique for completer survey data collection, which would obtain a more accurate cross-section of completer responses and eliminate the need for second-party (proxy) responses.

3. A study could be conducted to identify and evaluate successful special needs placement programs, in order to develop placement standards for Michigan secondary vocational programs.

4. An investigation could be conducted to compare special needs vocational completers with special needs students who failed to complete vocational programs, to determine the factors contributing to noncompletion of vocational programs.

5. A job and task analysis with special education professionals could be conducted to determine the factors that are important to the successful instruction of special populations in vocational education.

6. Persons in other states with comparable data may wish to replicate this study to determine whether the patterns identified are found in those areas.

Reflections

As the heading implies, the researcher's purpose in this section is to reflect on some concerns that could not be addressed fully or properly in the course of the investigation. It was believed that these observations could be explored more appropriately in a separate section.

During the several years involved in completing this research, the investigator began to understand that a much larger picture existed, of which the present study was but a small segment. It appears that much of the information gathered through follow-up surveys used in Michigan and other states is used primarily in compliance reporting, as required by state and federal mandates. However, state and federal agencies have done virtually nothing with the mass of data collected.

The researcher thinks that part of the problem can be attributed to the beliefs that these surveys do not gather data in a form that encourages and permits usability for significant purpose and/or that they do not generate sufficient information on which

decision makers and/or researchers can act. The limited information (much of which pertains to entry-level employment) amplifies the need to use a different data-gathering mode and to ask some different kinds of questions, in order to make the data more robust.

The questions asked in the survey should go beyond the usual demographic-information requirements, such as gender and ethnicity, and current employment information, such as job satisfaction. Those who design the survey instruments might want to consider using additional or different kinds of questions in the future. For example, at present, it is important to determine whether a student comes from a single-parent home or from other types of dysfunctional families, which tend to put an onus on the student and might create a heightened state of being at risk. Likewise, employment-information questions asked of former vocational students need to elicit more useful data. It is important to determine level of employment, as well as the skills that former students use and/or need in the course of their jobs and the skills and knowledge needed to retain or advance in their jobs.

In addition, new techniques must be found for collecting the data. The data collection as it is presently done--use of local school personnel, the high incidence of second-party (proxy) responses, and use of telephone survey by individuals with limited training--brings into question the accuracy of the data. With the stress on accountability of high school programs and the need for high return rates to validate the survey results, the researcher believes that different sampling methods and surveying techniques

performed by an outside agency with professional assessment experts should be considered.

Also of great concern to the researcher were the individual special needs vocational program completers themselves. The unusually high levels of idleness demand that the underlying causes be addressed. With the known density of special needs students in vocational education (nearly one-fifth of its population) and with the specific focus of legislative mandates, vocational educators cannot continue to ignore the needs of this sizable group. The researcher believes that the people who are professionally responsible must be prepared to deal with this segment of the population, which might become even larger in the future. Although those in vocational education can be proud of the nearly parallel record of placements in employment for special needs completers as compared to regular completers, something is not being provided to these individuals, which limits their pursuit of advanced education as used by regular completers. Vocational education instructors and those preparing to teach in vocational education must be apprised of the unique problems of special needs students and become more skillful in dealing with them. Likewise, it is incumbent upon academic instructors at the secondary level to address these same problems so as to develop a comprehensive effort to assist special needs students. This might, in time, force those in teacher-preparation institutions to develop courses and/or programs that

will upgrade vocational and academic instructors' knowledge about and ability to deal with special needs students.

APPENDICES

APPENDIX A

ANNUAL FOLLOW-UP SURVEY (VE 4045-A)

Note: The writer has included the 1985 Follow-Up Survey of 1984 Students (VE-4045-A) to illustrate the survey questions used in the annual follow-up process. During the five years under investigation, the survey questions used to elicit the data for this research remained the same in each annual survey. The researcher believed that including the other surveys would lead to unnecessary duplications. Any differences unique to a given year's survey have been addressed elsewhere in the study (see Chapter III).

VE-4045-A
2/85

Michigan Department of Education

AUTHORITY: OFFICE OF STATE SUPT.
COMPLETION: Voluntary (SCHOOL WILL BENEFIT FROM RETURN.)

SCHOOL DISTRICT LABEL

1985 FOLLOW-UP SURVEY OF 1984 STUDENTS

We are writing you, as a former high school student, to ask your help in improving some of the courses you took in school. By answering a few questions about what you are doing now and giving us your opinions, you can help us plan to make the courses better for students in the future.

