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GENDER EQUITY IN REGULAR VOCATIONAL
PROGRAMMING FOR EDUCABLE
MENTALLY IMPAIRED STUDENTS

By

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A DISSERTATION

Submitted to
Michigan State University
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ABSTRACT

GENDER EQUITY IN REGULAR VOCATIONAL PROGRAMMING FOR EDUCABLE MENTALLY IMPAIRED STUDENTS

By

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This study was conducted to determine if enrollment of educable mentally impaired students in regular vocational education programs was equitable by gender in a sample of mid-Michigan school districts. A secondary purpose of the study was to investigate aspects of the regular vocational education programs which contribute to differences in enrollment patterns by gender. Enrollment of educable mentally impaired students and non-handicapped vocational education students in regular vocational education programs was compared. No significant differences in such enrollment were found in the rates of male and female educable mentally impaired student enrollment. However, significant differences were found in the types of enrollment by program of male and female educable mentally impaired students. This gender pattern was not the same as the gender enrollment pattern of non-handicapped vocational education students. Investigation of the pre-requisite

skills and instructional materials of the vocational programs revealed that those programs utilized by both male and female EMI students had the following characteristics: they required a low level of academic skills and they were not stereotyped as belonging to either gender. In this study it was found that there was a high level of participation in regular vocational education programs by male (47%) and female (45%) educable mentally impaired students in the sample.

This dissertation is dedicated to my husband,
George Arthur Baisley, whose unqualified support and
constant encouragement have enabled me to reach goals
I never would have achieved alone.

To my children, Dana Dorothy and Margo Georgia,
I hope that this achievement will be an example to them
that every goal is within their reach.

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INTRODUCTION

Federal and State laws mandate access to vocational training for handicapped students. Other Federal and State laws also require equal access to vocational training for females. Therefore, there is a legal commitment to sexual equity in vocational training for the handicapped. The legal requirements are based on a Constitutional commitment to equal protection under the law (14th Amendment), as applied in this case, to develop one's potential for self support and self-fulfillment, regardless of sex or handicap.

Federal and State mandates reflect an awareness that preparation for employment should be available to students on a non-discriminatory basis. Access to vocational training is not only encouraged by funding, but is also required to be non-discriminatory by civil rights legislation. Title IX of the Educational Amendments of 1972 forbids exclusion on the basis of sex from any educational program. Section 504 (Nondiscrimination on the Basis of Handicap), of the Rehabilitation Act of 1973, affirms vocational education accessibility for handicapped students. It follows that participation in vocational education should not be restricted by either gender or

handicap. Legally, choice of vocational education training programs should be based upon availability, individual aptitudes, and individual interests.

In order to assess progress toward this goal of equal opportunity for vocational training, it is necessary for educators to be aware of the current status of the situation. This research study is an attempt to determine the participation of female and male educable mentally impaired (EMI) students in regular vocational education programs within two intermediate school districts of the mid-Michigan area. Further, the study will compare the participation rates of female and male EMI students to those of regular students in these programs.

Participation in a vocational training program can be thought of as being determined by two major factors. The first is an internal component; individual choice, affected by personal, parental, and societal influences. The second is an external component of access; aspects of the training programs themselves which affect the decision to participate. This study investigates access factors which could account for differences, if found, in the rates of participation between groups, i.e., male and female EMI and non-handicapped students.

Research (especially follow-up studies) has shown that vocational training is crucial to the development of

EMI students (1, 2, 3). Vocational training is also mandated by the Michigan mandatory special education act (P.A. 198, 1971 as recodified in P.A. 451, 1976) for those special education students enrolled in high school under a special education graduation plan. Almost all EMI students are enrolled under such plans. Integrating these students within regular vocational education programs is encouraged by research (4, 5, 6) and by law (R340.1722, P.A. 451, State of Michigan, 1977). Thus, vocational training should be available to all EMI students at a level which fits their needs, interests, and abilities, and which maximizes their potential to be self-supporting. If the appropriate training program is determined by the Individual Educational Planning Committee to be a regular vocational education program, then male and female EMI students should have equal opportunity to participate in such programs.

It is widely documented in the literature that females in the general population choose and participate in vocational education in a manner that perpetuates sexual stereotyping and concentrates them in a small number of female-dominated occupations (8, p. 1; 9, p. 16; 10, p. 134). The reasons for this have been widely investigated and are deeply entrenched in American society and culture.

Although such research has been conducted on gender differences in vocational programming for the regular student population, little is known about how the handicapping conditions of EMI students affect those gender differences. If it can be assumed that sex stereotypes influence handicapped and non-handicapped students in the same way, and yet if a significant difference is found in the frequency and type of vocational training participation between these two groups, then it may be assumed that other factors are affecting the participation pattern. If these factors, gender and handicap, combine to restrict the vocational training opportunities of any segment of the EMI population, it is important that decision-makers in the educational process be aware of those restrictions.

Since the educational designation of educable mentally impaired is one that is defined by State regulations, a study of a segment of this population may generalize to a larger population of EMI students. Additionally, since many other students exhibit problems in academic skills and behavioral areas similar to those of EMI students, this investigation may have implications for a broader segment of the student population concerning their access to vocational training.

Generally stated, the questions to be investigated in this study are:

1. Is the participation in regular vocational education by educable mentally impaired students differential by gender?

2. If such participation is differential by gender, what factors exist that alter the rates of participation and the types of participation of male and female EMI students?

The following null hypotheses are presented for investigation of Question 1:

1. The percentage of male EMI students having formal vocational training plans (either regular or special education) is equal to that of female EMI students with such plans.

- 1a. The percentage of male EMI students with a vocational goal on their Individual Educational Plan is equal to the percentage of female EMI students with such a goal.

- 1b. The percentage of male EMI students with a vocational IEP goal who are actually involved in vocational training is equal to the percentage of female EMI students with a vocational IEP goal who are actually involved in vocational training.

2. The percentage of male EMI students enrolled in regular vocational education programs is equal to the percentage of female EMI students enrolled in such programs.

2a. The percentage of male EMI students enrolled in regular vocational classes is equal to the percentage of female EMI students so enrolled.

2b. The percentage of male EMI students enrolled in regular vocational training programs equals the percentage of female students so enrolled.

3. The types of regular vocational training programs chosen by male EMI students do not differ significantly from those types chosen by female EMI students.

4. The types of regular vocational training programs chosen by female EMI students do not differ significantly from those chosen by non-handicapped female students.

5. The types of regular vocational training programs chosen by male EMI students do not differ significantly from those chosen by non-handicapped male students.

Investigation of Question 2 includes an analysis of the factors which determine access to regular vocational training programs. These factors include both personal areas such as counseling, parental, and cultural influences,

and impersonal areas such as required skills, pre-requisite knowledge, textbooks, and testing procedures. This analysis compares and contrasts these factors among the programs utilized by EMI and non-handicapped students, both male and female, in order to identify any differences which may be apparent.

Definition of Terms

Vocational education--"vocational or technical training or retraining which is given in schools or classes, including field or laboratory work...conducted as part of a program designed to fit individuals for gainful employment as semiskilled or skilled workers or technicians in recognized occupations..." (Michigan School Code of 1976, Act 451 (380.7 Sec 7 (4))

Regular vocational education program--as used in this study, a vocational education program administered and instructed by general education personnel and attended by non-handicapped students.

Regular vocational class--as used in this study, any secondary level general education class considered to be part of the vocational education curriculum by the Michigan State Department of Education; for example, typing, wood shop, or home economics.

Regular vocational training program--as used in this study, secondary level general education instruction meant to prepare for employment by teaching at least entry-level job skills, having one or more of the following characteristics: (1) advanced nature, application of basic skills, (2) extended time, two or more hours of instruction per day and/or more than one year duration, (3) laboratory orientation.

Participation--as used in this study, participation refers to enrollment.

Access--as used in this study, access refers to the availability of a vocational program and the opportunity to participate. Access may be

determined quantitatively by the existence of a program and whether a program size is sufficient to accommodate the number of students wanting to participate. Access may be determined qualitatively by factors such as pre-requisite knowledge necessary for entry into the program, admission policy, testing procedures, textbooks, and certification requirements.

Educable mentally impaired--as defined by Michigan Special Education Rules (1983) (R340.1705).

- (a) Development at a rate approximately 2 to 3 standard deviations below the mean as determined through intellectual assessment
- (b) Scores approximately within the lowest 6 percentiles on a standardized test in reading and arithmetic
- (c) Lack of development primarily in the cognitive domain
- (d) Impairment of adaptive behavior

Individualized Educational Plan--an annual plan developed by the Individual Educational Planning Committee including the following (R340.1721e(3)):

- (a) A statement of the person's present level of educational performance
- (b) A statement of annual goals, including short-term instructional objectives
- (c) The projected dates for initiation of services and the anticipated duration of the service
- (d) Appropriate objective criteria and evaluation procedures and schedules for determining whether the instructional objectives are being achieved
- (e) A statement of the specific special education and related services to be provided to the person

- (f) The extent to which the person is able to participate in regular education programs

REVIEW OF RELATED LITERATURE

Mental retardation can be considered to be one of our nation's major human problems. It affects an individual's ability to have a satisfying and useful life. It is estimated that six million Americans are affected by some degree of retardation. More than five million of these are characterized as being mildly retarded (11, p. 20). With few exceptions, this group is served by educational and other social agencies in their home communities. The local community must provide treatment, training, and education for these individuals. It is advantageous for not only the mentally impaired members of a community, but also for the community as a whole, that the social and economic independence of these individuals be maximized. It is generally accepted that vocational training is a crucial part of this effort toward achieving independence.

In order to understand the complexities of the issue of vocational training for the mentally impaired person, it is helpful to keep in mind the definition of mental retardation issued by the American Association on Mental Deficiency (AAMD) in 1973: "Mental retardation refers to a significantly sub-average general intellectual

functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period" (11, p. 7).

Adaptive behavior is defined as the effectiveness or degree with which the individual meets the standards of personal independence and social responsibility expected of his age and cultural group (11, p. 8). The emphasis in this definition on personal independence points out the importance of the role of vocational training in compensating for the deficit in adaptive behavior. It is generally accepted that some kind of formal training or habilitation is necessary to overcome any existing deficits in adaptive behavior and to develop vocational skills, in spite of limited intellectual functioning. Although the area of vocational training has not been emphasized until recently, Federal legislation has brought attention and resources to the area and has motivated special educators and vocational educators toward meeting the vocational needs of mentally impaired students (13, p. 54).

History and Legislative Background of Vocational Training for the Mentally Impaired

Early efforts in vocational training for the mentally impaired grew out of the vocational rehabilitation movement spurred by the plight of veterans of World War I,

when Congress passed the Smith-Sears Act in 1918 (14, p. 30). The Vocational Rehabilitation Amendments of 1943 extended services to the mentally handicapped for the first time. The Federal government gradually expanded its role in the vocational training of mentally handicapped citizens with such legislation as the Manpower Development and Training Act of 1962 (P.L. 89-15) which provided training and employment for mentally impaired youth and adults, and the 1964 Amendments of the Vocational Rehabilitation Act of 1920 (P.L. 66-236), which provided funds to states on a matching basis for providing vocational rehabilitation services to mentally impaired persons (14, p. 33).

Efforts to provide vocational training through the public education system were evolving throughout this period, as the responsibility for serving the educational needs of the handicapped gradually moved into the public realm. The 1962 report of the President's Panel on Mental Retardation recommended a national priority for providing vocational training to the nation's mentally impaired population (15, p. 347).

Since the 1950's, the generally accepted modes for providing vocational training to mentally handicapped youth have been the work-study program, sheltered work-shops, and segregated special education classroom

programs, although their effectiveness has never been conclusively proven. Work-study programs were originally initiated because it was apparent that traditional secondary academic curricula were not meeting the needs of mentally impaired students. Brolin and D'Alonzo (1979) cite a number of studies supporting the efficacy of occupationally-oriented programs on the vocational adjustment of these students (16, p. 249).

Although it was recognized that secondary-level special education students needed vocational preparation, efforts to provide such training have been only partially successful. Miller, Sabatino, and Larsen (1980) found that mildly handicapped secondary school age students are the most under-served group of handicapped students found in the United States, with only 21 percent leaving high school with employable skills (17, p. 345).

Since it was obvious that educational agencies, at any level, were not meeting the vocational preparation needs of secondary school handicapped students, the Federal government and the State of Michigan began encouraging vocational services for these students. In the 1970's legislation generated a new thrust for vocational opportunities for the handicapped: access to regular vocational education programs. These legislative initiatives have resulted in providing handicapped persons the

same rights to vocational education as the non-handicapped, as part of a comprehensive set of civil rights for handicapped persons.

This thrust began with a ten percent set-aside provision in the 1968 Vocational Education Act Amendments, an effort on the part of Congress to guarantee financial support for this initiative. The set-aside provision, under which funds were restricted to being used only for programs for the handicapped, was an effort to insure that sufficient resources are provided for these programs to make an impact on the problems of delivering vocational education to individuals whose handicaps would prevent them from succeeding in a regular vocational education program. Eligible individuals are defined by the Vocational Education Amendments of 1968 as (1) disadvantaged and (2) handicapped. Under this Act, Federal funds can be used for the following types of services:

- (1) Advisory/coordinating committee
- (2) Surveys/evaluations
- (3) Recruitment/promotion activities
- (4) Identification of disadvantaged and handicapped
- (5) Staff development
- (6) Modification of schedules
- (7) Modification of curriculums
- (8) Development of curriculums
- (9) Modification of equipment for the handicapped
- (10) Supplemental educational services
- (11) Facilities
- (12) Cooperation with business community

Congress also provided the initiative for compelling special education, vocational education, and vocational rehabilitation agencies to work together. The Senate Report on the Vocational Education Amendments of 1968 states the following: "That all State vocational agencies be required to develop jointly with the State special education agency a comprehensive plan providing vocational education for the handicapped and that this plan be coordinated with the general State vocational education plan That efforts be undertaken in each State to coordinate the activities of vocational education, vocational rehabilitation, and special education to insure the continuity and broad use of resources" (Federal Register, Vol. 35, No. 91, P. II, May 9, 1970, Sec. 102.40, p. 7342).

In the State of Michigan, during the same time period, the status of special education in general was evolving from a permissive, subsidized situation to a mandated status. P.A. 198 was passed in 1971, becoming effective in 1973. This mandatory special education law included a specific requirement for inclusion of vocational training (Sec. 10, P.A. 198).

This requirement is presently being met through cooperation between the Michigan Rehabilitation Services, Special Education Services, and the Vocational-Technical

Education Service, which together provide the Michigan Interagency Delivery System for Vocational Education and Related Services for the Handicapped (12). This plan is meant to provide interagency cooperation, insure accessibility to programs, and to reduce duplication of services in order to help all handicapped persons benefit from vocational education. It is designed to assure responsibility for assisting local educational agencies to develop vocational programs to serve handicapped persons, assure that persons eligible for services under the Education of All Handicapped Children Act of 1975 (P.L. 94-142), the Vocational Education Amendments (P.L. 94-482), the Rehabilitation Act of 1973 (P.L. 93-112), and Michigan Public Act No. 451 (1976) receive the services for which they are eligible, and assure the rights of the handicapped persons to have access to vocational training under Section 504 of the Rehabilitation Act of 1973.

Weisgerber (1980) states that the most important recent development in vocational education on the national level is the effect of Public Law 94-482 giving emphasis to those populations previously underserved by vocational education: handicapped, women, and the disadvantaged. This legislation affirms the right of the handicapped to be provided with vocational training suited to their needs, interests, and abilities, and it specifies that funds be

directed to vocational programs which serve persons with special needs. States are required, by P.L. 94-482, to spend at least ten percent of their Federal funds for vocational education for handicapped persons. States are further required to plan for the use of these funds in accordance with the Education of All Handicapped Children Act (P.L. 94-142; 4, p. 15). If vocational education is considered appropriate for a special education student, this law, as well as Michigan Special Education Law (P.A. 198), requires that it be incorporated in the student's Individual Educational Plan (IEP). By committing themselves to the requirement of federal law, States take the responsibility for insuring that vocational programs are available to handicapped children.

The Education for All Handicapped Children Act of 1975 (P.L. 94-142) includes access to vocational training as a right of the handicapped student, if such training is determined to be necessary by the IEPC, with emphasis on the placement in an appropriate and least restrictive environment. P.L. 94-142 specifies: "The term special education also includes vocational education, at no cost to the parents, to meet the unique needs of a handicapped student" (CFR 300.14(a) (3)). It emphasizes that vocational education opportunities must be open to handicapped students:

Each public agency shall take steps to insure that its handicapped children have available to them the variety of educational programs and services available to non-handicapped children in the area served by the agency, including art, music, industrial arts, consumer and homemaking education, and vocational education (CFR 300.305).

This statement makes it very clear that Congress expects vocational education opportunities for handicapped students to be equal to those of non-handicapped students.

P.L. 94-142 also has a requirement that handicapped students be instructed in the least restrictive environment, i.e. the most normal, in which they can profit (CFR 300.552). This further emphasizes the right of the handicapped student to have access to regular vocational education programs, predicated on the determination of what is best for the student.

The Rehabilitation Act of 1973, P.L. 93-112, contains a part which has been called that "Bill of Rights for disabled people." Section 504 is the most significant, since it provides for non-discrimination in any program or activity, including, of course, vocational education. It requires that reasonable accommodation be made to permit the handicapped access to vocational education programs (4, p. 28). This requirement of "reasonable adjustments" is especially important to the accessibility of vocational programs for handicapped students. Adjustments must be made in curriculum, provision of special aides, and

special help such as counseling and placement services. Further, counseling cannot be discriminatory, arbitrary, or stereotypic (4, p. 28).

In an effort to summarize and clarify these Federal regulations as they relate specifically to vocational education for handicapped students, the Council for Exceptional Children (1978) published an administrative manual on this issue. Through interpretation of P.L. 94-142, P.L. 94-482, and P.L. 93-112, the Council for Exceptional Children summarized the right of handicapped students to participate in regular vocational education as follows:

All handicapped students who will benefit from such placement shall receive instruction in regular vocational education classes adapted to their needs as specified in the IEP. The LEA shall provide the necessary support services to accomodate these students. Prior to placing handicapped students in regular vocational education classes, the local educational agency shall consider student and personnel needs for implementing successful mainstreaming. These include consideration of, but are not limited to, the following:

- pre-training needs of handicapped students (pre-vocational experiences)
- support services needed by students and instructional staff
- modifications of equipment, materials, and facilities needed by students
- changes in curriculum and teaching methods needed
- inservice needs of staff (both vocational and special education)
- need to establish communication between vocational education and special education personnel

(18, p. 132)

According to CEC's interpretation, the local educational agency is further required, by Federal regulation, to establish procedures to provide support services and modifications in order to integrate handicapped students into regular vocational classrooms. Such modifications may include:

- longer instructional periods
 - longer total time for course completion
 - simplified instruction guides and manuals
 - mini-courses of single skill development within a broader program of study
 - entrance and exit at intervals as student progresses
- (18, p. 132)

According to P.L. 94-142, "each public agency shall insure that a continuum of alternative placements is available to meet the needs of handicapped children for special education and related services" (CFR 300.551 [a]). An example of such a continuum in the vocational area is the following:

Placement in regular vocational classes

- indirect service (to teachers) provided
- direct services to students provided
- student spends part of time in resource room receiving special help, but most of time in regular classroom

Placement in separate vocational classroom

- part-time in regular education facility
- self-contained in regular education facility
- separate class in special education facility

Placement in a sheltered environment

- residential
- hospital

- other institution
- sheltered workshop
- work activities center

The Guidelines for Special Education Programs and Services in Michigan contains a continuum of vocational training alternatives for special education students in Michigan as shown in Appendix B-1, p. 136.

In spite of legislative efforts, many problems plague the area of vocational education for the mentally impaired. Special education teachers, generally, have not been trained to implement programs that address the issue of employability, and they tend to emphasize remedial reading and math, instead of vocational preparation. Teacher preparation programs rarely include any course work in secondary special education, and local school districts rarely encourage regular and vocational educators to develop programs for handicapped students (17, p. 345). Research in this area has been limited, but it appears that there has been little change in the type of scope of programming available. Miller, Ewing, and Phelps specify the problems extant in this area as "lack of trained personnel, inadequate and incomplete needs assessment, limited interagency communication, few teacher certification initiatives, and little differential vocational curricula for the handicapped" (15, p. 353). In 1976, it was reported that less than two percent of the regular

vocational education enrollment was handicapped, as compared to an estimate of ten percent of the general school population who are handicapped (6, p. 356). Baxter found that sixteen percent of his sample of EMI students were enrolled in regular vocational education (1, p. 70). Miller, Ewing, and Phelps cite studies which concluded that, nationally, the great majority of mentally impaired youth are still enrolled in segregated vocational classes. They conclude that impediments to successful integration into regular vocational education courses include "attitudinal barriers, lack of personnel preparation, and availability of few satisfactory curriculum delivery models" (15, p. 354).

Because of impediments to integrating the special education student into regular vocational education, the most common type of vocational training program available for mentally impaired secondary students may still be the work-study arrangement (20, p. 24; 3, p. 593). This is usually an arrangement with an employer to provide on-the-job training experience to a student. Advocates of this type of program feel that students learn job habits and attitudes along with specific job skills. It also provides a wider selection of occupational training than could be offered by a classroom program.

However, in spite of their popularity, the benefits of work-study programs have never been conclusively demonstrated. Chaffin, Spellman, Regan, and Davison (1971) report that a summary of follow-up studies found that the employment records of work-study graduates ranged from 46 to 86 percent (2, p. 734). Anttonen (1974) reports unemployment rates of work-study graduates at four times the rate of the general population (5, p. 236).

Chaffin, Spellman, Regan, and Davison (1971) found that long-term post-graduate employment records show that EMI students without any work-study experience had employment levels equal to those students who completed a work-study program. They concluded that the goal of vocational training for these students is not to make them employable, but rather, to enhance their employability and that this can be done most effectively with formal vocational training in skilled and semi-skilled occupational areas (2, p. 737).

Baxter (1977) concludes from a review of past studies and from his own research, that there is no evidence that work-study programs improve the social or vocational skills of the mentally impaired student. He theorizes that results of studies showing higher employment levels for work-study graduates, as compared to special education students with no such training, are a function

of natural selection, wherein the less able and less well-adjusted students drop out of school programs before graduation. Baxter (1977) concludes that there is no evidence that on-the-job training improves the EMI student's academic or vocational skills. At best, it teaches social skills and work habits (1, p. 115).

Other authors also have studied the relative merits of integrated vocational training, as compared to segregated special education vocational training. Miller, Ewing, and Phelps concluded that even studies that excluded categories of student and housewife from employment totals failed to prove the efficiency of work-study programs (15, p. 349). John Anttonen (1974) feels that segregated work-study programs limit the social and educational involvement of EMI students with regular high school students (5, p. 236). Patricia L. Sitlington (1981) concurs and adds that work-study programs prepare students for low-paid entry-level jobs (3, p. 592).

In spite of research showing that segregated work-study programs may not be effective, and Federal and state laws requiring integration into regular vocational training whenever feasible, some researchers have found that few handicapped students are actually being served in regular programs (20, p. 24; 1, p. 2; 16, p. 249). However, given the fact that integrating handicapped

students into regular vocational education programs is a new trend, research may not accurately reflect the current status of the situation. Educational agencies are responding to Federal and State legislation by devising guidelines and plans for educational programs for special education students, including vocational training. These efforts may be affecting the kinds of vocational training opportunities available to handicapped students.

For example, in the State of Michigan, a special education student whose Individual Educational Planning Committee (IEPC) determines that it is unlikely that he will be able to fulfill the minimum requirements for regular high school graduation, can be placed in a special education program leading to a high school diploma. Under this "Special Education Course of Study," according to the Michigan School Code, the program must include instruction in:

- (1) the Constitution of the State of Michigan and the United States of America
 - (2) the functions of all levels of government
 - (3) the spread and control of dangerous, communicable diseases
 - (4) the harmful effects of tobacco, alcohol, and narcotics
 - (5) the humane treatment of animals
 - (6) health and physical education, unless the student is not able to take part
- (R380.1166-R380.1170)

In addition to these, the Michigan Special Education Rules (1983) state that all students graduating through a

special education course of study must meet requirements in personal adjustment, pre-vocational education, and vocational education (R340.1701a). These rules define personal adjustment as "instruction designed to help the student develop personal and social skills necessary for adult independent living. Some examples include home-making, independent travel, personal health and grooming, and the appropriate use of leisure time (R340.1701a).

Pre-vocational training is instruction related to job training such as reading, writing, arithmetic, and the use of common tools and utensils. It also helps the student determine his or her vocational interests, aptitudes, and abilities (R340.1701a).

Vocational training is defined as vocational or job training which prepares students for gainful employment as semi-skilled or skilled workers in recognized occupations. It includes vocational guidance and counseling related to job training, and work-study or on-the-job training (R340.1701b).

The determination as to whether or not a student has met these objectives is typically left to the special education teacher or teacher/consultant working with the student. There are written IEP performance objectives

for each student which should be met. When they are met, the student is recommended for graduation.

Many educable mentally impaired students are assigned to the special education course of study, since their academic achievement levels usually preclude their success in regular education classes. This means that most EMI students are required to have vocational training. Students enrolled under this course of study are the only Michigan high school students who are required to have vocational training in order to graduate. Appendix B-2, p. 150, shows the choice of plans for special education students which lead to a high school diploma in the State of Michigan.

Since many EMI students are required to have vocational training, and since this training may be required by the IEPC to be regular vocational education, it may be expected that some EMI students will be enrolled in such programs. If mentally impaired students are to succeed in regular vocational education programs, adaptations may need to be made to compensate for their handicap.

Accommodations made in regular vocational education programs for handicapped students include curriculum modifications, modifications of instructional materials, technical or non-technical tutors, and para-professionals to assist vocational instructors. The use of

para-professional teaching assistants is a common technique used in Michigan, utilizing Special Needs Projects, funded from P.L. 94-482 for special education, disadvantaged, and limited English-speaking students. These funds provide para-professionals in regular vocational education programs to help these students with the extra instructional attention they may need to succeed.

The Vocational-Technical Education Unit of the Michigan Department of Education complies with Federal law by promulgating an annual plan outlining the use of P.L. 94-482 funds. Local educational agencies with approved vocational programs apply to the Special Populations and Programs Unit for Special Needs grants. There are two types of grants. The first is a "basic grant," which can be used for administrative costs, counseling, advocates, para-professionals, tutorial help, clerical help, and supplies, for vocational programs having 5-8 special needs students enrolled. Special needs students are defined as disadvantaged, limited English-speaking, and special education students who need support to succeed in regular vocational programs. The second type is a "specialized grant," which can provide interpreters, special tools, and math and reading instruction for these students.

Many Special Needs grants in Michigan are used to provide para-professional instruction in qualified vocational courses. These persons provide the extra support and individualized instruction needed to help the special needs students to succeed.

Another modification that may be made to open regular vocational programs to EMI students is the "open entry/open exit" model, in which the special education student participates in a portion of a regular vocational curriculum. This is also referred to as the "career-ladder" approach. This modification is based on the concept that a vocational training program can prepare a student for a number of career levels. A student may enter a vocational program and progress to his own maximum level and then exit the program successfully. All of these modifications are intended to help the special education student, especially the mentally impaired, to succeed in regular vocational education.

The Tuscola (Michigan) Pre-vocational Education Curriculum Management System illustrates another type of modification. It uses competency-based vocational curricula in the Skill-Technical Centers to prepare secondary special education students for success in regular vocational programs. Once a student enters high school, he is referred for vocational assessment. Mathematics and

reading skills are cross-referenced by vocational program area and job titles in that area. If the assessment shows deficiencies in the skill areas necessary in that program, a remediation program will be outlined. The student is enrolled in a pre-vocational program area, such as Food Management, in addition to common pre-vocational courses, such as work habits and career awareness. The system is also intended to provide vocational support for the students while they are in a vocational program. The pre-vocational curricula can be used to re-teach the needed skills (22).

Another approach to integrating handicapped students into regular vocational education is Project SSAVE (Special Student Access to Vocational Education), a project supported by the Tennessee State Department of Education, which is intended to help special education students succeed in regular vocational education by providing inservice training to vocational education instructors and school administrators. This training is meant to increase the knowledge of these personnel in the area of special education, improve their skills in working with these students, and consequently, change attitudes toward mainstreaming these students into regular vocational education programs (23).

Another model of vocational curriculum material available for handicapped students is the Vocational Education/Special Education Project developed at Central Michigan University. These instructional materials include pre-vocational enabling skills and vocational skills curriculum models for a wide range of vocational areas.

Robert Weisgerber has edited a publication of the National Center for Research in Vocational Education entitled: Vocational Education: Teaching the Handicapped in Regular Classes. This publication suggests a number of approaches meant to improve the success of EMI students in regular vocational education. The author states that the starting point should be knowledge of the characteristics of mental retardation and how they impact on the vocational training process. The vocational instructor must have comprehensive information about the individual EMI student in order to plan and set goals. The instructor should set training goals for retarded students based on a thorough understanding of the specific tasks necessary to learning the job and how to evaluate those tasks. In modifying the regular curriculum and building individual plans, the vocational instructor should work closely with the special educators responsible for that student. Instruction should be: (1) divided into small steps, (2) repeated and checked, (3) over-learned, and (4) reinforced. Assessment is very important. Written tests should be avoided unless they are

geared to the student's level. Criterion-referenced assessment, in which standards for judging the student's work are matched with the goals set for that student, should be used. Teacher observation, check-lists, and other progress records can be used to measure skill development. Periodic review of the student's progress will permit further modification of the curriculum as needed, and intervention by the special education instructor will aid in learning and relearning necessary skills (24, p. 61).

These are a few of the many methods of modifying and arranging regular vocational education programs so as to maximize the opportunity for success of EMI and other special education students.

Gender Differences in Vocational Training

Students may not only be limited in their access to regular vocational education by handicap, but also by gender. Occupational choice, and therefore, occupational preparation, remains stereotyped by gender in this country, despite the movement toward sexual equity in society and in our laws. Nationally, over half of the employed females are clerical workers or in service-related jobs (25, p. 2). Although females are now working outside the home in large numbers, a 1977 study of high school graduates showed that, although nine out of ten females planned to have paid careers, they planned to seek jobs in areas that are

traditionally female (25, p. 2). This choice is reflected in enrollment figures for vocational programs. Most female students continue to enroll in traditional programs: secretarial, nursing, and child-care. This maintains occupational segregation in low-paying jobs, with little opportunity for upward mobility (25, p. 2). Steele reported that enrollment in vocational education shows distinct differences in male and female enrollment by types of programs. Males are concentrated in agriculture, technical education, and in trade and industrial programs. Females are concentrated in home economics, health, and office occupations. Enrollments reflect patterns which later limit earnings for young women by leading to lower paying jobs than male-dominated programs (10, p. 29).

Why do young women restrict themselves in their vocational choice? Much research has been done into the occupational choice decision-making process. Current studies tend to agree that, while attitudes have changed about women being employed in the labor force, women and men continue to be working in different occupations and different industries (8, p. 1; 24, p. 133; 10, p. 2). Herzog (1982) found very little change in high school students' occupational plans. She found that students persist in setting their career plans in traditional sex-stereotyped patterns. According to Herzog, the

generally accepted explanation for this sexual segregation in the labor force is that men and women seek to satisfy different needs in choosing a job. Females seem to attempt to satisfy traditional roles, such as helping others, through their occupational choices (8, p. 1). Bokemeier and Perry (1981) report that it is very difficult for males and females to see themselves in occupations generally stereotyped for the opposite sex (26, p. 724).

Enrollment in vocational education programs seems to reflect this occupational sex stereotyping. Although females constitute half of the enrollment in vocational education, almost 50% of that enrollment is in the areas of homemaking and consumer education courses that are not intended to prepare students for paid employment (26, p. 13). A number of researchers have noted this fact and conclude that enrollment figures do not accurately reflect the actual vocational preparation of female students, since these figures lump homemaking and consumer education courses together with those courses intended to prepare a student for remunerative employment (7, p. 3; 26, p. 14; 9, p. 9). These authors suggest that separating homemaking and consumer education courses from gainful home economics training gives a more realistic picture of the status of female students in actual vocational preparation. Steiger

(1974) reports that 49.5 percent of female students were enrolled in courses not intended to prepare them for employment (27, p. 13). This fact seriously disputes the impression, made by total enrollment figures, that sexual equity exists in vocational education.

On both the State and Federal levels, legislation has been developed to attempt to overcome lack of equity and sex stereotyping, and to promote sex fairness in both employment and career preparation. Title IX of the Education Amendments of 1972 is aimed at sexual discrimination in educational policy, programs, and practices. In vocational education, this includes admission to programs, treatment of students, and graduation requirements. It requires that persons may not be excluded from, denied participation in, or be treated differently in education programs. It applies directly to local educational agencies (9, p. 13).

Title II of the Education Amendments of 1976 also specifically addressed the issue of sexual bias and sex stereotyping in vocational education and requires states to channel federal money to local agencies to overcome these conditions in their vocational education programs. This law mandates the development of programs to overcome sex bias, sex stereotyping, and discrimination in vocational education by authorizing the use of this money to

develop model programs to reduce stereotyping. States are required to encourage local educational agencies to promote the enrollment of students of both sexes in all programs (9, p. 14).

Michigan has responded to this mandate in its Annual and Long Range State Plan for Vocational Education in Michigan (28). The plan addresses the issue of gender equity. It lists, among its goals, Goal I: "All persons will have access to vocational-technical education and training or retraining opportunities regardless of any distinguishable personal characteristics." Objectives under this goal include IA which states that "State and eligible recipient policies will assure the equality of vocational education opportunities for persons of differing sex and racial/ethnic characteristics" (28, p. 1). Projected activities for implementation of Goal IA concerned with sex equity include secondary/post-secondary plans for recruiting males and females into programs and courses considered non-traditional for their sex and disseminating sex equity materials (28, p. 1).

Educable Mentally Impaired Students
by Gender in
Vocational Training Programs

Michigan's Annual and Long Range State Plan for Vocational Education also addresses the status of vocational education for the handicapped under Goal IB which

states, "Eligible recipient policies will promote the equality of vocational education opportunity for students of differing physical and mental capabilities" (28, p. 1). The Michigan Department of Education plans activities aimed at providing vocational training opportunities for the handicapped, including:

- (1) Provide para-professionals, remedial teachers, tutors, certified teaching staff, and support services and activities to meet the special needs of secondary and post-secondary handicapped persons.
- (2) Initiate the development of a pre-vocational program designed to provide eligible handicapped students with the competencies to enter vocational education programs.
(28, p. 1)

In spite of these efforts, research noted earlier shows that mentally impaired students are not participating in regular vocational education programs at a rate proportional to their population (1, p. 70; 6, p. 356; 15, p. 350). It also shows that female students are not participating in vocational preparation programs at a rate commensurate with their population (7, p. 3; 9, p. 9; 26, p. 13). Therefore, it is reasonable to expect that female mentally impaired students are under-represented in regular vocational education programs.

However, at first glance, the literature specifically relating to the status of EMI students by gender in vocational education does not support this assumption.

Both Baxter (1977) and Danker-Brown, et al (1976) report no quantitative differences in enrollment of EMI students by sex in vocational education training programs (1, p. 69; 29, p. 454). However, these data do not discriminate between occupationally-oriented and consumer-oriented courses. Danker-Brown, Sigelman, and Flexer point out that while quantitative differences were not found in enrollment, qualitative differences did exist, with a significant number of female EMI students placed in consumer-oriented home economics classes. They also found gender differences in special education work-study programs, mainly in quality and levels of competitive employment (29, p. 455).

A number of explanations have been suggested for the differences in vocational preparation between male and female mentally impaired students. Cegelka notes that there seems to be a difference in the criteria used by researchers to measure successful post-school adjustment between males and females. While males are expected to be employed and self-supporting, females are regarded as successful by researchers if they are housewives supported by their husbands or even homemakers in their parents' homes (30, p. 325). Comparison of the genders might be more meaningful if the group of females engaged as homemakers was eliminated. Then, an accurate comparison

of employed and unemployed males and females could be made. Cegelka found that the curricula of model vocational training programs for mentally impaired students reflect differential expectations for the sexes, with male students given skills which transfer to higher paying occupations (30, p. 325). Danker-Brown, Sigelman, and Flexer, in reporting differences in vocational preparation and post-school outcomes for female handicapped students, suggest that school counselors encourage traditional feminine sex-roles and occupational goals which the students themselves and their parents also share (29, p. 457).

This suggestion raises the question of how mentally impaired students make their vocational choices. There has been little research in this specific area, although there are a number of theories of occupational decision-making among non-handicapped students. Jeffs reports that Super (1953) indicated that vocational choice results from parental socio-economic level, the student's intellectual level, and opportunities which the student has experienced (31, p. 7). The decision-making process can be simplified into two components: information about ourselves and information about occupations (31, p. 7). Many career awareness programs are based on these components.

Some researchers have attempted to investigate the issue of vocational choice with retarded students. Jeffs reports a study of vocational preference of adolescent mentally retarded boys which found that the majority chose jobs at the unskilled and semi-skilled levels. He concluded that the vocational experience associated with home and community appeared to exert a stronger influence on the formation of vocational plans than did experiences in school (31, p. 9).

In general, vocational decision-making by mentally impaired students seems to be characterized by the same cultural, societal, and personal influences as it is for non-handicapped students, but it is thought by some researchers that the mentally impaired are also characterized by greater "outer-directedness." Zigler found that retardates exhibit a problem-solving technique that can be so described. He explains this as resulting from the repeated failures experienced by these children. They come to distrust their own solutions and seek guidance from their immediate environment. They show a greater sensitivity to external clues provided by social agents, because they believe that these clues are more reliable than their own reasoning (32, p. 100).

This aspect of the decision-making process of retardates has implications for their choice of occupation

and vocational training. The tendency to rely on external influences means that retarded students may make their occupational decisions based on information and attitudes received from their immediate environment; peers, social and cultural factors, teachers, and counselors.

The decision-making process in occupational choice may be further complicated for EMI students by accessibility limitations. It is these problems of accessibility that will be investigated in this study. Accessibility is most likely influenced by limitations of EMI students, whether they are direct academic weaknesses or indirect limitations resulting from mental disabilities, such as immaturity, distractability, or behavior problems. Vos, Tesolowski, and Hux, and Sitlington suggest that a major barrier to involvement in regular vocational education programs is the level of academic skills required for admittance and completion (33, p. 14; 3, p. 595).

Summary of Related Literature

In summary, it is a generally accepted fact that vocational training is a crucial part of the educational program for most educable mentally impaired students. Federal law and Michigan law reflect this fact.

However, the literature in this area illustrates problems inherent in providing such training to these students. It appears that most EMI students receive

vocational training in a segregated special education setting, usually in a work-study arrangement. The efficacy of these programs is questionable. Efforts to integrate EMI students into regular vocational education have been less than totally successful, according to research in this area. However, there is a question as to whether published literature accurately reflects the current status of this movement toward integrating EMI students into regular vocational education programs, since the trend is relatively new and is an on-going process. Various methods are being used to accomplish this goal.

Students may not only be impeded in their access to vocational training by their handicap, but also by their gender. Research shows that vocational choice and consequently, vocational training selection, generally remain sexually stereotyped in this country. Both the Federal government and the State of Michigan encourage efforts toward reducing this limitation in vocational training choices.

In reviewing the literature in this area as it relates to the EMI student population, it can be seen that male and female EMI students are generally represented in equal numbers in vocational training programs. However, various researchers point out that qualitative differences exist between the male and female EMI enrollment patterns,

with a large number of females enrolled in consumer-oriented home economics programs.

In order to understand the sources of these enrollment patterns, research in decision-making by EMI students was included in this review. No conclusions can be made as to whether this process does or should result in significant differences between vocational choices for EMI students as compared to non-handicapped students. Some researchers suggest that differences in enrollment patterns may result from characteristics of the vocational programs themselves, specifically, academic and other requirements inherent in the programs, as well as deficits of the EMI students.

Review of the related literature in the area of vocational programming for EMI students reveals that some questions remain insufficiently answered, both on the national level and also in the state of Michigan:

- (1) What level of integration into regular vocational education is currently seen in the EMI student population?
- (2) What types of regular vocational education programs are being utilized by EMI students?
- (3) Are there differences in these enrollment patterns between male and female EMI students?
- (4) If there are differences in enrollment by rate or by type, what factors may affect these differences?

RESEARCH METHODOLOGY

This study was designed to be descriptive in nature. The intent was to collect factual information about a current condition and to evaluate that condition. The general situation under investigation was the involvement of educable mentally impaired students by gender in regular vocational education training programs. Two samples of students were used for this study: a sample of secondary-level educable mentally impaired students and a sample of non-handicapped vocational education students. These samples were taken from public high school enrollment in April and May, 1984, from school districts in the mid-Michigan area.

Data were collected on 141 EMI students participating in a regular high school program. The sample of 189 non-handicapped students was taken from the total vocational education population in the selected school districts. Data were collected from documents obtained from the school districts in the selected area. All EMI students for whom information was available were included in the EMI sample. The non-handicapped vocational education student sample was selected randomly from the

total enrollment in vocational education programs in the school districts in the sample area.

Information necessary to investigate Question 2 was obtained from two sources. The first was school district documents, published materials, reporting instruments, and instructional materials gathered from vocational education programs in the school districts in the sample area. The second was personal interviews conducted with school personnel who were involved in the vocational training of educable mentally impaired students.