The courses we are writing you about are those that you took in "vocational education" in order to get ready for a job after high school. The courses you took might have been in auto mechanics, office work, marketing and selling, agricultural production, welding and cutting, data processing, child care, small engine repair, electronics, food management, cosmetology, or one of many others possible.

Please take a few minutes to answer the questions and mail back your answers and opinions. We're counting on your help.

Thank you very much.

Please answer the questions by putting an "x" in the box next to the answer of YOUR CHOICE or by filling in the blank.

1. Are you now attending a school or college, or enrolled in a training program, or working as an apprentice?
(Check ONLY ONE.)

Yes is [1] No is [2]

If you answered "no", please turn the page and go to Question 4.

If you answered "yes", please go on to Question 2 below.

2. In your major area of study (or training), how much do you use the vocational training you received in your high school or area vocational education center?
(Check ONLY ONE.)

is [1] A lot
[2] Some
[3] Hardly any
[4] None

3. Check the type of school or program you are now attending.
(Check ONLY ONE.)

17 [1] High school
[2] 1-year college vocational-technical program
[3] 2-year college vocational-technical program
[4] 2-year college liberal arts program
[5] 4-year college or university
[6] Business or trade school
[7] Apprentice Program
[8] Other _____

Please go to Question 4 on the next page.

4. Are you working for pay?

Yes 18 [1] No 18 [2]

If you are working for pay, please answer questions 5, 6, 7, 8, 7.

If you are not working for pay, please go to Question 9.

5. About how many HOURS PER WEEK do you work? Write the number of hours per week in the box.

19 [ ]

6. On your present job, how much do you use the vocational training you received in your high school or area vocational education center? (Check ONLY ONE.)

21 [1] A lot
[2] Some
[3] Hardly any
[4] None

7. Overall, how satisfied are you with your present job? (Check ONLY ONE.)

22 [1] Very satisfied
[2] Somewhat satisfied
[3] Not very satisfied
[4] Not at all satisfied

8. On my present job I am paid about

23 $ _____ per hour.

Please go on to Question 9.

9. Are you looking for a job? (Check ONLY ONE.)

Yes 27 [1] No 27 [2]

10. Are you in the military service? (Check ONLY ONE.)

Yes 28 [1] No 28 [2]

11. Are you a full-time homemaker? (Check ONLY ONE.)

Yes 29 [1] No 29 [2]

Please go to Question 12.

(SCHOOL USE ONLY)

1. M 30 [1] F [2] S?
2. AI 31 [1] A [2] B [3] H [4] W [5] R?
3. C 32 [1] or L [2] STATUS?
4. Yes 33 [1] No [2] GRADUATE?
5. Yes 34 [1] No [2] CO-OP?
6. Yes 35 [1] No [2] S. N.?
   H 36 [1] and/or LEP 37 [1] and/or D 38 [1]
7. Yes 39 [1] No [2] PROJECT?
   H 40 [1] or LEP [2] or D [3]
8. CIP 41 [ ][ ] [ ][ ][ ][ ]
9. PSN 47 [ ][ ][ ][ ][ ]
10. If an AREA CENTER or SHARED TIME program, report respondent's home district identification. CIPD CODE 52 [ ][ ][ ][ ][ ]
11. Telephone 59 [1] Proxy 60 [1]
    Mail [2]