Sample Area

All information necessary to this study was obtained from public school districts in the mid-Michigan area. Districts were chosen using two criteria:

(1) proximity to Lansing, Michigan, and (2) balance between large and small districts, and urban and rural districts. The desired size of the EMI sample was one hundred. Districts were added to the sample until this goal was met. The samples were obtained from the following school districts:

Clinton Intermediate School District

--Five small rural districts and one mid-sized small-town district

--Fowler, Ovid-Elsie, DeWitt, Bath, Pewamo-Westphalia, St. Johns

Ingham Intermediate School District

--One large urban district-Lansing

--Five small rural districts and five mid-sized suburban or small-town districts

--Williamston, Webberville, Haslett, Leslie, Stockbridge, East Lansing, Holt, Waverly, Mason, and Okemos

	<u>Total Enrolled High School EMI Students</u>	<u>Total Enrolled Vocational Education Students</u>	<u>Total School Population</u>
Clinton ISD	22	194	9,126
Ingham ISD			
-Lansing	79	737	26,070
-Other districts	40	1,033	24,339
Total	141	1,964	

Lansing School District, although a constituent district of Ingham Intermediate School District, operates independently in the area of vocational education and has its own vocational-technical center. Clinton Intermediate School District, and the other constituent districts of Ingham ISD are comprised of suburban, small-town, and rural areas. The students in these districts are provided vocational education mainly by the Intermediate School districts through vocational centers. A map of the geographical area from which the sample was drawn is found in Appendix B-3, p. 151.

Subjects
Educable Mentally Impaired

The educable mentally impaired student sample was comprised of the total number of EMI students receiving education at the secondary level in the high schools in the sample districts, for whom information was available at the time of the study, April and May, 1984. The total size of the EMI sample obtained was 141. The profile of this sample was found to be as follows:

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Grade 9	9	12	21
Grade 10	14	17	31
Grade 11	22	16	38
Grade 12	31	20	51
Total	76	65	141

Subjects
Non-Handicapped Vocational Students

The non-handicapped vocational education student sample was obtained from the same school districts. The sample of 189 non-handicapped vocational students was derived from the total vocational education population (1,964 students) by choosing every tenth student from the student lists from the vocational programs in the sample districts.

The profile of this sample was found to be as follows:

Male	110
Female	79
Total	189

Although these students' grade levels were not obtained as part of the data collection, they were all enrolled in public high schools and were classified as grades 9-12.

Data Collection
Question 1--Educable Mentally
Impaired Sample

Data for each EMI student was recorded on the "data collection sheet" (see Appendix B-4, p. 152). Subjects were assigned a number in the order that the data was received. The "data collection sheet" was intended to be used for both the EMI student sample and the non-handicapped student sample, but it was only used for the EMI sample, since the non-handicapped vocational education student data were obtained in the form of computer print-outs and it was not necessary to transfer this information to the "data collection sheet" forms. In the Lansing School district, the information was obtained personally from the special education co-ordinators in each high school from the individual students' records, as maintained in each high school

special education office. In Ingham ISD, the information was received in the form of a computer-print-out with names deleted. In Clinton ISD, the information was received from copies of the current IEP, with names and other personally identifiable information blacked out. When necessary, telephone calls were made to individual teachers to confirm class schedules. In one local school district, which determined that parental permission was necessary before information could be imparted to the researcher, a form was distributed to students and returned. All of the forms were returned, enabling 100% of the students to be included in the sample.

In order to answer Question 1, Hypotheses 1-3, concerning EMI participation in vocational education, the following information was gathered for each EMI student in the sample:

- (1) Sex
- (2) Presence or absence of IEP vocational goal
- (3) Enrollment in segregated special education vocational training program
- (4) Enrollment in regular vocational education class or classes
- (5) Enrollment in regular vocational education training program

Since the term "vocational education" can be included in a wide array of courses and programs with very different goals and potential occupational outcomes, it was crucial to this study that a differentiation be made between vocational classes and vocational training

programs. The former is defined as introductory-level classes and include home-making and consumer education classes. None of these classes is intended to prepare a student with a marketable skill, without further training. The latter, however, have a direct relation to paid employment, since they are intended to prepare a student for entry-level employment or for post-secondary training. These vocational training programs are defined as upper-level, laboratory-type courses of extended duration.

As researchers in the past have pointed out, it is important to make a distinction between these two types of vocational education courses in order to measure accurately the actual vocational preparation of any group under investigation. Measurement of the rates of participation of both male and female EMI students in regular vocational education in this study is intended to reflect the actual position of these groups in terms of preparation for paid employment.

Data Collection
Question 1--Non-Handicapped Sample

The sample of 189 non-handicapped vocational education students was taken from computer lists of total current (April-May, 1984) student enrollment in the three vocational centers in the sample districts. These computer lists provided the sex of the student and the name of the

vocational education program in which the student was enrolled. At one vocational center, the list was alphabetized by student name. Names were deleted by having the left side of the print-out cut off. In the other two districts, the lists were arranged by program and by gender with names also deleted.

The final sample of 189 non-handicapped vocational education students was derived from the total population of 1,964 students by choosing every tenth student from the student lists. It was determined that including every tenth student from these lists would result in a random sample of approximately the same size as the EMI sample. The two samples were not matched for grade level or gender, since the total enrollment patterns were of interest. All students in both samples were, however, enrolled in public high schools and classified as grades 9-12.

In order to compare EMI participation in vocational training to that of non-handicapped student participation, Question 1, Hypotheses 4-5, the following data were gathered on each non-handicapped vocational education student in the sample:

- (1) Sex
- (2) Enrollment in regular vocational education training program by type

Data Collection
Question 2

The data necessary for investigation of Question 2, concerning factors which may affect the rate and types of participation in regular vocational training programs by male and female EMI students, are descriptive. Data were collected to analyze the nature of the vocational training programs offered in the school districts from which the student samples were drawn. These data included the following:

- (1) Published statements by school districts and by the vocational-technical centers utilized by the students in the samples
- (2) Pamphlets and other literature distributed to the public and students by these vocational-technical centers
- (3) Samples of textbooks and other instructional materials used in the vocational training programs in the districts
- (4) Measures of readability of the printed instructional materials
- (5) Samples of reporting instruments used to measure and communicate progress of the students in the vocational training programs

Since the researcher determined that written materials did not always communicate a complete picture of the requirements, pre-requisite skills, and behaviors necessary for success in a vocational education training program, interviews conducted with school personnel involved in the decision-making process through which EMI

students choose a vocational program. These interviews were conducted in an effort to gain a more complete understanding of the process of helping the EMI student choose a vocational training program. In this way, it was hoped that questions could be identified for future research into the process of integrating EMI students into regular vocational education programs. These interviews were not meant to provide conclusive information, but were only meant to supplement the investigation of the factors which might be influential in determining the specific kind of vocational training a particular EMI student might choose. Since it is recognized that these factors may go beyond the limits of impersonal, quantifiable information such as that listed on the previous page, it was thought that these interviews might identify other personal factors which need to be considered when discussing the decision-making process for EMI students making vocational training plans.

Interviews were conducted with eleven persons, chosen from the school districts in the sample:

- Clinton ISD (total-4)
- High School special education teacher/consultant
- High School special education teacher
- High School guidance counselor
- Vocational center director

Lansing School district (total-5)

- High School special education co-ordinators (2)
- High School special education counselor
- High School special needs vocational counselor
- Vocational-technical center placement director

Ingham IDS (total-3)

- Vocational-technical center vocational evaluator
- Vocational-technical center special education counselor
- Vocational-technical center principal

This selection was not meant to be inclusive or comprehensive. It was meant to be representative of the professionals involved with EMI students in their vocational decision-making process. Interviewees were selected to be broadly representative of this group of professionals, both in terms of role and in terms of geographical area.

Interviews were conducted in person. The interview form can be found in Appendix B-5, p. 153. Information and opinions in other areas beside the actual interview questions were also recorded. This was an informal interview process, since it was meant only to supplement other information available, in order to help isolate any factors which might influence the vocational decision-making process for EMI students.

RESEARCH RESULTS

Question 1

The first question investigated in this study was:
Is the participation in regular vocational education by
educable mentally impaired students differential by gender?
In order to explore this question in depth, the following
null hypotheses were presented for investigation:

1. The percentage of male EMI students having
formal vocational training plans (either in regular or
special education programs) is equal to that of female
EMI students with formal vocational training plans.

1a. The percentage of male EMI students with
a vocational goal on their Individual Educational Plan is
equal to the percentage of female EMI students with such
a goal.

1b. The percentage of male EMI students with
a vocational IEP goal who are actually involved in
vocational training is equal to the percentage of female
EMI students with a vocational IEP goal who are actually
involved in vocational training.

2. The percentage of male EMI students enrolled
in regular vocational programs is equal to the percentage
of female students enrolled in such programs.

2a. The percentage of male EMI students enrolled in regular vocational classes equals the percentage of female EMI students so enrolled.

2b. The percentage of male EMI students enrolled in regular vocational training programs equals the percentage of female EMI students so enrolled.

3. The types of regular vocational training programs chosen by male EMI students do not differ from those types chosen by female EMI students.

4. The types of regular vocational training programs chosen by female EMI students do not differ significantly from those chosen by non-handicapped female students.

5. The types of regular vocational training programs chosen by male EMI students do not differ significantly from those chosen by non-handicapped male students.

Data collected to test these hypotheses were analyzed using the chi-square procedure, using the observed frequencies in each cell and the column and row totals. Percentages were included in the Tables to make informal comparison easy for the reader.

Chi-square analysis was chosen as the appropriate method, since the compiled information was in the form of frequency data. Chi-square enabled a determination of

whether the observed frequencies from the sample deviated significantly from the expected population frequencies. In this situation, it would be expected that frequencies for males and females would be of equal proportions, since, theoretically, gender would be expected to be independent of vocational education enrollment. Chi-square analysis indicates the level of significant deviation from these expected equal proportions which may exist. The level of significance chosen for this study was 0.05.

Hypothesis 1a

The percentage of male EMI students with a vocational goal on their Individual Educational Plan is equal to the percentage of female EMI students with such a goal.

Table 1 shows numbers and percentages of EMI students in the sample who had a vocational goal on their

TABLE 1 (Hypothesis 1a).--Number and Percentage of EMI Students by Sex With and Without IEP Vocational Goals.

	<u>Number</u>		<u>Row</u> Total	<u>% by Column</u>			<u>% by Row</u>		
	M	F		M	F	Total	M	F	Total
EMI students with vocational IEP goal	50	39	89	66%	60%	63%	56%	44%	100%
EMI students without vocational IEP goal	26	26	52	34%	40%	37%	50%	50%	100%
Column total	76	65	141	100%	100%	100%			
Total sample	Male = 54%			Female = 46%			Chi-square = .504		

IEP, both males and females. There is no significant difference between numbers of male and female with a vocational IEP goal. The Chi-square value (.504) is not significant at the 0.05 level. Null hypothesis 1a cannot be rejected, and it may be assumed that there was no significant difference in the numbers of male and female EMI students with vocational IEP goals.

The data were further divided by grade levels as shown in Tables 1a and 1b. These subsets were not independent samples. The obtained Chi-square values of .234 and .025 were not significant at the 0.05 level. This further justifies failure to reject Hypothesis 1a.

TABLE 1a (Hypothesis 1a).--Number and Percentage of Ninth and Tenth Grade EMI Students by Sex With Vocational IEP Goal.

	<u>Number</u>		<u>Row Total</u>	<u>% by Column</u>			<u>% by Row</u>		
	M	F		M	F	Total	M	F	Total
EMI students with vocational IEP goal	5	8	13	22%	28%	25%	38%	62%	100%
EMI students without vocational IEP goal	18	21	39	78%	72%	75%	46%	54%	100%
Column total	23	29	52	100%	100%	100%			
Total sample	Male = 60%			Female = 40%			Chi-square = .025		

TABLE 1b (Hypothesis 1a).--Number and Percentage of Eleventh and Twelfth Grade EMI Students by Sex With Vocational IEP Goal.

	<u>Number</u>		<u>Row</u> Total	<u>% by Column</u>			<u>% by Row</u>		
	M	F		M	F	Total	M	F	Total
EMI students with vocational IEP goal	45	31	76	85%	86%	85%	59%	41%	100%
EMI students without vocational IEP goal	8	5	13	15%	14%	15%	62%	38%	100%
Column total	53	36	89	100%	100%	100%			
Total sample	Male = 60%		Female = 40%		Chi-square = .025				

Hypothesis 1a compares the number of male and female EMI students whom the IEPC has determined to be ready for vocational training with the number of male and female EMI students who may not be ready for such programs. This also enables a sub-sample to be formulated composed of those students for whom vocational training is appropriate, without contamination by students for whom training was not appropriate or desirable at this time.

There are two reasons that some EMI students do not have vocational goals in their Individual Educational Plan. First, some EMI students are enrolled in high school under a regular course of study, which does not require vocational training. Because of academic weaknesses,

few EMI students are enrolled in a regular course of study.

The second reason that some EMI students do not have vocational goals on their IEP's is that they are not ready to participate in a vocational training program, but they may be involved in personal adjustment or pre-vocational training. Many school districts restrict vocational training to eleventh and twelfth grade. Both of these reasons help to explain why not all EMI students were enrolled in vocational training. By showing the number of EMI students who have vocational training goals on their IEP's, it was possible to separate out those students who should be involved in vocational training programs from those for whom such enrollment was not feasible or appropriate at the time these data were collected. This separation also helped to divide the issue of choosing to participate in a vocational program, from that of obtaining access to a vocational program.

It can be noted that there seemed to be a distinct difference in the number of EMI students with a vocational goal according to grade level (Tables 1a and 1b). While only 25% of ninth and tenth grade EMI students had vocational training goals, 85% of eleventh and twelfth grade EMI students had such a goal. This was a substantial difference. It reflects the typical pattern of programming

in vocational education, whereby vocational programs are usually restricted to the final year or two of a high school program. In a regular high school course of study, the ninth and tenth graders are usually enrolled in required academic classes and introductory vocational classes. EMI students, under a special education course of study, usually spend their ninth and tenth grade years progressing through the personal adjustment and pre-vocational programs. Therefore, it was expected that vocational training goals would be found more often on the IEP's of older students.

Hypothesis 1b

The percentage of male EMI students with a vocational IEP goal who are actually involved in vocational training is equal to the percentage of female EMI students with a vocational IEP goal enrolled in such programs.

Table 2 illustrates the numbers and percentages of male and female EMI students who had a vocational IEP goal and who were actually enrolled in vocational training. Since 98% of males and 100% of females with plans for vocational training are so enrolled, it can be seen that IEP goals were being carried out in the students' actual educational programs. Chi-square procedures cannot be performed on data which are arranged in frequencies such as are found here. In order to perform a meaningful

TABLE 2 (Hypothesis 1b).--Number and Percentage of EMI Students by Sex With a Vocational IEP Goal Enrolled in Vocational Program.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Vocational program enrollees	49	38	87	98%	100%	99%	56%	44%	100%
Vocational program non-enrollees	1	0	1	2%	0%	1%	100%	0%	100%
Column total	50	38	88	100%	100%	100%	57%	43%	100%
Total sample	Male = 57%			Female = 43%					

chi-square procedure, most of the cells must have a theoretical frequency of five (5) or more. The precise proportion of cells with frequency less than five (5) differs according to the particular statistical reference used, but in general, no cell in a two by two cell data table should have a theoretical frequency less than five (5) (34, p. 177). Comparison of the percentages in Table 2 leads to the conclusion that there is no meaningful difference between the percentages of male and female students with an IEP vocational goal who are enrolled in vocational programs. There is no evidence to support rejection of this null hypothesis.

Data in Table 3, although not actually a part of Hypothesis 1, illustrate the small number of students

who were enrolled in vocational training, but did not have recorded vocational training IEP goals. Out of 53 EMI students without a vocational training goal, eight (15%)

TABLE 3.--Number and Percentage of EMI Students by Sex Without an IEP Goal Enrolled in Vocational Program.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Vocational enrollees	5	3	8	19%	11%	15%	63%	37%	100%
Vocational non-enrollees	21	24	45	81%	89%	85%	47%	53%	100%
Column total	26	27	53	100%	100%	100%			
Total sample	Male = 49%		Female = 51%		Chi-square = .681				

nonetheless were enrolled in a vocational training program. There was no significant difference between the genders, with a chi-square value of .681, which was not significant at the 0.05 level. However, it is interesting to note that the IEP system seemed to have broken down in these cases. It would seem that such a major part of a student's educational program as vocational training would need to be included in the IEP in order for it to be effective as a legal plan and agreement.

Hypothesis 2

The percentage of male EMI students enrolled in regular vocational programs is equal to the percentage of female students enrolled in such programs.

Hypothesis 2 compared the rate of participation of male and female EMI students in regular vocational education programs, as distinct from segregated special education vocational training, including both introductory level classes and advanced training programs.

Hypothesis 2a

The percentage of male EMI students enrolled in regular vocational education classes is equal to the percentage of female EMI students so enrolled.

Table 4 shows the number of male and female EMI students enrolled in regular vocational education classes.

TABLE 4 (Hypothesis 2a).--Number and Percentage of EMI Students by Sex Enrolled in Regular Vocational Classes.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Regular class enrollees	6	7	13	8%	11%	9%	46%	54%	100%
Regular class non-enrollees	70	58	128	92%	89%	91%	55%	45%	100%
Column total	76	65	141	100%	100%	100%			
Total sample	Male = 54%			Female = 46%			Chi-square = .346		

Table 4 shows that 8% of male EMI students and 11% of female EMI students were enrolled in regular vocational classes. These classes are defined as introductory, basic classes in areas such as typing, home economics, carpentry, and distributive education. There was no significant difference found in these percentages. The obtained Chi-square value was .346. At the 0.05 probability level, the critical value with one degree of freedom is 3.841. It is therefore assumed that there is no statistical difference in male and female enrollment in these regular vocational education classes.

Hypothesis 2b

The percentage of male EMI students enrolled in regular vocational training programs equals the percentage of female EMI students so enrolled.

The second part of Hypothesis 2 refers to the percentage of male and female EMI students enrolled in regular vocational education training programs (integrated with non-handicapped students). These programs are defined as upper-level, laboratory-type programs of extended duration meant to prepare a student for employment status. Table 5 shows the male and female EMI enrollment in such regular vocational training programs. Of the 65 EMI students enrolled in regular vocational training programs, 47% of the males and 45% of the females were so enrolled.

TABLE 5 (Hypothesis 2b).--Number and Percentage of Total Sample of EMI Students by Sex Enrolled in Regular Vocational Training Programs.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Regular vocational enrollees	36	29	65	47%	45%	46%	55%	45%	100%
Regular vocational non-enrollees	40	36	76	53%	55%	54%	53%	47%	100%
Column total	76	65	141	100%	100%	100%			
Total sample	Male = 54%		Female = 46%		Chi-square = .107				

The difference by gender was not significant at the 0.05 level, with a computed Chi-square value of .107.

A sub-sample of EMI subjects (those with a vocational IEP goal) was analyzed to further investigate Hypothesis 2b. Data used in analysis of this hypothesis are shown in Table 6 and Table 7.

By comparing the enrollment of only those EMI students with a vocational IEP goal (assuming that these students have been found to be ready for vocational training), further investigation of the enrollment pattern by gender was made. This analysis of male and female EMI students showed no sex related differences in the actual regular vocational education enrollment of students with

TABLE 6 (Hypothesis 2b).--Number and Percentage of EMI Students by Sex With Vocational IEP Goal Enrolled in Regular Vocational Training.

	Number			% by Column			% by Row		
	M	F	Total	M	F	Total	M	F	Total
Regular vocational program enrollees	34	26	60	68%	68%	68%	57%	43%	100%
Regular vocational program non-enrollees	16	12	28	32%	32%	32%	57%	43%	100%
Column total	50	38	88	100%	100%	100%			
Total sample	Male = 57%			Female = 43%			Chi-square = .002		

a vocational IEP goal. When those students for whom the IEPC has determined that vocational training is inappropriate at this time were deleted from the sample, the percentages enrolled in regular vocational education training programs increased to 68%, both in total and for each gender. The Chi-square computed value of .002 is not significant at the 0.05 level. This result supports acceptance of the null hypothesis 2, since there is no significant difference between males and females, either in the total sample (Table 5), or in the sub-sample of EMI students with a vocational IEP goal (Table 6).

Continuing to examine Hypothesis 2b, a comparison was made of male and female EMI students enrolled in

vocational programs, on the basis of whether this enrollment was in a special education vocational program or in a regular vocational education training program.

Table 7 shows the number of EMI students by gender enrolled in either regular education or special education vocational training programs.

TABLE 7 (Hypothesis 2b).--Number and Percentage of EMI Students by Sex Enrolled in Regular and Special Education Vocational Programs.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Regular vocational program enrollees	36	29	65	65%	69%	67%	55%	45%	100%
Special education vocational enrollees	19	13	32	35%	31%	33%	59%	41%	100%
Column total	55	42	97	100%	100%	100%			
Total sample	Male = 57%			Female = 43%			Chi-square = .139		

Of 97 EMI students enrolled in some kind of vocational training program, 36 (65%) of the males and 29 (69%) of the females were enrolled in regular vocational education training programs, participating with general education students (Table 7). These figures do not reflect a significant difference, with an obtained Chi-square value of .139. This is not significant at the 0.05 probability

level. Additionally, the figures show that two-thirds of the EMI students involved in vocational training were enrolled in regular education programs. This level of integration is unexpected, based on past research, and will be discussed in a subsequent chapter.

Further analysis of these data shows that enrollment by eleventh and twelfth grade EMI students was also not significantly differential between males and females (Table 7a). Sixty-nine percent of males and 74% of females

TABLE 7a (Hypothesis 2b).--Number and Percentages of Eleventh and Twelfth Grade EMI Students by Sex Enrolled in Regular and Special Education Vocational Training Programs.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Regular vocational program enrollees	33	25	58	69%	74%	71%	57%	43%	100%
Special education vocational program enrollees	15	9	24	31%	26%	29%	63%	37%	100%
Column total	48	34	82	100%	100%	100%			
Total sample	Male = 59%			Female = 41%			Chi-square = .220		

in these grades were enrolled in regular vocational training programs. The difference between male and female enrollment was not significant at the

0.05 level, with a computed Chi-square value of .220.

Looking at the same information in another way, Table 8 shows that 25% of male EMI students and 20% of female EMI students were participating in segregated special education vocational training programs. This reaffirms the conclusion, based on Table 7, that an

TABLE 8 (Hypothesis 2b).--Number and Percentage of EMI Students by Sex Enrolled in Special Education Vocational Programs.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Special education vocational enrollees	19	13	32	25%	20%	23%	60%	40%	100%
Special education vocational non-enrollees	57	52	109	75%	80%	77%	52%	48%	100%
Column total	76	65	141	100%	100%	100%			
Total sample	Male = 54%			Female = 46%			Chi-square = .550		

unexpectedly high proportion of EMI students were enrolled in regular vocational training programs. Although there was a difference in enrollment of males and females, it was not statistically significant, at the 0.05 level, with an obtained Chi-square value of .550. Overall, there was

no evidence to suggest that participation rates in regular vocational education training programs by EMI students was differential by gender.

In order to ascertain whether the lack of differences between male and female EMI enrollment in regular vocational training programs in this study was a result of the aggregation of data, comparisons were made among the three major areas in the sample. Separating the data by district would reveal sex differences in a single district, if they did exist, which might be hidden by the aggregation of data from all three districts. The first comparison (Table 9a) concerned the proportions of EMI students (involved in vocational training) that were enrolled in regular vocational training or special education vocational training. Although there were differences in the percentages of EMI enrollment in regular vocational education training programs among the districts, these differences were not statistically significant at the 0.05 probability level.

A comparison of the proportions of each gender of EMI students enrolled in regular vocational education training programs among the districts is shown in Table 9b. Although this comparison showed certain numerical differences in the proportions of male and female EMI students enrolled in regular vocational education training

TABLE 9a.--Number and Percentage of EMI Students Enrolled in Regular or Special Education Vocational Programs by District.

	Number		% by Row		
	Regular	Special Education	Total	Regular	Special Education
Clinton ISD	10	9	19	53%	47%
Lansing	27	9	36	75%	25%
Column total	37	18	55		
Chi-square = 2.83					
Clinton ISD	10	9	19	53%	47%
Ingham ISD (excluding Lansing)	28	14	42	67%	33%
Column total	38	23	61		
Chi-square = 1.10					
Lansing	27	9	36	75%	25%
Ingham ISD (excluding Lansing)	28	14	42	67%	33%
Column total	55	23	78		
Chi-square = .647					

TABLE 9b.--Number and Percentage of EMI Students Enrolled in Regular Vocational Training by Gender and by District.

	Number		Total	% by Row		Total
	Male	Female		Male	Female	
Clinton ISD	4	6	10	40%	60%	100%
Lansing	16	11	27	59%	41%	100%
Column total	20	17	37			
Chi-square = 1.09						
Clinton ISD	4	6	10	40%	60%	100%
Ingham ISD (excluding Lansing)	16	12	28	57%	43%	100%
Column total	20	18	38			
Chi-square = .869						
Lansing	16	11	27	59%	41%	100%
Ingham ISD (excluding Lansing)	16	12	28	57%	43%	100%
Column total	32	23	55			
Chi-square = .025						

programs among the districts, these differences were not significant at the 0.05 probability level. These findings (Tables 9a and 9b) indicate that (1) the high proportion of EMI students enrolled in regular vocational training programs found in the total sample was also found in each district from which the total sample was obtained, and (2) the lack of difference in enrollment by gender of EMI students in regular vocational training programs found in the total sample was also found in each district from which the total sample was obtained.

Hypothesis 3

The types of regular vocational training programs chosen by male EMI students do not differ from those types chosen by female EMI students.

Null Hypothesis 3 states that the types of regular vocational training programs chosen by male EMI students do not differ from the types chosen by female EMI students. Table 10 shows that EMI students were enrolled in eleven types of vocational education programs: food, physical plant maintenance, custodial, child care, business service, auto mechanics, auto body, heating and air conditioning, small engines, welding, and hospital service, in descending order of size of EMI enrollment.

Out of a total of 65 EMI students enrolled in regular vocational training programs, 26 were found in

TABLE 10 (Hypothesis 3).--Enrollment of EMI Students by Sex and Type of Regular Vocational Training Program.

Program	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Food service	10	16	26	28%	55.2%	40%	38%	62%	100%
Physical plant	10	3	13	28%	10.3%	20%	77%	23%	100%
Custodial	7	0	7	19.4%	0%	10.8%	100%	0%	100%
Child care	0	7	7	0%	24.2%	10.8%	0%	100%	100%
Business srv.	1	2	3	2.7%	6.9%	4.6%	33%	77%	100%
Auto mechanic	2	0	2	5.5%	0%	3.1%	100%	0%	100%
Auto body	2	0	2	5.5%	0%	3.1%	100%	0%	100%
Heating & A/C	2	0	2	5.5%	0%	3.1%	100%	0%	100%
Welding	1	0	1	2.7%	0%	1.5%	100%	0%	100%
Sm. Eng. Mech.	1	0	1	2.7%	0%	1.5%	100%	0%	100%
Hospital	0	1	1	0%	2.7%	1.5%	0%	100%	100%
Column total	36	29	65	100%	100%	100%			

Food Service and 20 were found in Custodial Service or Physical Plant Maintenance. Clearly, the majority (70.8%) were represented in these two areas.

By gender, enrollment in Foods programs was 38.5% male and 61.5% female. Enrollment in Custodial/Maintenance programs was 85% male and 15% female. In the program with the third highest EMI enrollment, Child Care, all the EMI students were female.

In order to perform a meaningful Chi-square analysis on the enrollment by type of EMI students in

regular vocational training programs, it was necessary to group the programs together by occupational cluster (Table 10a). These clusters were derived from those used by Atkinson (25, p. 20).

TABLE 10a (Hypothesis 3).--Enrollment of EMI Students in Regular Vocational Programs by Sex and Occupational Cluster.

	<u>Number</u>			<u>% by Column</u>			<u>% by Row</u>		
	M	F	Total	M	F	Total	M	F	Total
Health/home economics	27	27	54	75%	93%	83%	50%	50%	100%
Office	1	2	3	3%	7%	5%	33%	67%	100%
Industry	8	0	8	22%	0%	12%	100%	0%	100%
Column total	36	29	65	100%	100%	100%			

Chi-square = 7.85

The clear majority of all EMI students (83%) were enrolled in the Health and Home Economics-related areas, especially the females (93%). While 22% of the males were enrolled in the Trade and Industry areas, no females were so enrolled. The computed Chi-square value is 7.85, which is significant at the 0.02 level, indicating a significant difference in enrollment patterns between males and females. Clearly, Null Hypothesis 3 cannot be retained.

Tables 11 and 11a show the enrollment of EMI and non-handicapped students in regular vocational education training programs by occupational clusters both in total and by gender. While these comparisons are not a part of any hypothesis, they do provide a basis for the comparisons by gender which follow in Hypotheses 4 and 5.

It can be seen that EMI students as a group, enroll in regular vocational training programs in a very different frequency pattern than non-handicapped students. While the non-handicapped students enroll in a fairly even pattern, from 11% to 23% in any one area, the EMI students were concentrated in one area, Home Economics-related occupations (81.5%), with the remaining small number spread between the areas of Health, Office and Business, Auto, and Industry. Chi-square analysis of the enrollment pattern shows a significant difference between the two samples, with a computed Chi-square value of 98.310. This is significant at the 0.001 probability level.

Table 11a shows the enrollment pattern of non-handicapped students by occupational cluster and by gender. There were significant sex differences in the vocational education enrollment patterns for non-handicapped students (0.05 probability level), just as there were significant sex differences in the enrollment patterns of EMI students, as shown in Table 10a. These

TABLE 11a.--Enrollment of Non-handicapped Students in Regular Vocational Training Programs
by Sex and Occupational Cluster.

	Number		% by Column			% by Row		
	M	F	Total	M	F	Total	M	F
Health/ home economics	16	34	50	14.5%	43%	26.5%	32%	68%
Office/business	12	29	41	11%	36.7%	21.7%	29%	71%
Trade/industry	82	16	98	74.5%	20.3%	51.8%	83.7%	16.3%
Column total	110	79	189	100%	100%	100%		
Total sample	Male = 58.2%		Female = 41.8%		Chi-square = 54.522			

sex differences were anticipated, and probably result from vocational sex stereotyped choice.

Hypothesis 4

The types of regular vocational training programs chosen by female EMI students do not differ significantly from those chosen by non-handicapped female students.

Hypothesis 4 compares female EMI and non-handicapped student enrollment in regular vocational training programs. Table 12 lists all programs with female enrollment, including EMI and non-handicapped students. The low frequencies in some of the categories made it inappropriate to analyze the information with the Chi-square procedure (34, p. 177).

In order to facilitate statistical interpretation, vocational programs from the various school districts were grouped together by occupational cluster. This resulted in six categories, which included all the vocational programs offered in the districts from which the samples were drawn, as shown in Table 12a.

Comparison of non-handicapped and EMI female enrollment by occupational cluster showed EMI students in five of the six categories. Chi-square analysis of the differences in the enrollment pattern results in a computed value of 47.30, which is significant at the 0.001 level. It is obvious that there is a significant

TABLE 12 (Hypothesis 4).--Enrollment of Female EMI and Non-handicapped Students by
Type of Regular Vocational Program.

	Number		% by Column			% by Row			
	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total
Health	20	1	21	25.3%	3.4%	19.4%	95.2%	4.8%	100%
Home economics/ foods	7	16	23	8.8%	55.2%	21.3%	30%	70%	100%
Child care	6	7	13	8%	24.1%	12%	46%	54%	100%
Custodial/ Maintenance	1	3	4	1.3%	10.3%	3.7%	25%	75%	100%
Office/business	29	2	31	37%	7%	28.7%	93.5%	6.5%	100%
Industry	1	0	1	1.3%	0%	1%	100%	0%	100%
Auto	1	0	1	1.3%	0%	1%	100%	0%	100%
Trade:									
Cosmetology	9	0	9	11%	0%	8.3%	100%	0%	100%
Draft/art	5	0	5	6%	0%	4.6%	100%	0%	100%
Column total	79	29	108	100%	100%	100%			

TABLE 12a (Hypothesis 4).--Enrollment of Non-handicapped and EMI Female Students in Regular Vocational Training Programs by Occupational Cluster.

	Number		% by Column			% by Row		
	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total	Non-handicapped	EMI
Health	20	1	21	25%	3%	19%	95%	5%
Home economics related	14	26	40	18%	90%	37%	35%	65%
Office	29	2	31	37%	7%	29%	94%	6%
Trade/industry	16	0	16	20%	0%	15%	100%	0%
Column total	79	29	108	100%	100%	100%		
Chi-square = 47.30								

difference in female enrollment by type of regular vocational program between EMI and non-handicapped students (Table 12a). Rejection of the Null Hypothesis 4 is indicated by this information.

Hypothesis 5

The types of regular vocational training programs chosen by male EMI students do not differ significantly from those chosen by non-handicapped male students.

Table 13 shows the enrollment of EMI and non-handicapped males in regular vocational training programs.

Non-handicapped male students were represented in eight types of vocational training programs. Of the 110 male non-handicapped students in the sample, 67% were found in two programs: Auto and Industry. Twenty-two percent of male EMI students were enrolled in these areas. Seventy-five percent of male EMI students were found in Custodial/maintenance and Foods programs. Only 13% of non-handicapped males were enrolled in these areas.

Statistical comparison of the enrollment rate of EMI and non-handicapped male students by vocational program was not possible because of the low frequencies in many of the categories. Therefore, the list of vocational programs was grouped by occupational clusters in order to facilitate statistical analysis. Table 13a shows the

TABLE 13 (Hypothesis 5).--Enrollment of Male EMI and Non-handicapped Students by Type of Regular Vocational Training Program.

Number		% by Column			% by Row				
	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total
Health	1	0	1	1%	0%	.7%	100%	0%	100%
Home economics:									
Custodial	9	17	26	8%	47%	17.8%	35%	65%	100%
Foods	6	10	16	5%	28%	11%	37.5%	62.5%	100%
Office/business	12	1	13	11%	3%	8.9%	92%	8%	100%
Industry	42	4	46	38%	11%	31.5%	91%	9%	100%
Auto	25	4	29	23%	11%	19.9%	86%	14%	100%
Trade/tech.:									
Cosmetology	2	0	2	2%	0%	1.3%	100%	0%	100%
Draft/art	13	0	13	12%	0%	8.9%	100%	0%	100%
Column total	110	36	146	100%	100%	100%			

TABLE 13a (Hypothesis 5).--Enrollment of Non-handicapped and EMI Male Students in Regular Vocational Training Programs by Occupational Cluster.

	Number		% by Column			% by Row			
	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total	Non-handicapped	EMI	Total
Health/home economics	16	27	43	14%	75%	29%	37%	63%	100%
Office/business	12	1	13	11%	3%	9%	92%	8%	100%
Auto	25	4	29	23%	11%	20%	86%	14%	100%
Industry	42	4	46	38%	11%	32%	91%	9%	100%
Trade/tech.	15	0	15	14%	0%	10%	100%	0%	100%
Column total	110	36	146	100%	100%	100%			

Chi-square = 48.73

enrollment pattern of non-handicapped and EMI male students by occupational clusters.

Chi-square analysis of the differences in enrollment rates between male EMI and non-handicapped students for all occupational clusters shows that there was a significant difference in enrollment between non-handicapped and EMI male students. The computed Chi-square value was 48.73, which is significant at the 0.001 level.

There were no male EMI students in the area of Trade/technical, which included programs such as drafting, graphics, and commercial art. There was only one male EMI student in the category of Office/business, while 11% of the non-handicapped students were enrolled in these programs. Although 61% of the non-handicapped males were enrolled in auto and industrial areas, only 22% of the male EMI students were found in these areas. In those areas with heavy male EMI enrollment (75%), Health and Home economic-related occupations, only 14% of the non-handicapped male students were enrolled. It is clear that there was a significant difference in the types of programs utilized by non-handicapped and EMI male students. Null Hypothesis 5 also cannot be retained.

Summary of Data Tables

Table	Hypothesis	Chi-square	Decision
1	Number and Percent of EMI Students by Sex With and Without IEP Vocational Goals	1a .504	Retain null hypothesis
1a	Number and Percentage of Ninth and Tenth Grade EMI Students by Sex With Vocational IEP Goal	1a .234	
1b	Number and Percentage of Eleventh and Twelfth Grade EMI Students by Sex With Vocational IEP Goal	1a .025	
2	Number and Percent of EMI Students by Sex With a Vocational IEP Goal Enrolled in Vocational Program	1b	
3	Number and Percentage of EMI Students by Sex Without IEP Goal Enrolled in Vocational Program	.681	
4	Number and Percentage of EMI Students by Sex Enrolled in Regular Vocational Classes	2a .346	Retain null hypothesis
5	Number and Percentage of Total Sample of EMI Students by Sex Enrolled in Regular Vocational Training	2b .107	Retain null hypothesis
6	Number and Percentage of EMI Students by Sex With Vocational IEP Goal Enrolled in Regular Vocational Training	2b .002	Retain null hypothesis

Table	Hypothesis	Chi-square	Decision
7	Number and Percentage of EMI Students by Sex Enrolled in Regular and Special Education Vocational Program	2b .139	
7a	Number and Percentage of Eleventh and Twelfth Grade EMI Students by Sex Enrolled in Regular and Special Education Voca- tional Training Programs	2b .220	
8	Number and Percentage of EMI Students by Sex Enrolled in Special Education Vocational Programs	2b .550	
9a	Number and Percentage of EMI Students Enrolled in Regular or Special Education Vocational Programs by District	2.83 1.10 .647	
9b	Number and Percentage of EMI Students Enrolled in Regular Vocational Training by Gender and by District	1.09 .869 .025	
10	Enrollment of EMI Students by Sex and Type of Regular Vocational Training Program	3	
10a	Enrollment of EMI Students in Regular Vocational Programs by Sex and Occupational Cluster	3 7.85	Reject null hypothesis
11	Enrollment of EMI and Non-handicapped Students in Regular Vocational Programs by Occupational Clusters	98.310	

Table	Hypothesis	Chi-square	Decision
11a	Enrollment of Non-handicapped Students by Sex and Occupational Cluster	54.522	
12	Enrollment of Female EMI and Non-handicapped Students by Type of Regular Vocational Program	4	
12a	Enrollment of Non-handicapped and EMI Female Students in Regular Vocational Programs by Occupational Clusters	4	47.30
			Reject null hypothesis
13	Enrollment of Male EMI and Non-handicapped Students by Type of Regular Vocational Training Program	5	
13a	Enrollment of Non-handicapped and EMI Male Students in Regular Vocational Programs by Occupational Clusters	5	48.73
			Reject null hypothesis

Investigation of Question 2

Printed Materials

Question 2 explores the nature of the regular vocational training programs in order to postulate reasons for significant differences in the enrollment patterns for non-handicapped and EMI students. As stated previously, Question 2 asks, "If such participation (type of vocational program) is differential by gender, what factors exist that alter the rates and types of participation by male and female EMI students?"

Statistical investigation in this study has shown that, although the rates of participation by male and female EMI students are not significantly different, the types of programs in which these students enroll are differential by gender. These differences were found through research on Question 1, Hypotheses 4 and 5, in which significant differences were found between the types of vocational programs utilized by EMI and non-handicapped males and between EMI and non-handicapped females (pp. 82, 85). Given the possibility of sexual stereotyping and individual choice in vocational selection, it was expected and found that such participation would be different by gender. However, there were also differences in the types of participation between EMI males and non-handicapped males and between EMI females and non-handicapped females. These

differences cannot be as readily explained without further analysis. Question 2 was formulated in anticipation of such differences.

Investigation of Question 2 was intended to identify factors in the decision-making and selection process which might cause the differences in enrollment patterns between EMI and non-handicapped students of both genders. Although this effort was a secondary purpose of this study, it was a logical extension of the main effort, which was to identify differences in vocational training between male and female EMI students. It was not intended that this secondary effort would result in any conclusive findings of causative factors which effect the differences in vocational education enrollment patterns found in Hypotheses 4 and 5. Rather, it was meant to identify aspects of the decision-making process which may influence these enrollment patterns.

These aspects may be considered to take two avenues. The first involves factors inherent in the programs themselves. These were studied by looking at the curricula, instructional materials, established goals of the programs, and pre-requisite skills required for entry. The second aspect involves the human factors inherent in both the decision-making process and in the vocational programs. This aspect was investigated through

personal interviews with the school personnel who influence the decision-making process.

Information from printed materials provides a great deal of insight into differences in vocational training programs. Since the purpose of investigating printed materials from regular vocational education programs was to attempt to identify differences between those programs utilized by EMI students and those programs not utilized by EMI students, materials from programs in both of these categories were collected. Although materials were available for all the programs offered by Capitol Area Career Center (Ingham ISD) and Harry Hill Vocational-Technical Center (Lansing School District), the administrators in each center were requested to choose a sample of programs from each category and provide materials for analysis. Such printed materials were not available from Clinton ISD. The materials provided for analysis were as follows:

Ingham ISD (pre-enrollment information)	Lansing School District (pre-enrollment information)
Custodian	Child care
Cosmetology	Food management
Auto mechanics	Physical plant service
Data processing	Accounting
Auto body	Word processing
Medical assistant	Electronics
Machine tool	
Marketing	(Progress reporting instruments)
Parts control	
Small engine mechanics	
Welding	Accounting
Accounting	Electronics
Secretarial	Word processing
Building maintenance	Data processing
Business service	Child care
Medical laboratory	Physical plant service
Drafting	Food service

This information describes the occupations that might expect to result from completing the particular vocational training program at entry level or with additional training after high school. The duties of each vocation in the career group are described, as well as some aspects of the jobs that should be considered before a student enters the program. For example, the pamphlet explaining the program with the highest EMI enrollment, Physical Plant Services, states the duties of a person engaged in this occupation and also states the recommended general abilities a student should have:

- (1) Be able to follow directions and work independently
- (2) Enjoy active physical work
- (3) Have interest in maintenance and repair
- (4) Have good physical health

The pamphlet also states the skills a student will learn and the possible employment opportunities open to a student who completes the program (Appendix C-1, pp. 154-155).