12. COMMENTS

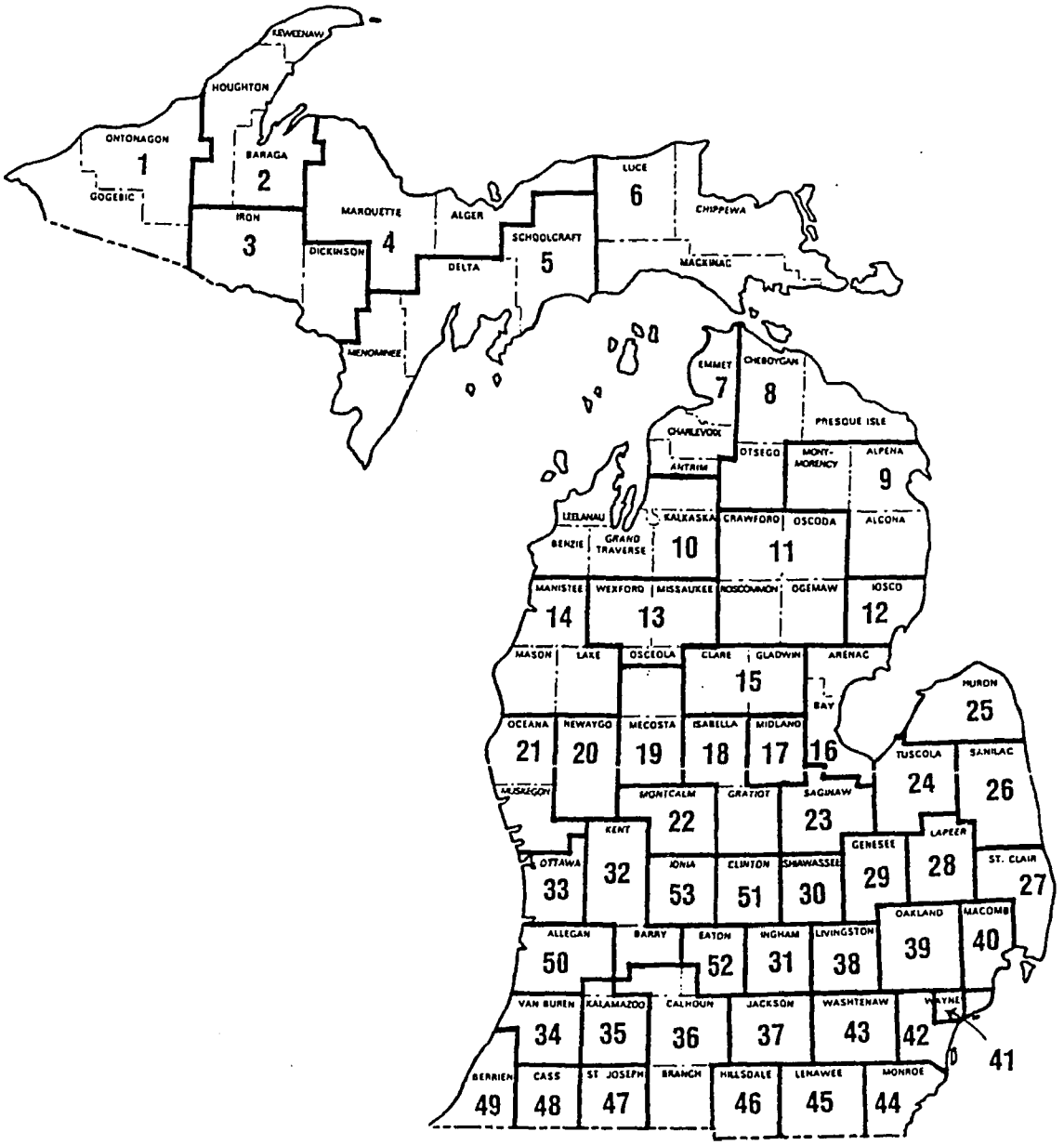
Please make any comments and/or suggestions you believe are needed to improve some of the courses you took or services you received while in high school. Also, add any general comments or suggestions you have about your school experience. (If you are working for pay please provide the helpful information in the box at the bottom of this page.)

Please fill in the name of the company where you work		
Company's Street Address		
City	State	ZIP Code
Please fill in the name of your job		

APPENDIX B

CAREER EDUCATION PLANNING DISTRICTS

CAREER EDUCATION PLANNING DISTRICTS



APPENDIX C

POST-HIGH SCHOOL ACTIVITY DATA FOR SPECIAL NEEDS AND REGULAR VOCATIONAL PROGRAM COMPLETERS, BY YEAR

POST-HIGH SCHOOL ACTIVITY DATA FOR SPECIAL NEEDS AND REGULAR VOCATIONAL PROGRAM COMPLETERS, BY YEAR

Year	Special Needs Completers						Regular Completers					
	No.	ConEd	HMker	Milty	Idle	Emp	No.	ConEd	HMker	Milty	Idle	Emp
1982	3,993	25.4%	6.8%	6.4%	21.2%	52.2%	33,481	42.7%	5.1%	5.3%	10.9%	58.2%
1983	4,355	25.4%	6.5%	7.9%	20.1%	51.4%	33,864	44.0%	5.0%	5.9%	11.4%	56.9%
1984	7,305	32.2%	5.6%	7.4%	9.5%	69.1%	32,037	44.7%	5.0%	5.8%	7.6%	63.8%
1985	6,697	30.4%	5.3%	6.2%	14.2%	62.9%	31,193	43.0%	5.3%	6.2%	8.5%	63.1%
1986	4,785	25.3%	5.3%	6.1%	12.6%	64.9%	30,674	44.3%	4.7%	6.0%	6.7%	64.6%

Note. Rows do not total 100% because completers were allowed to indicate participation in more than one category.

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