In contrast, a pamphlet advertising a program of Electronics, although having the same format, shows some differences (Appendix C-2, pp. 156-157). For instance, recommended skills before enrollment include:

- (1) Have the ability to read and comprehend technical manuals
- (2) Have ability and skills in mathematical functions and abstractions
- (3) Enjoy problem solving
- (4) Enjoy working with hands and have good physical dexterity
- (5) Enjoy working independently
- (6) Have good eyesight and good color vision

Skills that will be learned include:

- (1) Learn the use of math in solving electrical problems
- (2) Learn building of electrical circuits
- (3) Learn to make electrical measurements
- (4) Learn to apply electronic theories and concepts
- (5) Learn reading of electrical diagrams
- (6) Learn proper soldering techniques
- (7) Learn repairing of electrical/electronic equipment
- (8) Learn basic computer theory and operation

This program is clearly a more academically rigorous one.

There are no EMI students enrolled in electronics programs.

Analysis of the published pre-requisite skills required for a selection of vocational training programs is shown in Table 14. These pre-requisite skills were taken from published materials given to counselors and

TABLE 14.--Academic Requirements of Selected Regular Vocational Programs.

<u>Courses With EMI Enrollment</u>	<u>Academic Requirements</u>
Custodian	Math skills
Business services	None
Auto body	None
Food service	None
Child care	Prepare reports and keep records
Food management	Verbal, math, reading skills
Physical plant services	None
Welding	Math skills
Auto mechanics	None
<u>Courses With No EMI Enrollment</u>	
Data processing	Math, typing
Accounting	Math, typing
Secretarial	Spelling, grammar, punctuation
Building maintenance	Math skills
Drafting	Math, science, reading
Medical lab	Math, biology
Medical assistant	None
Small engines	None
Parts control	Math skills
Marketing	Math skills
Machine tool	Math skills
Electronics	Math, science, read technical manuals
Cosmetology	Must pass State Board exam
44% of courses with EMI enrollment require academic skills	
85% of courses with no EMI enrollment require academic skills	

-Academic skills are defined as those subjects or content areas which require language arts and/or mathematical skills.

-Derived from published materials from Harry Hill Vocational-Technical Center, Lansing School District and Capitol Area Career Center, Ingham ISD.

students in order to help the students decide on a particular vocational program in both Lansing and other constituent districts in Ingham ISD. Academic skills were defined for this purpose as skills requiring language arts or mathematics ability. Eighty-five percent of those programs with no EMI enrollment required one or more types of academic skills, while only 44% of the programs in which EMI students are actually enrolled require such skills. This comparison is incomplete, since the variety of skills is great and the degree of skills required is unspecified.

Skill development during the course of the vocational program is evaluated and reported in various ways. For example, Lansing school district provides a report to students listing competencies mastered, in the form of an "Occupational Training Record." Potential employers can easily evaluate the skills and work habits of the student from this report (Appendix C-3, p. 158; C-5, p. 160).

In addition to inherent differences in vocational programs which make some more suitable for EMI students than others, there are some methods which are used to adapt programs so that various types of handicapped students can succeed. For instance, some programs which use a list of competencies to report student progress may adapt their program by allowing a student to complete his training with only selected competencies completed.

Another method for adapting vocational education for special education students is to modify the instructional materials. At the Capitol Area Career Center, all of the instructional materials have been written by the staff. They attempt to keep the reading level as low as possible, especially for programs heavily populated by poor readers. The same vocational center provides staff-prepared Career Related Instruction (CRI) modules, for use in preparing students (especially special education and special needs students) for vocational training. These modules are written specifically for low-level readers and have verbatim audio tapes to accompany them (Appendix D-9, p. 171).

Other vocational programs use commercial textbooks and teacher-made supplementary materials. In these programs, the willingness and ability of the instructor to modify the commercial textbooks may help to adapt the material to the students' levels. The reading levels of these commercial texts appear to vary widely, as do the reading levels of the teacher-produced materials.

Instructional materials were collected in a similar manner to that used to collect printed materials. These materials were available from Ingham ISD and Clinton ISD only. Administrators were asked to provide a selection of materials from programs typically utilized by EMI students

and from programs typically not utilized by EMI students. Those instructional materials provided by vocational administrators are as follows:

<u>Clinton ISD</u>	<u>Ingham ISD</u>
Auto mechanics	Electronics
Cosmetology	Custodial
Health services	Medical laboratory
Food services	Food service

The Flesch Reading Ease Formula (35, pp. 176-179) was used to analyze the reading level of the textbooks and other teaching materials (shown subsequently) used in a variety of vocational training programs in this study. This method is a computational type of readability formula designed for reading material from fourth grade to college level. It compares the number of words per sentence and the number of syllables in a 100-word passage to a chart which indicates the "Reading Ease" score (35, pp. 176-179). Using this formula, a 100-word passage was chosen at random from the following instructional materials, used in Clinton ISD vocational programs. Reading levels were computed to be as follows:

	<u>Words per sentence</u>	<u>Syllables in 100 words</u>	<u>Flesch Reading Ease Score</u>
Auto Service (textbook) <u>Automotive Mechanics</u> William H. Crouse McGraw-Hill Book Co. N.Y., 1965 (Appendix D-1, p. 163)	14	164	57 (average high school text)

	<u>Words per sentence</u>	<u>Syllables in 100 words</u>	<u>Flesch Reading Ease Score</u>
Cosmetology (textbook) <u>Van Dean Manual</u> Dean Barrett MiLady Publishing Co. Bronx, N.Y. 1979 (Appendix D-2, p. 164)	14	163	55 (average high school text)
Health Services (teacher-made handout) (Appendix D-3, p. 165)	19	179	44 (academic- college text)
Food Service (teacher-made handout) (Appendix D-4, p. 166)	13	154	64 (standard 8th grade magazine)

It can be noted that the program using the lowest level material is the only one with any EMI enrollment.

The same Flesch readability analysis was performed on that material from the Capitol Area Career Center.

	<u>Words per sentence</u>	<u>Syllables in 100 words</u>	<u>Flesch Reading Ease Score</u>
Electronics (Appendix D-5, p. 167)	12	149	70 (fairly easy 7th grade)
Custodial (Appendix D-6, p. 168)	9	135	84 (easy 6th grade)
Medical lab (Appendix D-7, p. 169)	14	145	70 (fairly easy 7th grade)
Food service (Appendix D-8, p. 170)	14	150	67 (standard 8th/9th grades)

These levels are generally lower than those of the commercial textbooks.

Analysis of the reading level of the Career Related Instruction module used for pre-vocational instruction by special education students in preparation for entering a vocational program at the Capitol Area Career Center follows:

	<u>Words per sentence</u>	<u>Syllables in 100 words</u>	<u>Flesch Reading Ease Score</u>
Food Service CRI Module (Appendix D-9, p. 171)	10	127	89 (easy 5th-6th grade)

This selection has a lower reading level than any other material tested.

In summary, investigation of factors inherent in the vocational programs reveals a pattern which seems to indicate a number of differences between programs heavily utilized by EMI students and those with few or no EMI students in the following areas: academic pre-requisite skills, and instruction materials.

Interviews

The second aspect of the vocational decision-making process involves the personal and human factors which influence the decision as to whether an EMI student will enter a regular education or a special education vocational

program, and which specific program will be chosen. This portion of the investigation of Question 2 was not meant to be a full-scale survey, but rather a preliminary effort to identify possible factors that may be influential in this process. Its limited scope precluded any precise quantification. Therefore, discussion of responses to the interview questions will be general in nature. The interview questions are found in Appendix B-5. The eleven persons interviewed include the following:

Clinton ISD (total-4)

- High School special education teacher/consultant
- High School special education teacher
- High School guidance counselor
- Vocational center director

Lansing School District (total-5)

- High School special education co-ordinators (2)
- High School special education counselor
- High School special needs vocational counselor
- Vocational-technical center placement director

Ingham ISD (total-3)

- Vocational-technical center vocational evaluator
- Vocational-technical center special education counselor
- Vocational-technical center principal

Studying the results of these interviews provides some insight into the vocational decision-making process of EMI students which may not be apparent from looking at other sources of information. Although this process is often described as creating a match between a student's interests and abilities, on one hand, and the program goals and requirements on the other hand, these interviews

suggest that other factors influence and complicate this decision. For instance, the decision as to whether a student will enroll in a special education vocational program or a regular education vocational program is influenced by the past experiences and personal knowledge of the special education teachers and counselors about the student, which may not be apparent through a psychological evaluation or a vocational evaluation.

The following is a reporting of responses to the interview questions (Appendix B-5) and a subsequent discussion of each. The number of responses differ since some interviewees did not answer every question and some gave multiple responses.

Question 1 - Who is responsible for enrolling EMI students in vocational training programs?

	<u>Number</u>
Regular guidance counselor	3
Special education teacher	3
Pre-vocational instructor	2
Vocational education advisor in home school	1
Career center special education counselor	1
Special education case manager	1

In response to Question 1, interviewees named both the guidance counselor and the special education teacher as those persons responsible for enrolling the EMI student in a vocational training program if that is appropriate for a particular student. In Lansing school district, the special education teacher is assigned the role of case

manager and is responsible for the total secondary program of a particular group of students. In Clinton ISD constituent districts, the regular guidance counselor fulfills much of this role, with input from the special education teacher. These persons are responsible for the final decision and for completing the required procedures for the implementation of these decisions. The vocational instructor is not directly involved in this decision.

Question 2 - Who is responsible for deciding on the EMI students vocational IEP goals?

	<u>Number</u>
Special education teacher/consultant	4
Special education teacher	3
Regular guidance counselor	1
Vocational instructor	1
Special education case manager	1
Pre-vocational instructor	1

Almost all the respondents reported that the special education teacher or the case manager is the person responsible for writing all IEP goals, including vocational training goals. In Ingham ISD, once the decision is made to enroll the student in a regular vocational training program, the general goals are set by the specific established curriculum, with individual modifications made when necessary. In one district, vocational education instructors are invited to the IEPC meeting and have input into setting goals. In three small local educational agencies (LEA's) the regular guidance counselor takes part

in the IEPC process and helps to write the IEP. In large LEA's, the regular guidance counselor does not take part in the process. Respondents also mentioned that the EMI students themselves have input into the vocational education decisions. They also reiterated that, by Michigan law, all special education students enrolled in the special education course of study must have vocational training as part of the required secondary program. Therefore, the decision is not whether to include vocational training in an IEP, but rather, when and which type (regular education or special education). This question was intended to identify the members of the IEPC who are significant in the vocational programming for EMI students.

Question 3 - How do you decide what is an appropriate vocational program for an EMI student?

	<u>Number</u>
Knowledge of student	3
Student's interests	2
Student's abilities	2
Knowledge of programs	1
Pre-vocational teacher judgement	1
Vocational evaluation	1
Intuition	1
Trial and error	1

Question 3 asks for information about the process involved in making the decision about vocational training--when, which kind, and what specific program. Most respondents indicated that the special education teacher has the most input into these decisions. Other

responses included: student interests, abilities, and aptitudes; and a vocational evaluation process. The personal and individual nature of this decision is reflected in other answers: intuition, trial and error, knowledge of the individual vocational instructors, and "what's available." These last factors are indications of the kinds of problems and limitations faced by these students in the process of making vocational training decisions.

Question 4 - Do you conduct vocational evaluations before deciding on vocational programming for EMI students?

	<u>Number</u>
None	3
Career awareness program	2
Pre-vocational assessment	1
Teacher judgement	1
Formal vocational evaluation	1
Aptitude, ability testing in special education classroom	1

One district conducts formal vocational evaluations to help them make vocational training decisions for their EMI students. This Intermediate School District makes a policy of evaluating each special education student for nine weeks in a special vocational evaluation laboratory by a vocational evaluator before making a decision as to which program is appropriate. In all other districts, the decision is developed through teacher judgement, informal methods, assessment in pre-vocational classes,

visits to the vocational-technical center, and use of the Michigan Occupational Information System career awareness programs. These are all methods used when a formal career awareness/assessment program is not available.

Question 5 - How do you decide if a student should enroll in a special education vocational program or a regular vocational education training program?

	<u>Number</u>
Assessment of ability level and achievement	4
Assessment of student behavior	2
Teacher/consultant judgement	1
Reading ability	1
Knowledge of individual vocational instructor	1
"What's available"	1

This decision was characterized by one respondent as the easiest part of the decision-making process. This judgement was not necessarily shared by all the interviewees, but they all did agree that if the decision was a borderline situation, the student was encouraged to try a regular training program, with the understanding that he could be moved to a special education program if necessary. The most frequent response (8) to this question was that special education teacher or teacher-consultant judgement was the basis for this decision. This judgement is based on their subjective assessment of the following factors:

- Student behavior
- Student record (grades, attendance, discipline)
- Student ability (especially reading level)
- Student attitude

It was also mentioned that attitudes toward handicapped students and the ability to work with these students on the part of specific vocational instructors was an important factor in this decision.

Question 6 - If you decide on a regular vocational training program, how do you decide which one is appropriate?

	<u>Number</u>
Student's decision	3
Cultural factors	2
Parents	2
Input from teacher	1
Input from counselor	1
Vocational evaluation	1
Peers	1

After the decision is made to place a student in a regular vocational training program, deciding which one is best for a student is the next step in the process. Many factors were mentioned by respondents as being important in this decision. Most commonly mentioned was students interests. Although three interviewees stated that the student has the major influence in the decision, many respondents noted that the special education teacher, counselor, or vocational evaluator worked with the student to help him make a reasonable decision. The factors considered by the professionals as they counsel students in this decision include vocational evaluation results, if available, and experiences in pre-vocational programs. Respondents named peers, parents, and cultural factors as

important in this decision. The professional with the most influence on the student as he makes the decision is thought to be the special education teacher or teacher/consultant.

Question 7 - Who influences the decision as to which regular vocational training program is appropriate?

	<u>Number</u>
Parents	4
Special education teacher	4
Students	3
Counselor	3

Question 7 is closely related to the previous question. Interviewees felt that the students themselves, special education teachers, and special education or regular education counselors are all very important in making the decision as to which regular vocational training program will be chosen. Parents were thought to be the influence in a direct way, and indirectly, as role models and transmitters of cultural and socio-economic values.

Question 8 - Do you counsel male EMI students into traditionally "female" programs? Why or why not?

Question 9 - Do you counsel female EMI students into traditionally "male" programs? Why or why not?

	<u>Number</u>
Yes, more than non-handicapped	5
No, less than non-handicapped	2
Same	1

All respondents considered Questions 8 and 9 to be two sides of the same issue. One counselor replied that she tried to point out the advantages of all programs, regardless of the sex of the student, but she does not push students into non-traditional areas. Another respondent said she lets the students and their parents make the decision. Five respondents felt that even though EMI students have a narrow outlook in areas such as vocational decisions, they are more easily counseled into non-traditional areas than are either other groups of special education students or non-handicapped students. One person conjectured that this flexibility results from the fact that EMI students are not as concerned with, or perhaps as aware of, cultural stereotypes as persons with normal mental capabilities. All respondents felt that they were as likely to counsel males into non-traditional programs as they were to counsel females into non-traditional programs.

Question 10 - Do you think EMI students enroll in a certain limited range of vocational programs? Why or why not?

	<u>Number</u>
Yes	7
Academic weakness	3
Professionals believe they will only succeed in certain programs	2
"Pigeon-holing" exists, but lessening due to more vocational awareness	1
Do not enroll in certain programs, because do not want to set up failure	1
No	0

Question 10 is a crucial question. There is no better source of understanding of the issue of the range of programs open to EMI students than the people closely involved in the process of making that decision and influencing the student in that decision. The most commonly reiterated cause of vocational limitations for EMI students is academic weakness. If programs require academic abilities above those that are possible for EMI students, the students will become frustrated and even possibly drop out of school. The respondents feel that they believe they know in which programs the EMI students have a high probability of succeeding. Their belief comes from their knowledge of program requirements, the attitudes of the vocational instructors, and the abilities of the students. One respondent felt that the EMI students are the most restricted group of all special education students. However, interviewees also agreed that there is improvement in the amount of access to vocational programs for EMI students. They cite more student input, more vocational awareness, more aptitude and interest testing, and less "pigeon-holing" into vocational programs which could be "dumping grounds" for EMI students.

Question 11 - Do you think male EMI students enroll in a certain limited range of vocational programs? Why or why not?

Question 12 - Do you think female EMI students enroll in a certain limited range of vocational programs? Why or why not?

	<u>Number</u>
"Female--1 or 2 programs, male--4 programs"	1
"Both weeded out in introductory classes"	1
"Such a large variety that there is no difference"	1
"EMI has most limited range of any handicap"	1
"More sex-stereotyping with non-handicapped than with EMI students"	1

Again, as in Questions 8 and 9, respondents felt that these two questions were inter-related. They replied that, although there is a definite limitation in the range of programs in which EMI students can succeed, there is no difference between the range available to males and females. The types of programs chosen by males and females are different, but the magnitude of the range is not different. One respondent felt that males are more restricted, and one other respondent felt that females were more restricted. A respondent from a large district reported that their vocational-technical center offers such a wide variety of programs, that there is ample range available to male and female EMI students. Some felt that the same limits apply to both genders, because EMI students are "weeded" out in introductory vocational classes before they can choose a vocational program which is unrealistic for them.

Question 13 - What factors determine the chances of success for an EMI student in a regular vocational training program?

Question 13 offered a list of possible responses to the question of which factors determine the chances of success after the EMI students have entered a regular vocational training program.

	<u>Number</u>
Behavior (attitude)	7
Motivation	5
The vocational instructor	5
Special education teacher, teacher-consultant, or other counselor	3
Instructional materials	2
Academic skills	2

Other factors suggested by respondents were:

Special needs instructional aides	1
Attendance	1
Adaptation of instructional materials and tests	1
Maturity of student	1
Problem solving and creative thinking	1
Career ladder (breaking down curricula into sections that the students can master)	1

The interviewees were told that this question assumed that the student had already enrolled in the program. Although consideration of students' abilities is crucial in the decision to enroll in a particular program, after such a decision is made, other factors become more important in determining the chance of successfully completing the program. Many of these factors concern ways of compensating for academic weaknesses, such as motivation, special education services, vocational instructors and aides, and adaptation of instructional materials.

Although a review of the literature offered understanding of the effect of mental retardation on the decision-making process in general, these interviews suggested information specific to the vocational training decision-making process. Respondents indicated that such factors as student behavior and attitude, and the attitude of the vocational instructors influenced the decision to enroll a student into a particular program, as well as more commonly considered factors such as student school records and ability levels.

Responses from interviewees agreed with the research results from this study in the area of gender differences in EMI vocational enrollment. Responses indicated that, although the range of regular vocational programs suitable for EMI students is limited to a certain extent, that range is considered generally to be no greater or smaller for either gender. Statistical evidence from this study indicated that this opinion is accurate, in the sample districts. Since the interviewees were persons who work directly with EMI students and their educational programs, the pattern of their responses should have practical value to those educators working on this problem. Responses to the last question, regarding factors influencing the success of an EMI student in a regular vocational education program, suggest some areas of attention which

might be considered by educators attempting to improve the levels of integration of EMI students into regular vocational education programs.

SUMMARY AND DISCUSSION

The overall purpose of this study was to determine if there is gender equity in access to regular vocational education for educable mentally impaired students. This research provided no evidence of gender differences in the rate of participation of EMI students in any kind of vocational training, including regular vocational education programs, within the districts studied. Therefore, the answer to Question 1 is that the participation in regular vocational education by EMI students was not differential by gender. As discussed in the previous chapter, none of the first three null hypotheses presented under Question 1 can be rejected.

The first hypothesis concerned the proportion of EMI males and females with formal vocational training plans. Hypothesis 1a compared the Individual Educational Plan vocational goals between the genders. The absence of any significant difference between male and female percentages on this measurement indicates that special education teachers, teacher-consultants, and co-ordinators are carrying out the requirements of laws regarding gender discrimination quite effectively. Since many EMI students are enrolled in high school under a special education

course of study which requires vocational training, it can be assumed that they will have a vocational training goal on their IEP at one time or another. In fact, as was found, among eleventh and twelfth grade EMI students, 85% of males and 86% of females had a vocational training goal on their IEP. The remaining 14-15% may fall into the category of those students who are not ready for vocational training, or into the category of those EMI students enrolled in a regular education course of study, in which vocational training is not required. This study did not investigate or measure the reasons that these particular students lacked vocational training IEP goals. However, not only were a high percentage of students involved in vocational training, but a lack of differences between the genders may indicate that teachers and counselors are following Michigan legal requirements of both sexual equity and handicapped student rights in this area. It may indicate that they also realize that vocational training is crucial to all EMI students, regardless of social influences which may not reinforce the value of such training for females.

Not only did a high percentage of EMI students have vocational goals, a high percentage were actually involved in some kind of vocational program, whether it was a segregated special education program, or an integrated regular education program. After deducting numbers of

students without a vocational IEP goal (assuming that vocational training was not appropriate for those students at the time that the data were gathered) , 98% of males and 100% of females were actually enrolled in vocational training (Table 2). This may indicate that these IEP goals are actually working plans for the vocational development of the students as the Michigan law requires. (Michigan law requires that a vocational training goal be included in a student's IEP.)

The data in this study reveal that, in a small number of cases, some school districts do not follow the policy of requiring vocational training plans to be included on the IEP (Table 3). This study did not explore reasons why the documentation for vocational training enrollment was not found on the IEP forms in these cases. The IEP is supposed to be the specific and definitive plan for a special education student's educational program. If an aspect as important as vocational training is not included in that plan, then the IEPC has relinquished its responsibility and control over performance objectives, and criteria and evaluation. Necessary accommodations, modification, and special help will not have been documented in the legally required manner which binds the school district to provision of these services.

Hypothesis 2 concerned the percentages of each gender of EMI students enrolled in regular vocational education programs, both in classes and training programs. Results showed that, while a small percentage of EMI students were involved in regular vocational education classes, this enrollment was not significantly differential by gender. The low rate of participation resulted, in part, from the ability of the large urban district in the sample area to offer a wide range of introductory-level vocational classes through the special education department in a segregated setting. It is felt that, in general, special education courses can better prepare EMI students for a vocational education program than can regular education classes.

Enrollment in regular vocational education programs was high. Of EMI students involved in vocational training, 67% were in regular programs. By gender, 69% of females and 65% of males were so enrolled (Table 7). As reported in the previous chapter, these figures are not significantly different.

When data for 11th and 12th grade students (who are more likely to be involved in vocational training) are separated from those for younger students, the results are very similar. Table 7a shows that 69% of males and 74% of females were enrolled in regular vocational education

training programs. These figures were not differential by gender. Looking at the situation in the opposite way, 25% of the total sample of male EMI students and 20% of the total sample of female EMI students were enrolled in special education vocational training programs (Table 8).

It is clear that these data do not support any hypotheses of differential enrollment rates between the genders in regular vocational education programs. It can be concluded that regular vocational education programs are as open to male EMI students as to female EMI students, in the areas from which the sample was drawn.

The high percentage of EMI students enrolled in regular vocational education is inconsistent with past research. While Razeghi and Davis found that only 2% of the enrollment in vocational education programs was composed of handicapped persons in 1974 (6, p. 356), in this study it was found that 46% of the total sample of EMI students were so enrolled. Baxter found that 16% of his total EMI sample (14% of males and 17% of females) were enrolled in regular vocational education (1, p. 70). Brandis and Halliwell reported that 15.7% of male handicapped students and 12.6% of female handicapped students were enrolled in regular vocational education programs in their study (20, p. 49). These findings are inconsistent with the 47% of males and 45% of females so

enrolled from the total EMI sample in this study. These high enrollment figures may be unique to the areas from which the sample was chosen, and perhaps to this state. On the other hand, they may reflect recently improved efforts toward the goal of complying with legal mandates for vocational training opportunities for handicapped students.

Hypotheses 3-5 expand the investigation beyond the rate of EMI participation in regular vocational education, into participation by types of programs. Comparing the types of programs utilized by male and female EMI students, this research revealed a significant difference in the enrollment patterns between the two groups. Out of six occupational clusters of vocational programs, EMI students were enrolled in five: Health, Auto, Industry, Home economics related occupations, and Office/business (Table 11). Although small numbers of EMI students were scattered among these programs, it is clear that the bulk of the EMI enrollment was in Foods and Custodial/maintenance (Table 10). Even in these two areas, EMI enrollment was differential by gender. Fifteen percent of the EMI enrollment in Custodial/maintenance was female with 85% male, while in Foods, 61% of the EMI students were female and 39% male. There is no question that EMI enrollment by type of regular vocational program was

differential by gender. This difference should be expected if it can be assumed that these students are affected by occupational sex stereotyping in the same way as non-handicapped students. In fact, Table 11a, comparing non-handicapped vocational enrollment by gender also shows sex differentiation.

The concept of outer-directedness may affect the enrollment pattern of EMI students. If indeed, EMI students are more vulnerable to outside influences, then it may be hypothesized that they are more influenced by sexual stereotyping in occupational choice, or it may be assumed that they are more influenced by the advice of teachers and counselors, who are likely to promote enrollment without reliance on sex stereotyping. There is no evidence for either supposition. Results of the interviews with special and vocational education personnel indicate that the persons involved in the decision-making process with EMI students feel that they have a greater influence on the students than counselors have with non-handicapped students. They feel that EMI students can be convinced to enroll in non-traditional vocational programs more readily than non-handicapped students.

In the absence of certain knowledge about the effects of outer-directedness and other possible influences on EMI students, one may hypothesize that these persons

are similar in their vocational decision-making to non-handicapped students. Expected differences were found in enrollment patterns when male and female EMI students were compared (Table 10a) and also when male and female non-handicapped students were compared (Table 11a). When the two samples were compared by gender, individually (Tables 12a and 13a), differences within each gender were significant. Therefore, since it was found that there is a significant difference in the vocational enrollment of EMI and non-handicapped students by gender, it may be assumed that some other factors are affecting EMI enrollment patterns. In fact, investigation of Hypothesis 4-5 reveals highly significant differences in the enrollment of male EMI and non-handicapped students and female EMI and non-handicapped students.

The heaviest non-handicapped female enrollment is found in Office/business (37%) and Health (25%). The heaviest EMI female enrollment is found in Foods (55.2%). Looking at Table 12, it can be seen that there are no female EMI students in Cosmetology, which is an almost totally female program, and a highly traditional female occupational area. Explanation for this absence of EMI students may be found in the State Board examination, which is required in order to receive a license to practice as a beautician in Michigan. Until very recently,

this examination could not be administered orally. Since a high school reading level is required to pass this exam, few EMI students could be expected to be successful. Even with the help of oral administration of the exam, few EMI students may be expected to succeed in Cosmetology, since the text books are difficult (Appendix D-2, p. 164, also p. 99). There is little or no chance to enter Cosmetology in a career-ladder format, since there is little opportunity for work in a beauty shop for a person without a cosmetology license.

A career ladder is an arrangement of specific jobs within an occupation in ascending order of skills required and task complexity. This arrangement forms a ladder. Students may train for any level on the ladder, or may enter at a certain level and work up the ladder through experience and on-the-job training. Some occupations are more suitable for such an arrangement than others, especially those requiring a license, degree, or other certificate, such as Cosmetology.

The high enrollment of female EMI students in Foods programs (55.2%) can be explained by the wide range of occupations which can be followed on a career-ladder basis, in this area. Many occupations, in the Foods area, as illustrated by Appendix C-4, p. 159, require few academic skills. Vocational training programs in this

area can provide preparation for a variety of entry-level occupations, and even EMI students with limited academic skills can be trained for such occupations as cook helper or baker helper.

The small female EMI enrollment in Office/business can be explained by the presence in the sample districts of a vocational program called Business Service. The two female EMI students in the Office/business category were enrolled in this program, which includes such occupational goals as stockperson, counter clerk, and motel maid (Appendix C-6, p. 161). There are no female EMI students in the other programs comprising this category: data processing, secretarial, and accounting. The latter are obviously more academically stringent programs. In interviews, it was mentioned that female EMI students have been involved in secretarial programs, but were limited to learning file clerk skills because their limited academic skills prevented them from mastering typing and other secretarial skills. Unfortunately, the job market for file clerks is very limited.

This information reaffirms the supposition by Vos, Tesolowski, and Hux (1982) that a lack of academic skills is the major limiting factor in reducing the range of programs accessible to EMI students. The examples given in the areas of Cosmetology and Office/business occupations

are just a few of the problems faced by female EMI students when they seek to gain access to typical female vocational programs. There are also similar barriers for males, as shown below.

The last Hypothesis, 5, concerned the types of participation in regular vocational education programs by male EMI students. Male enrollment seems to follow closely the same general pattern of concentration in a few areas. It can be seen that non-handicapped male enrollment is concentrated in those traditionally male vocational areas of auto and industrial occupations (Table 13). Sixty-one percent of the non-handicapped male enrollment is in these two categories. This is an expected figure, since these occupations are traditionally male dominated. However, only 22% of male EMI students are found in these areas. In office/business and technical/trade areas, enrollment of non-handicapped males is 25%, but there is just one male handicapped student in these areas (less than 3%). These programs require a high degree of technical skills and application of academic skills, especially in math, typing, science, and reading (p. 95).

Those programs with a high male EMI enrollment are Custodial/maintenance and Foods. Seventy-five percent of male EMI enrollment is found in these two areas, while only 13% of non-handicapped male students are found here.

These programs are clearly not popular with non-handicapped male students. Why are they so popular with male EMI students? Both of these programs are easily arranged into career ladders. The lower-level semi-skilled jobs are of a nature which the EMI student can learn with a high degree of success. Most importantly, there are job openings in these areas, and, therefore, it makes sense to train students in such occupations. In fact, according to a list published by the Michigan Department of Vocational-Technical Education (1980), the area of Food Service is ranked highest in demand-to-supply ratio, out of a list of 31 occupations. Custodial Services is ranked 17th highest out of this list in demand-to-supply ratio. A pamphlet issued to prospective vocational students by the Lansing School district illustrates the range of jobs for which a student can be prepared by a Food Management training program: waiter/waitress, cook apprentice, cook helper, short order cook, and baker helper (Appendix C-4, p. 158). Since these require a minimum of academic skills, they are seen as appropriate for EMI students. They are also practical occupational goals, since the demand for these workers is high. Although the demand for custodial workers is not as high, the nature of this occupation also lends itself to a continuum of levels, from apartment manager to hotel/motel service person.

Job possibilities in these custodial programs include: janitor, hospital custodian, dishwasher, bus boy/girl, and hotel/motel housekeeper as entry-level occupations. These are also occupations that require a minimum of academic skills. Taken together, these two vocational programs which are so heavily populated by male EMI students have distinct similarities. They are not stereotyped as traditionally female programs; they have employment opportunities; and they lend themselves to development of unskilled and semi-skilled jobs. Those programs with high female EMI enrollment, Foods and Child care, have similar characteristics: they are not traditionally reserved for males; they have employment opportunities; and they also lend themselves to the development of low-level skills. Taken together, these characteristics indicate a pattern which may help to explain the vocational enrollment pattern of EMI students.

The interviews conducted as a part of the research on Question 2 also shed light on the aspects of vocational training programs which influence enrollment patterns and success rates of EMI students. According to the interviewees, students are not forced to enroll in a particular program, although the decision as to whether a student will enroll in a special education or regular education program is made by professionals using test results,

educational records , and experiences. These professionals believe that , although the range of programs open to EMI students is limited , primarily by academic and other factors , that range is similar for male and female students. Some felt that EMI students are more open to suggestion of non-traditional programs than non-handicapped students. This may help to expand the range of programs open to a particular student. Statistical investigation of the range of participation of male and female EMI students supports these professionals' opinions that the rate and range of EMI enrollment is not differential by gender. This finding is inconsistent with those found in the literature, which indicates that females may be more restricted than male EMI students in vocational programs.

It is interesting to note the methods undertaken by the educational agencies in the sample districts to accommodate EMI and other handicapped students and special needs students into their vocational programs. This information was obtained in the course of investigating Question 2 , through both published materials and personal interviews. For instance , Lansing , the large urban district in the sample area , has developed a program that coordinates efforts of special education , vocational education , and Michigan Rehabilitation Services toward the end of placing special education students in regular vocational programs

and helping them succeed. The major concerns of the program (VESEP) are the preparation of students prior to entering the vocational courses and subsequent success in the programs. The theory underlying VESEP is that the three professional groups, working together, can make the widest range of vocational training alternatives available to the greatest number of handicapped students, and also increase their rate of success.

The VESEP committee, used by the Lansing school district to encourage the integration of handicapped students into regular vocational education programs, has provided intensive inservice training to both special education and vocational education personnel. It has promulgated a procedure which outlines the responsibilities of each group of personnel in the process of enrolling and following the progress of special education students through regular vocational programs. A Vocational Education Plan (VEP Form) is completed for each special education student in vocational education before the program is initiated (Appendix C-7, p. 162).

The vocational education and special education personnel together decide on goals for each student and they modify the vocational curriculum according to the level chosen on a career ladder for that student. Special Needs Projects, providing instructional support specialists

in those programs with a high percentage of special needs students, are also used to help improve the success of special education students. A student's program can be individualized, since each vocational program has been divided into a set of competencies with a career ladder approach (Appendix C-3, p. 158; C-5, p. 160). A student can participate in a vocational program and concentrate on achieving a reasonable level of competencies based on his abilities and motivation.

Ingham Intermediate School District's Career Center provides an intensive nine-week assessment and career awareness program to all of the special education students enrolled in high schools in that ISD. After this program is completed, the decision is made as to which vocational course is appropriate, with input from special education personnel, vocational education personnel, students and parents. Special education students and teacher in Ingham ISD have access to a system of Career Related Instruction (CRI), which is a set of student-directed individualized learning packets (modules) developed to provide students with pre-vocational instruction, vocational terminology, tools, and concepts necessary for their chosen vocational program. (See Appendix D-9, p. 171). In this way, students are prepared to compete with regular students. These packets are written at a low reading level and

audio tapes are available for non-readers. They can be used before or during a student's vocational program.

In addition to this system, special education students have the services of a special education counselor at the Career Center and para-professionals working along with the vocational instructors. Performance objectives, measured by instructor observation instead of written tests, are used to measure individual progress in the vocational program.

These efforts at accommodating EMI and other handicapped students in regular vocational education programs seem to be directed toward dealing with the major problem area of these students, which this and other investigations have suggested; that is, weak academic skills.

Conclusions

This study found an unexpectedly high rate of participation by both male and female EMI students in regular vocational training programs (47% of males and 45% of females). While this result may be unique to the sample areas, it may be indicative of a State-wide response to the Michigan statutory requirement of vocational training for students enrolled in a special education curriculum at the secondary level and also to the requirement of placement in the least restrictive environment. It may also be

furthered by the fact that the Michigan monitoring system for special education programs includes investigation of the vocational training status of these students.

The lack of gender differences in the rates of participation by EMI students in regular vocational training is also unexpected, compared to information from past research. It is possible that this may be attributed to State and Federal legislation emphasizing sexual equity in educational programs or to current heightened awareness of sex equity issues. Recent social changes may have changed the expectations by educators and students themselves about adult roles for both genders. The equality of enrollment by sex may reflect the efforts of school personnel, teachers, counselors, and administrators in supporting the legal and educational goal of maximizing participation of all groups of students in vocational education.

Although this is a positive achievement, it may be proposed that more programs need to be opened to EMI students, so that the range of programs utilized successfully by EMI students more closely resembles the range of programs available to non-handicapped students. As shown in this study, the range of programs utilized by EMI students was much smaller than the range utilized by non-handicapped students. This difference was found

between EMI and non-handicapped males and between EMI and non-handicapped females. A number of programs traditionally stereotyped by either male or female dominance do not seem to be accessible to EMI students, for example, technical and skilled trades, cosmetology, and secretarial courses. Given the methods which have been developed to improve the success of handicapped students in vocational training programs, such as specially-designed instructional materials, para-professional aides, and pre-vocational training programs, it would seem that the range of programs accessible to EMI students could be expanded. Some tentative conclusions about the nature of the vocational programs which may influence the range of programs accessible to EMI students are as follows: (1) The crucial factor determining if a program is appropriate for EMI students may be the level of academic skills required by that program and the level of skills achieved by the student. (2) Other factors reported to be important are the attitude of the vocational instructors toward special education students and the motivation of the students. These are tentative conclusions and need to be investigated more fully.

Suggested areas of further study include the following: (1) It is suggested that this study might be expanded to a state-wide investigation of the status of

the integration of EMI students, both male and female, into regular vocational education programs. This would determine whether the high levels of integration of both sexes found in this study are unique to the sample areas or if they are a reflection of a state-wide situation, perhaps resulting from the state mandate for vocational training for handicapped students pursuing a "special education course of study" in the secondary school program.

(2) A logical extension of a state-wide study of these questions is a comparison between the state of Michigan, which requires vocational training for most EMI students, and a state which has no such mandate. This might indicate the effectiveness of the legal requirement for providing vocational training to handicapped students. This study found levels of integration in regular vocational education by both male and female EMI students much higher than those reported in past research on a national basis. It would be helpful to know if legal mandates are really effective in improving vocational training opportunities for handicapped students. (3) One aspect of the vocational training process for EMI students that was not investigated in this study is the personal involvement of the students themselves, from their point of view. The students might be interviewed about the factors and persons influencing their vocational training decisions. Interviews with EMI students concerning

their feelings about and experiences in vocational training would be informative and useful to those who administer educational programming for these students.

Although this study indicates that the efforts being made to provide access by both male and female EMI students to regular vocational training programs are having positive results, it also shows that more attention needs to be directed at improving the range of programs accessible to EMI students.

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APPENDIX A-1

EMI STUDENT DATA OBTAINED FROM IEPC FORMS

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
1	A	9	M	Y	Y	Woods	
2	A	9	F	N	N	Typing	
3	A	12	F	N	N		Foods
4	A	10	M	N	Y	Metals	
5	A	12	M	Y	N		Foods
6	A	9	F	N	N		
7	A	9	M	N	N	Woods	
8	A	10	F	N	N	Typing	
9	A	12	F	Y	N		Foods
10	A	12	F	N	N	Typing	
11	A	12	M	N	Y		
12	A	12	M	N	N		Foods
13	A	11	F	Y	N		Foods
14	A	9	M	N	N	Agriculture	
15	A	12	F	N	N		Foods
16	A	12	F	Y	N		Foods
17	A	12	F	Y	Y		Foods
18	A	11	M	Y	Y	Agr., Power Mechanics	
19	A	10	M	N	Y		
20	A	11	M	Y	Y		Foods
21	A	10	M	Y	Y	Metals	
22	A	10	F	N	Y	Typing, Bookkeeping	
23	A	12	M	N	N		Foods
24	B	11	F	Y	N		Child Care
25	B	12	M	N	N		

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
26	B	10	M	N	N		
27	B	12	F	Y	N		Hospital
28	B	12	M	Y	N		Physical Plant
29	B	10	M	N	N		
30	B	12	M	Y	N		Physical Plant
31	B	9	M	N	N	Metals	
32	B	10	F	Y	Y		
33	B	9	M	N	N		
34	B	11	F	N	N	Typing, Clothing	
35	B	12	M	Y	N		Physical Plant
36	B	10	F	N	N		
37	B	12	M	Y	N		Foods
38	B	12	B	Y	N		Child Care
39	B	11	F	Y	N		Child Care
40	B	12	M	Y	Y		
41	B	11	M	N	N		
42	B	11	M	Y	N		Auto Body
43	B	12	F	Y	Y		
44	B	11	F	Y	N		Foods
45	B	10	M	Y	N		Physical Plant
46	B	12	F	N	N	Typing	
47	B	9	F	N	N		
48	B	12	M	Y	N		Physical Plant
49	B	10	M	N	N		
50	B	12	M	Y	N		Physical Plant
51	B	9	F	N	N		

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
52	B	10	F	N	N		
53	B	9	F	N	N		
54	B	10	M	N	N		
55	B	12	M	Y	Y		
56	B	10	F	N	N		
57	B	10	F	N	N		
58	B	10	F	Y	Y		
59	B	11	M	Y	N		Physical Plant
60	B	10	M	N	N		
61	B	9	M	N	N		
62	B	11	M	Y	N		Physical Plant
63	B	10	M	Y	N		Physical Plant
64	B	9	M	Y	N		
65	B	12	M	Y	N		Foods
66	B	10	M	N	N		
67	B	10	M	N	N		
68	B	10	F	Y	N		Foods
69	B	10	F	N	N		
70	B	9	F	N	N		
71	B	10	F	N	N		
72	B	12	M	Y	N		Physical Plant
73	B	12	M	Y	N		Foods
74	B	11	F	Y	N		Child Care
75	B	11	M	N	N		
76	B	10	F	N	N		
77	B	12	F	Y	N		Child Care
78	B	10	F	N	N		
79	B	9	F	N	N		

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
80	B	9	M	N	N		
81	B	12	M	Y	N		Heat/A-C
82	B	12	F	Y	N		Physical Plant
83	B	9	F	N	N		
84	B	11	F	Y	N		Child Care
85	B	10	M	Y	N		Auto Body
86	B	11	F	Y	Y		
87	B	12	M	Y	Y		
88	B	12	F	Y	N		Physical Plant
89	B	12	F	Y	Y		
90	B	12	M	Y	Y		
91	C	12	M	Y	N		Custodial
92	C	12	M	Y	N		Heat/A-C
93	C	11	M	Y	N		Foods
94	C	11	F	Y	N		Foods
95	C	11	M	Y	N		Custodial
96	C	11	F	Y	N		Foods
97	C	12	M	Y	N		Auto Mechanic
98	C	11	M	Y	N		Auto Mechanic
99	C	12	M	Y	N		Foods
100	C	11	F	Y	N		Foods
101	C	11	M	Y	N		
102	C	12	M	Y	N		Custodial
103	C	11	M	Y	Y		
104	C	12	M	Y	N		Business Service
105	C	12	M	Y	Y		
106	C	12	F	Y	N		Food Service

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
107	C	11	M	Y	Y		
108	C	12	M	Y	N		Custodial
109	C	11	M	Y	N		Custodial
110	C	10	F	Y	N		Business Service
111	C	11	M	N	N		
112	C	10	F	Y	N		Food Service
113	C	11	M	Y	N		Welding
114	C	11	M	N	N		
115	C	11	F	Y	N		Foods
116	C	12	F	Y	N		Business Service
117	C	11	M	Y	N		Custodial
118	C	11	F	Y	Y		
119	C	11	F	Y	N		Food Service
120	C	10	F	Y	Y		
121	C	11	M	Y	N		Custodial
122	C	11	F	Y	Y		
123	C	12	M	Y	Y		
124	C	12	M	Y	N		Food Service
125	C	12	F	Y	N		Food Service
126	C	11	M	Y	Y		
127	C	12	F	Y	Y		
128	C	12	M	Y	Y		
129	C	9	F	N	N		
130	C	12	M	Y	N		Small Engine Mechanics
131	C	11	F	Y	Y		

<u>Subject Number</u>	<u>District</u>	<u>Grade</u>	<u>Gender</u>	<u>Vocational Goal</u>	<u>Special Education Vocational Program</u>	<u>Regular Vocational Class</u>	<u>Regular Vocational Program</u>
132	C	9	F	N	N		
133	C	10	F	Y	N		Child Care
134	C	11	M	Y	Y		
135	C	11	M	Y	Y		
136	C	9	M	N	N		
137	C	10	M	N	N		
138	C	9	F	N	N		
139	C	9	F	N	N		
140	C	12	F	Y	Y		
141	C	12	F	Y	N		Physical Plant

Totals: Grade -- 9th - 21
 10th - 31
 11th - 38
 12th - 51

Sex -- Male - 65
 Female - 76

Vocational Goal -- Yes - 89
 No - 52

Special Education Vocational Program -- Yes - 32
 No - 109

District A - Clinton ISD

District B - Lansing School District

District C - Ingham ISD (excluding Lansing)

APPENDIX A-2

NON-HANDICAPPED STUDENT DATA OBTAINED FROM VOCATIONAL PROGRAM ENROLLMENT LISTS

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
1	B	F	Child Care
2	B	F	Commercial Art
3	B	M	Graphics
4	B	M	Construction
5	B	M	Physical Plant
6	B	M	Auto Body
7	B	F	Child Care
8	B	M	Small Engine Mechanics
9	B	M	Accounting
10	B	F	Distributive Education
11	B	M	Auto Body
12	B	F	Secretarial
13	B	F	Dental
14	B	M	Auto Mechanics
15	B	M	Construction
16	B	F	Hospital Service
17	B	M	Physical Plant
18	B	M	Machine Shop
19	B	F	Graphics
20	B	M	Auto Body
21	B	F	Cosmetology
22	B	F	Foods
23	B	M	Construction
24	B	M	T.V. Production
25	B	F	Dental
26	B	F	Cosmetology

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
27	B	M	Foods
28	B	M	Construction
29	B	F	Hospital Service
30	B	M	Machine Shop
31	B	F	Dental
32	B	M	Auto Body
33	B	M	Auto Mechanics
34	B	F	Distributive Education
35	B	F	Child Care
36	B	M	Graphics
37	B	M	Electronics
38	B	M	Physical Plant
39	B	M	Electronics
40	B	M	Heat/Air Conditioning
41	B	M	Heat/Air Conditioning
42	B	M	Construction
43	B	M	Construction
44	B	M	Heat/Air Conditioning
45	B	F	Child Care
46	B	F	Child Care
47	B	M	Auto Body
48	B	M	Foods
49	B	F	Data Processing
50	B	M	T.V. Production
51	B	M	Physical Plant
52	B	M	Physical Plant
53	B	F	Data Processing
54	B	M	T.V. Production
55	B	M	Hospital Service
56	B	M	Distributive Education
57	B	M	Graphics

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
58	B	M	Cosmetology
59	B	M	Heat/Air Conditioning
60	B	M	Auto Body
61	B	M	Small Engine Mechanics
62	B	F	Dental
63	B	F	Commercial Art
64	B	M	Physical Plant
65	B	F	Accounting
66	B	M	Accounting
67	B	M	T.V. Production
68	B	F	Physical Plant
69	B	F	Data Processing
70	B	M	Data Processing
71	B	M	Machine Shop
72	B	M	Auto Mechanics
73	B	F	Commercial Art
74	B	F	Data Processing
75	B	M	Construction
76	B	F	Auto Mechanics
77	B	M	Physical Plant
78	B	F	Cosmetology
79	B	M	Accounting
80	B	M	Machine Shop
81	B	F	Accounting
82	B	F	Dental
83	B	F	Accounting
84	B	M	Auto Mechanics
85	B	M	Small Engine Mechanics
86	B	M	Small Engine Mechanics
87	B	F	Data Processing
88	B	M	Small Engine Mechanics

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
89	B	M	Commercial Art
90	B	M	Commercial Art
91	B	M	Machine Shop
92	B	F	Child Care
93	B	M	Auto Body
94	B	F	Hospital Service
95	B	F	Hospital Service
96	B	F	Dental
97	B	F	Dental
98	B	M	Machine Shop
99	B	M	Construction
100	B	M	Accounting
101	B	F	Foods
102	B	M	Heat/Air Conditioning
103	C	F	Secretarial
104	C	F	Secretarial
105	C	F	Secretarial
106	C	F	Secretarial
107	C	F	Secretarial
108	C	F	Secretarial
109	C	F	Secretarial
110	C	F	Secretarial
111	C	M	Accounting
112	C	F	Accounting
113	C	F	Accounting
114	C	M	Data Processing
115	C	M	Data Processing
116	C	F	Data Processing
117	C	F	Data Processing
118	C	M	Graphics
119	C	M	Graphics

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
120	C	F	Graphics
121	C	M	Building Maintenance
122	C	M	Heat/Air Conditioning
123	C	M	Heat/Air Conditioning
124	C	M	Heat/Air Conditioning
125	C	M	Heat/Air Conditioning
126	C	M	Custodial
127	C	M	Electronics
128	C	M	Electronics
129	C	M	Electronics
130	C	M	Electronics
131	C	F	Electronics
132	C	F	Medical Lab
133	C	F	Medical Assistant
134	C	F	Medical Assistant
135	C	F	Medical Assistant
136	C	F	Medical Assistant
137	C	M	Foods
138	C	M	Foods
139	C	F	Foods
140	C	F	Health Services
141	C	F	Health Services
142	C	M	Welding
143	C	M	Welding
144	C	M	Welding
145	C	M	Machine Tool
146	C	M	Machine Tool
147	C	M	Machine Tool
148	C	M	Drafting
149	C	M	Drafting
150	C	M	Cosmetology

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
151	C	F	Cosmetology
152	C	F	Cosmetology
153	C	F	Cosmetology
154	C	M	Marketing
155	C	F	Marketing
156	C	F	Marketing
157	C	M	Business Service
158	C	F	Business Service
159	C	M	Parts
160	C	M	Auto Body
161	C	M	Auto Body
162	C	M	Auto Mechanics
163	C	M	Auto Mechanics
164	C	M	Auto Mechanics
165	C	M	Auto Mechanics
166	C	M	Auto Mechanics
167	C	M	Auto Mechanics
168	C	M	Auto Mechanics
169	C	M	Small Engine Mechanics
170	C	M	Small Engine Mechanics
171	A	F	Cosmetology
172	A	F	Cosmetology
173	A	F	Cosmetology
174	A	M	Auto Body
175	A	M	Auto Body
176	A	M	Auto Body
177	A	M	Auto Body
178	A	F	Foods
179	A	F	Foods
180	A	F	Foods
181	A	F	Foods

<u>Subject Number</u>	<u>District</u>	<u>Gender</u>	<u>Course Name</u>
182	A	M	Foods
183	A	M	Foods
184	A	F	Health Services
185	A	F	Health Services
186	A	F	Data Processing
187	A	F	Data Processing
188	A	F	Data Processing
189	A	M	Data Processing

Totals: Male - 110
 Female - 79

District A - Clinton ISD constituent districts
 District B - Lansing School District
 District C - Ingham ISD constituent districts
 (excluding Lansing)

APPENDIX B-1

VOCATIONAL ALTERNATIVES AVAILABLE FOR THE HANDICAPPED

Type of Program	Description	Program Criteria	Resources	Eligible Funding Categories
Regular Education	College Preparation Regular Vocational Education or General High School Program. These programs are to be used for all handicapped students who can benefit from the program. All students who are receiving an instructional special education services (speech, social work, or occupational therapy) special education the following must also be placed in these programs.	Students receive credits toward a regular high school diploma in accordance with the policies of the operating district. The usual outcome is graduation followed by employment, post school vocational training or college. Regular vocational education curriculum are approved by Vocational Education Services, Michigan Department of Education.	Special education supportive services such as special materials, resource room placement, assistive devices, etc. V.E.S. may provide post school services, rehabilitation counseling placement and follow up services and may participate in the costs of placement, tests, physical examination, etc. when the school or family or another public agency cannot cover the costs.	State and membership Special Education Services approved by State Special Education and in Intermediate Vocational Education contact where appropriate. Vocational Education program funds for districts and programs that qualify.
Adapted Vocational Education	Regular vocational programs are altered to accommodate special education eligible students who could not otherwise be placed in the program. Special materials and adaptations are examples of adapting the program. The objective may be needed for hand adapted programs designed to further students or special education resource room who need adapted curriculum.	Students receive credits toward a regular high school diploma in the same manner as the regular vocational education program. The program prepares special education eligible students for graduation followed by employment or post school vocational training. Adaptation in the regular vocational education curriculum should be approved by Vocational Education Services, Michigan Department of Education. No approval is needed to add supportive personnel or adaptive equipment.	Special education supportive services such as a resource room, curriculum resource modification and work study coordinator. Vocational Rehabilitation Services may be available as defined above.	Same as above plus Vocational Education Special Funds for approved projects. Eligible Vocational Rehabilitation clients may receive supportive services needed to maintain them in on-the-job training programs.
Special Vocational Education	Training in quality of a state school where qualified training services are provided. Vocational training services are provided to students who are not eligible for regular vocational education services or to provide entry level job skills. It is designed for handicapped persons where disability prevents or impedes into a regular vocational education program. It is usually limited to handicapped students assigned to self contained special education programs.	Students receive credits toward a regular high school diploma. The program may be used to prepare special education students for integration into regular vocational education. It provides the students who considered the training with a job entry skill. The program must be authorized in the Intermediate School District Plan for the delivery of Special Education Programs and Services as approved by Special Education Services and Vocational Education Services of Vocational Education Units are used.	Same as above.	Same as above.
Individual Vocational Training	Training in special programs. M.D.T.A. approved training services are provided by a governmental agency. Individualized training program designed to a handicapped student's special interests and not generally available in the geographic area. Instructional support (learning objectives, delivery etc.) This program may be used for the special education student who special interest or special training needs. Continued training sessions may be used to long as students do not receive employment and are not paid a wage.	Students receive credits toward a regular high school diploma. The Individualized Planning and Placement Committee must approve the training plan and the amount of credit to be given. This type of program should provide job entry skills and it may also provide prerequisite skills needed for entry into post school training. The individual plan must be approved by the Intermediate Director of Special Education or his designee in writing consistent with the intent of the Intermediate Plan.	Special education classroom programs and supportive services that ready services may not be provided until the completion of the training sequence. A vocational education or special education teacher may supervise the program. Placement in M.D.T.A. of the program falls in the category V.E.S. they provide post school services, rehabilitation counseling, placement and follow up services and may participate in the costs of placement, tests, physical examination, etc. when the school or family or another public agency cannot cover the costs.	State and membership Special Education Categories A and B in Intermediate Special Education reimbursement where appropriate.
Pre-employment Services	The program is designed for students whose disability prevents the use of the regular education program for obtaining vocational employment. The service is provided as a sheltered workshop authorized in the U.S. Department of Labor to prepare the student. Placement is limited to 6 months by U.S. Department of Labor rules. This is a classroom career and not an instructional program.	Placement does not qualify for receipt of credits toward a high school diploma. Placement also vocational education work entry credit services or sheltered or remedial employment are some of the usual outcomes. A school may operate or contract for the services of sheltered in the Intermediate Special Education Plan as approved by the Department of Education.	Students must be assigned to a special education classroom program. They may receive supportive services from Special Education.	Reimbursed under State Special Education Aid for remedial programs and Intermediate Special Education reimbursement where appropriate.
Work Study Center Services	A program designed exclusively to provide work therapy for students whose handicap is to work so to make them productively (eventually) independent. The program must be licensed by the U.S. Department of Labor.	Placement is a work activity center in a special education service. Therefore, no credits are given toward graduation. The student usually remains in the program until they have reached an age where they are no longer eligible for special education or until they are able to function in a regular V.E.S. program, community employment or a regular sheltered employment. The program must be authorized in the Intermediate Special Education Plan as approved by the Michigan Department of Education.	Same as above. Refer to guidelines for delivery of sheltered workshops for the delivery of Special Education Services.	Same as above.
Work Study Services for Students Who Have Not Had Vocational Education	Available to any special education student who is within one year of graduation and who is not in an approved school of state to drop out. Students must be employed and paid a wage.	Students do not receive credits for placement in this program until they have taken a V.E.S. program or are satisfactorily employed in a related vocational education outcome. Students are expected to become employed as a result of the program. The program must be approved by the Individualized Planning and Placement Committee in writing. Vocational education or vocational teacher and it is the first interest of the student. Handicapped students who have dropped out of school and who are able to work in an employment service should be referred to E.S.C. or V.E.S.	Special education classroom programs, supportive services, work study services and Vocational Rehabilitation Services. Refer to guidelines for work study programs approved by Special Education personnel.	State and membership State Special Education Categories A and B in Intermediate Special Education reimbursement where appropriate. Vocational Rehabilitation may receive reimbursement and costs covered by an employer and certain sheltered work or school uniforms for students who qualify.

Guidelines for Special Education Programs and Services in Michigan. Michigan Department of Education, Special Education Services, 1977.

APPENDIX B-2

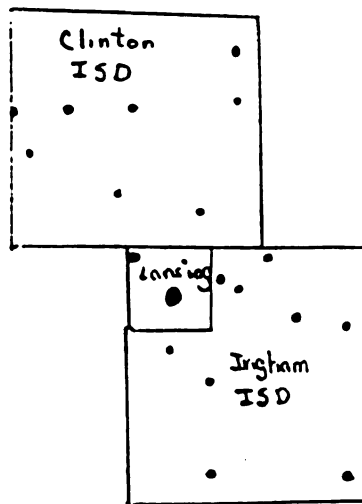
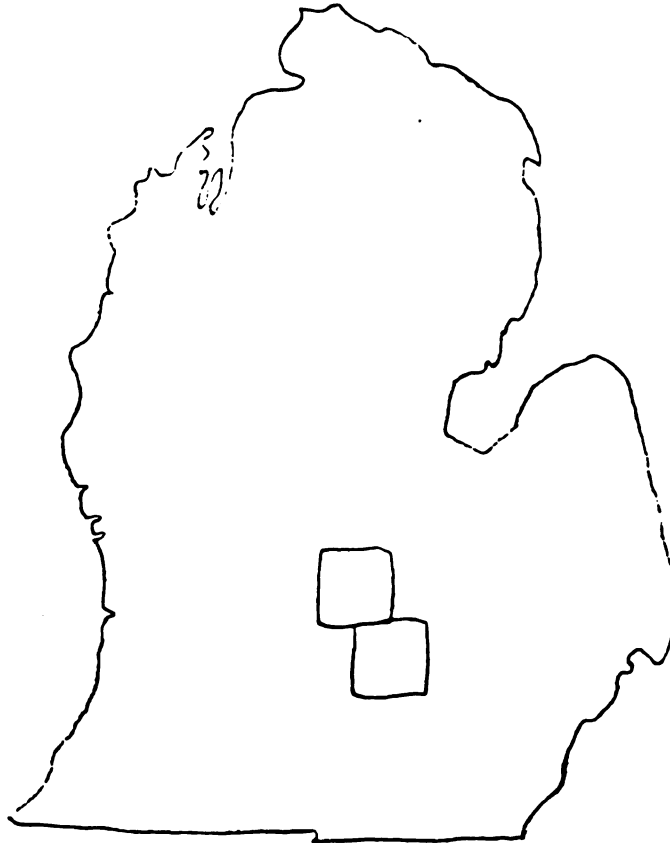
PLANS FOR SPECIAL EDUCATION STUDENTS LEADING TO HIGH SCHOOL DIPLOMA

Regular Education Course of Study	Special Education Course of Study (as approved by I.S.D.)
1. State and local requirements	1. State and local required program content
2. Normal course of study with regular subject performance objectives (with or without special education support: resource room, sp. ed. classroom, teacher consultant, etc.)	2. Individualized educational plan must include integration into regular education programs appropriate by the IEPC
3. Regular education performance objectives for classes taught by special and/or regular educators	3. Performance objectives for each student may or may not be modified. If modified, then there must be collective effort of sp. ed. and special area teacher
4. General and special education supportive services may be supplied, such as speech and language services, reading support, etc.	4. Personal adjustment training
5. Vocational education not necessary. When an IEPC deems necessary, handicapped students must be provided equal opportunity to access vocational education classes as part of the regular education program	5. Pre-vocational training
	6. Vocational training (adapted, special, or individual vocational training as recommended by IEPC). Sp. ed. services must include related math, reading, counseling and job placement
	7. Work study (optional)
	8. Referred to Vocational Rehabilitation Services when appropriate
	9. One year follow-up

Reproduced from Guidelines for Special Education Programs and Services in Michigan, Michigan Department of Education, 1977.

APPENDIX B-3

MAP OF SAMPLE AREA



- indicates local school districts

APPENDIX B-4

DATA COLLECTION SHEET

Subject No. _____

EMI Student _____

Sex _____

Regular Student _____

Grade _____

IEP Vocational Goal
(EMI student only)

Regular vocational class (name)

Yes _____

No _____

Regular vocational program (name)

Segregated Sp. Ed. vocational
class (name)

Segregated Sp. Ed. vocational
program (name)

APPENDIX B-5

INTERVIEW QUESTIONS

1. Who is responsible for enrolling EMI students in vocational training programs?
2. Who is responsible for deciding on the EMI students vocational IEP goals?
3. How do you decide what is an appropriate vocational program for an EMI student?
4. Do you conduct vocational evaluations before deciding on vocational programming for EMI students?
5. How do you decide if a student should enroll in a special education vocational program or a regular education vocational program?
6. If you decide on a regular vocational program, how do you decide which one is appropriate?
7. Who influences the decision as to which regular vocational program is appropriate? Student, parents, counselor, teacher, etc.?
8. Do you counsel male EMI students into traditionally "female" programs? Why or why not?
9. Do you counsel female EMI students into traditionally "male" programs? Why or why not?
10. Do you think EMI students enroll in a certain limited range of vocational programs? Why or why not?
11. Do you think male EMI students enroll in a certain limited range of vocational programs? Why or why not?
12. Do you think female EMI students enroll in a certain limited range of vocational programs? Why or why not?
13. What factors determine the chances of success for an EMI student in a regular vocational program?
 - a. Motivation
 - b. Academic skills
 - c. Parental support
 - d. T/C or counseling support
 - e. Vocational instructor
 - f. Instructional materials
 - g. Testing instruments
 - h. Behavior
 - i. Other

APPENDIX C-1

PHYSICAL PLANT SERVICES

CAREER OPPORTUNITIES

Upon successful completion of this program, and in some cases with additional training and work experience, you may qualify for employment in the following or related positions:

Apartment Manager	D.O.T. 187.167-190
Building Custodian	D.O.T. 381.687-014
Maintenance Mechanic	D.O.T. 891.137-010
Groundskeeper	D.O.T. 891.137-014
Small Appliance Repair Person	D.O.T. 723.381-010
Warehouse Worker	D.O.T. 922.687-058
Professional Carpet Cleaner	D.O.T. 369.384-014
Hotel-Motel Service Person	D.O.T. 238.362-010

PROGRAM INFORMATION

Length of program.	One year
Grade of entry	Eleventh or Twelfth
Recommended prerequisites.	Math and Industrial Arts
Recommended electives.	Math and Woodshop

HOW YOU CAN APPLY

Call 374-4164 for assistance and/or.

Contact your counselor or vocational advisor who can

Direct you to additional information

Assist you with the application procedure



Reproduced from Harry Hill Vocational-Technical
Center (Lansing School District).

IN PHYSICAL PLANT SERVICES, A PERSON
MAY PERFORM ONE OR MORE OF THE
FOLLOWING DUTIES:

- Spray buff floors
- Wire light switches
- Grease fans
- Backwash pools
- Repair faucets and other plumbing fixtures
- Repair plaster walls
- Strip and refinish floors
- Seed, fertilize, and groom lawns
- Maintain supply inventories

TO ENTER THIS CAREER, IT IS
RECOMMENDED THAT YOU:

- Be able to follow directions and work independently
- Enjoy active physical work
- Have interest in maintenance and repair
- Have good physical health



AT THE CENTER

YOU WILL:

- Learn cleaning procedures for various surfaces
- Learn minor maintenance in electrical and plumbing
- Learn cleaning and maintaining exterior grounds, sidewalks, and entrance ways
- Learn chemicals, their uses and hazards

Reproduced from Harry Hill Vocational-Technical
Center (Lansing School District).

APPENDIX C-2

ELECTRONICS TECHNOLOGY

CAREER OPPORTUNITIES

Upon successful completion of this program, and in some cases with additional training and work experience, you may qualify for employment in the following or related positions:

Radio-Television Repair Technician	D.O.T. 823.281-014
Computer Repair Technician	D.O.T. 822.261-026
Telephone Installer	D.O.T. 822.381-018
Appliance Repair Technician	D.O.T. 723.584-010
Electrical Technician	D.O.T. 003.161.010
Electronics Technician	D.O.T. 003.161.014
Electronics Mechanic	D.O.T. 828.281-010
Sound Technician	D.O.T. 829.281-022

PROGRAM INFORMATION

Length of program.	Two years
Grade of entry	Eleventh
Recommended prerequisites.	Algebra and Shop Courses
Recommended electives.	Math, Drafting, Algebra, and Physics

HOW YOU CAN APPLY

Call 374-4164 for assistance and/or.

Contact your counselor or vocational advisor who can:

Direct you to additional information

Assist you with the application procedure



Reproduced from Harry Hill Vocational-Technical
Center (Lansing School District).

IN ELECTRONICS TECHNOLOGY, A PERSON

MAY PERFORM ONE OR MORE OF THE

FOLLOWING DUTIES:

- Troubleshoot and service electronic systems
- Install and repair electronic equipment
- Work with sound and intercommunication systems
- Work with automotive electronics systems
- Conduct electrical research
- Work with industrial electrical/electronics, radio systems, radar systems
- Work with appliance repair
- Work with telephone systems

TO ENTER THIS CAREER, IT IS

RECOMMENDED THAT YOU:

- Have the ability to read and comprehend technical manuals
- Have ability and skills in mathematical functions and abstractions
- Enjoy problem solving
- Enjoy working with hands and have good physical dexterity
- Enjoy working independently
- Have good eyesight and good color vision



AT THE CENTER

YOU WILL:

- Learn the use of math in solving electrical problems
- Learn building of electrical circuits
- Learn to make electrical measurements
- Learn to apply electronic theories and concepts
- Learn reading of electrical diagrams
- Learn proper soldering techniques
- Learn repairing of electrical/electronic equipment
- Learn basic computer theory and operation

Reproduced from Harry Hill Vocational-Technical Center (Lansing School District).

APPENDIX C-3

OCCUPATIONAL TRAINING RECORD-ACCOUNTING

NAME _____
 STREET _____
 CITY _____ STATE _____
 BIRTH _____ DATE OF BIRTH _____
 PLACE _____
 HEIGHT _____ WEIGHT _____
 COLOR OF EYES _____ COLOR OF HAIR _____
 SOCIAL SECURITY NO _____

 Trainee's Signature

STUDENT ATTITUDE CHECKLIST

Each statement is rated on a scale of 1 to 5. One (1) being the poorest quality and five (5) the highest quality.

Safety Consciousness	_____
Completes Assignments	_____
Regular Attendance	_____
Reports On Time	_____
Follows Directions	_____
Demonstrates Cooperation	_____
Appropriate Appearance	_____
Accepts Constructive Criticism	_____
Demonstrates Initiative	_____

PROGRAM COMPETENCIES

C - Competent	L - Limited Ability
I - Introduced-Exposed	N - No Exposure

ACCOUNTING

☐ Service Business—Cash Journal
☐ Merchandise Business—Partnership—Combination Journal
☐ Automated Accounting System
☐ Merchandise Business—Corporation—Special Journals
☐ Accounting Control Systems—Voucher, Petty Cash, Inventory
☐ Accounting Cycle
☐ Partnership Accounting
☐ Departmentalized Accounting
☐ Automated Departmentalized Accounting
☐ General Accounting Adjustments
☐ Corporation Accounting
☐ Cost Accounting
☐ Management Accounting

MICROCOMPUTER

☐ General Ledger
☐ Accounts Payable
☐ Accounts Receivable
☐ Payroll
☐ Service Business
☐ Partnership
☐ Corporation

RELATED SKILLS

☐ Employment Opportunities Search
☐ Employment Applying and Interviewing
☐ Operation of Calculator
☐ Records Management
☐ Telephone Techniques
☐ Business Mathematics
☐ On-The-Job Training

Reproduced from Harry Hill Vocational-Technical
 Center (Lansing School District).

APPENDIX C-4

FOOD MANAGEMENT

CAREER OPPORTUNITIES

Upon successful completion of this program, and in some cases with additional training and work experience, you may qualify for employment in the following or related positions:

Waiter/Waitress	D.O.T. 311.477-026
Cook Apprentice	D.O.T. 313.361-018
Cook Helper	D.O.T. 317.687-010
Short Order Cook	D.O.T. 313.361-022
Baker Helper	D.O.T. 313.684-010

PROGRAM INFORMATION

Length of program	One year
Grade of entry	Eleventh or Twelfth
Recommended prerequisites	Math, Reading, Foods and Nutrition
Recommended electives	Foods and Nutrition, General Business, Business Math, and Home Economics

HOW YOU CAN APPLY

Call 374-4164 for assistance and/or

Contact your counselor or vocational advisor who can:

Direct you to additional information

Assist you with the application procedure



Reproduced from Harry Hill Vocational-Technical Center (Lansing School District).

APPENDIX C-5

OCCUPATIONAL TRAINING RECORD - FOOD MANAGEMENT

INSTRUCTORS COMMENTS

- ___ Grill
- ___ Deep Fat Fryer
- ___ Mixer/Attachments
- ___ Food Slicer/Attachments
- ___ Beverage Making Equipment
- ___ Buffalo Chopper
- ___ Refrigerators, Coolers, Freezers
- ___ Hot Food Service Counters
- ___ Dish Machine
- ___ Steam Kettle
- ___ Garbage Disposal
- WAITER / WAITRESS / DINING ROOM ATTENDANT AND SERVICE AREA
- ___ Carry Dirty Dishes
- ___ Set Table With Placemat, Napkin, Silverware
- ___ Replenish Supplies For Dining Room
- ___ Supply Service Bar With Food
- ___ Serve Ice Water And Beverage To Customers
- ___ Clean And Replenish Back Up Supplies For Dining Room
- ___ Clean Service Area
- ___ Select Proper Serving Utensils And Portion Food
- ___ Run Errands And Deliver Food Orders
- ___ Serve Food To Patrons At Cafeteria Service Area
- ___ Present Menu, Answer Questions
- ___ Make Suggestions Regarding Food And Service
- ___ Write Order On Check
- ___ Relay Order To Kitchen And Serve Courses
- ___ Observe Guests To Fulfill Any Requests
- ___ Clear And Reset Tables
- CASHIER
- ___ Receive Cash From Customers And Record Amounts
- ___ Compute / Recompute Bill
- ___ Use Adding Machine, Cash Register
- ___ Make Change, Issue Receipts
- ___ Record Amount Received
- ___ Prepare Reports Of Transactions
- ___ Read, Record Totals And Verify Cash Before And After Sales
- ___ Greet And Seat Patrons
- ___ Answer Telephone
- ___ Take Reservations
- ___ Make Seating Charts

Occupational Training

RECORD OF

LANSING SCHOOL DISTRICT

TRAINEE ENROLLED IN THE PROGRAM

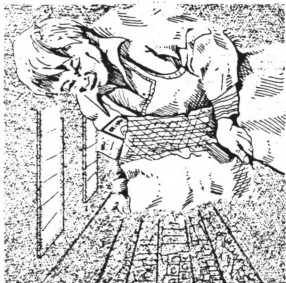
_____ 19 ____ AND COMPLETED

TRAINING ON _____ 19 ____

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Center (Lansing School District).

BUSINESS SERVICES

People in business services provide services to sell products to customers. They assist customers in choosing and buying products. They prepare and stock merchandise and clean customer areas or rooms. A Career Center student will learn sales and service skills. A student may train for a job as a beggar, stockperson, cashier, delivery helper, room clerk, housekeeper, sales clerk, shipping and receiving clerk, supply clerk and counter clerk. People in business services work in grocery stores, clothing stores, department stores and drug stores. Room clerks and housekeepers work in hotels and motels.



As a bagger you will

- ...Bag customer purchases
- ...Carry the bags to the car
- ...Collect shopping carts

As a stockperson or supply clerk you will

- ...Order and deliver supplies
- ...Receive, check, unpack and tag merchandise
- ...Stock shelves

As a cashier you will

- ...Operate the cash register
- ...Total customers' bills
- ...Handle coupons, bottle returns and rain checks

As a delivery helper or a shipping and receiving clerk you will

- ...Load and unload trucks
- ...Fill out forms for receiving merchandise
- ...Tag merchandise and stock shelves

As a counter or sales clerk you will

- ...Help customers select and buy products
- ...Operate the cash register

As a room clerk you will

- ...Carry luggage

As a housekeeper you will

- ...Clean hotel/motel rooms

Reproduced from Capital Area Career Center (Ingham ISD).

VEP FORM - (Vocational Educational Plan)
Special Education - Vocational Education - Rehabilitation

[illegible]

Reproduced from Lansing School District.

TEXTBOOK, AUTO MECHANICS



Engine Service— Pistons and Rods

This chapter continues the discussion of engine service and describes the servicing of connecting rods, rod bearings, pistons, and piston rings.

CONNECTING RODS AND ROD BEARINGS

§ 292. BEARING OIL-LEAK DETECTOR On many engines, the connecting-rod and main bearings (crankshaft bearings) can be checked for wear with an oil-leak detector (Fig. 19-1) before the engine is torn down. To use the detector, the oil pan is removed (§ 295), and the detector hose is connected to the pressure side of the engine lubricating system (at the oil filter, for example). Then, with the detector filled with SAE 30 oil, an air pressure of 25 psi (pounds

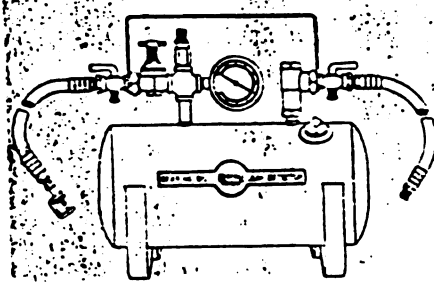


Fig. 19-1. Engine-bearing oil-leak detector to check main and connecting-rod bearings for wear. (Federal-Mogul Corporation)

per square inch) is applied to the detector tank. This pressure forces oil through the engine lubricating system. If bearings are worn, considerable oil will leak from them. Worn bearings greatly increase engine oil consumption because they pass more oil (see § 266). The detector manufacturer states that a normal bearing will leak between 20 and 150 drops of oil a minute. If it leaks more, the bearing is worn. If it leaks less than 20 drops per minute, then either the bearing clearance is too small or else the oil line to the bearing is stopped up.

NOTE: When oil-passage holes in the crankshaft and bearing align, considerable oil will be forced through the bearing, giving the appearance of excessive wear. In such a case, the crankshaft should be rotated somewhat to move the oilholes out of register.

§ 293. PREPARING TO REMOVE RODS Connecting rods and pistons are removed as an assembly from the engine. Removing, servicing, and replacing connecting rods requires about 5 to 8 hours, according to the type of engine. About 3 additional hours is required to install new piston rings. Additional time is needed for such services as piston-pin or bushing replacement. On most engines, the piston-and-rod assemblies are removed from the top of the engine (on a few, from the crankcase end). Thus, the first step is to remove the cylinder head. Cylinders should be examined for wear. If wear has

APPENDIX D-2

TEXTBOOK, COSMETOLOGY

358

FUNCTIONS OF THE SKIN

exception of the palms and soles, these glands are found in all parts of the body, particularly the face.

Sebum is a semi-fluid, oily substance produced by the oil glands. Ordinarily, it flows through the oil ducts leading to the mouths of the hair follicles. However, when the sebum becomes hardened and the duct becomes blocked, a blackhead is formed. Cleanliness is of prime importance in keeping the skin free of blemishes.

The principal functions of the skin are: protection, sensation, heat regulation, excretion, secretion and absorption.

1. **Protection.** The skin protects the body from injury and bacterial invasion. The outermost layer of the epidermis is covered with a thin layer of sebum, thus rendering it waterproof. It is resistant to different degrees of temperature, minor injuries, chemically active substances, and many microbes. If germs do invade, the skin becomes inflamed and in the process destroys them.
2. **Sensation.** Through its sensory nerve endings, the skin responds to heat, cold, touch, pressure and pain. Extreme stimulation of a sensory nerve ending produces pain. A minor burn is very painful, but a deep burn that destroys the nerves may be painless.
3. **Heat regulation.** The healthy body maintains a constant internal temperature of about 98.6 degrees Fahrenheit. As changes occur in the outside temperature, the blood and sweat glands of the skin make necessary adjustments in their functions. Heat regulation is a function of the skin, which is an organ that protects the body from environment. Heat is lost by the evaporation of sweat.
4. **Excretion.** Perspiration from the sweat glands is excreted from the skin. Water lost by perspiration carries salt and other chemicals with it.
5. **Secretion.** Sebum is secreted by the sebaceous glands. Excessive flow of oil from the oil glands may produce seborrhea (seb-o-re'ah). Emotional stress may increase the flow of sebum.
6. **Absorption** is limited, but it does occur. Female hormones applied in a face cream can enter the body through the skin and influence the body to a very minor degree. Fatty materials, such as lanolin creams, are absorbed largely through the hair follicle and sebaceous gland openings.

The skin has an immunity responsiveness to many things that touch it or gain entry into it.

Structures related to the skin are: hair, nails, sweat and oil glands.

APPENDIX D-3

HANDOUT, HEALTH SERVICES

Procedure Sheet BLOOD PRESSURE

Definition: Pressure of the blood against the wall of the arteries.

Purpose: To aid in diagnosis and treatment.

Equipment: Stethoscope
Sphygmomanometer

PROCEDURE:

1. Explain procedure to patient.
2. Have patient in comfortable, relaxed position.
3. Place sphygmomanometer in a position that makes the scale easy to read; expell any air left in the cuff.
4. Roll patient's sleeve well above elbow on the left arm and wind the cuff of the sphygmomanometer smoothly and snugly around upper arm.
5. Locate the bracial artery by feeling for pulsation.
6. Put the ends of the stethoscope in your ears and the diaphragm over the area where you felt the pulsation.
7. Close the valve on the bulb and inflate cuff until mercury rises to 180mm or higher if necessary.
8. Open the valve slowly, allowing air to escape from cuff until the sound of pulsation is heard - this designates the systolic pressure.
9. Continue to slowly deflate cuff until sound disappears and note the level of mercury at this point-this designates the diastolic pressure.
10. Release valve so remaining air in cuff escapes.
11. If necessary, repeat procedure to verify reading.
12. Remove equipment and make patient comfortable.

Special Considerations:

1. Prolonging of procedure affects the accuracy of the reading and is uncomfortable to the patient.
2. Never pump the cuff up more than twice.

Charting:

1. Time and the systolic and diastolic readings (systolic/diastolic).
2. Report any significant deviations from normal to the charge nurse.

(Health Assistants 7-27-79)

APPENDIX D-4

HANDOUT, FOOD SERVICE

FOOD SERVICE TERMINOLOGY

<u>Blend:</u>	To <u>mix</u> two or more ingredients <u>thoroughly</u> together.
<u>Boil:</u>	To bring a liquid to a temperature at which the bubbles rise and break over the surface rapidly.
<u>Boiling Point of Water</u>	212° F at sea level (at higher elevations it will boil at higher temperatures.)
<u>Bone:</u>	To <u>remove</u> the bones from meat, fish, or poultry.
<u>Boullion:</u>	Very clear and rich stock usually made from beef.
<u>"Bouquet Garni":</u> (boo-kay-garnee)	A mixture of herbs, spices, or pieces of vegetables tied inside a cheesecloth bag and added to a liquid to impart flavor, and then removed before serving.
<u>Braise:</u>	To <u>simmer</u> meat, that has been browned, gently in a <u>covered</u> pan or casserole in the oven or on top of the range with a <u>small amount of liquid</u> for long period of time in order to tenderize meat. (synonomous terms: Pot Roast and Stew.)
<u>Bread:</u>	To coat with bread crumbs before cooking.
<u>Broil:</u>	To cook by direct heat from above at a temperature of 500°-550° F.
<u>Broth:</u>	The liquid in which meat, fish or vegetables is cooked. (synonomous term - "Stock".)
<u>Brown Sauce:</u>	One of four basic sauces, made from brown stock and roux. (synonomous term - "Espagnole Sauce".)
<u>Canape</u> (can-a-pay)	A cold appetizer usually made by a paste, spread, or mixture placed on a cracker or bread base and garnished attractively.
<u>Caramelize:</u>	To heat sugar until a brown color and thickened syrup consistency.
<u>Chill:</u>	To place in a refrigerator until cold.
<u>Chop:</u>	To cut into small pieces using a knife or some other sharp tool.
<u>Choux Paste:</u> (chew-paste)	A paste consisting of eggs, water, salt, shortening, and flour. Used in making eclairs and cream puffs.
<u>Coat:</u>	To cover entire surface of one food with some other food product such as flour, sugar, bread crumbs, cheese, or BBQ Sauce.
<u>Cool:</u>	To allow to stand at room temperature until no longer warm to the touch.
<u>Cream:</u>	To beat butter (fat) and sugar together with a whip or electric mixer until light and fluffy.

(continued over)

APPENDIX D-5

INSTRUCTIONAL MATERIAL, ELECTRONICS

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4

WORD GUIDE

OHM - UNIT OF MEASURE FOR A RESISTOR.

INFORMATION

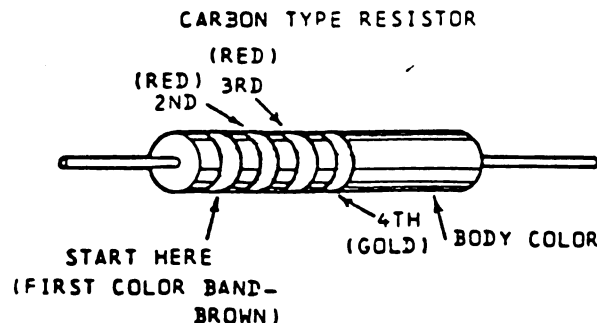
THE UNIT OF MEASURE FOR A RESISTOR IS CALLED AN OHM. A GREEK LETTER IS USED TO ABBREVIATE THE WORD OHM. THE GREEK SYMBOL IS Ω , AND IS CALLED OMEGA. THE TERM OHM IS USED IN ALL BRANCHES OF ELECTRONICS IN MEASURING RESISTORS.

WITH THIS INFORMATION, WE CAN LEARN ABOUT THE COLOR BANDS THAT ARE PAINTED AROUND CARBON-TYPE RESISTORS. EACH BAND PLAYS A CERTAIN PART IN FINDING THE EXACT VALUE OF THE RESISTOR SIZE.

AN EXAMPLE ON HOW TO DETERMINE THE VALUE OF A RESISTOR

THERE ARE USUALLY FOUR COLOR BANDS ON EACH RESISTOR. YOU START READING THE COLOR BANDS FROM THE END THAT HAS THE LEAST AMOUNT OF BODY COLOR SHOWING.

YOU MAY SEE A RESISTOR THAT LOOKS LIKE THIS:



APPENDIX D-6

INSTRUCTIONAL MATERIAL, CUSTODIAL SERVICE

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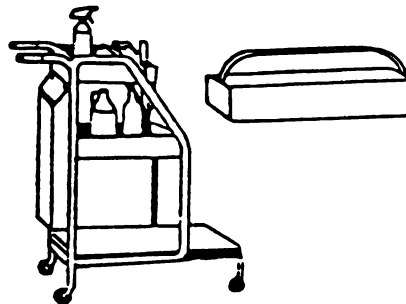
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WORD GUIDE

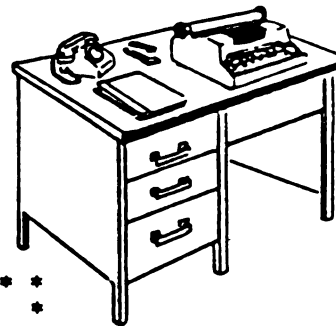
GRAIN - LINES THAT ARE SEEN WHEN
LOOKING AT FURNITURE (SUCH
AS WOOD GRAIN).

JOB STEPS

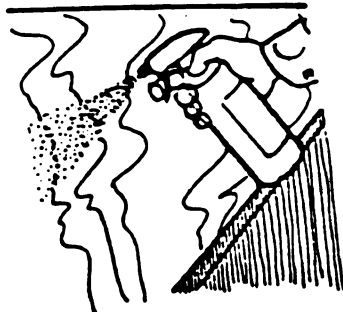
1. GET YOUR EQUIPMENT. CHECK TO BE SURE YOU HAVE ALL OF IT.
2. USE A CART OR CARRIER FOR YOUR EQUIPMENT, IF THERE IS ONE.



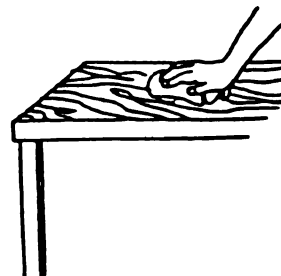
3. LIFT AND WIPE UNDER THINGS SUCH AS TELEPHONES, STAPLERS, TYPEWRITERS OR PAPERS. PUT THEM BACK WHERE THEY WERE.



* CAUTION: SOME EMPLOYERS DO NOT WANT PAPERS
* MOVED. ASK YOUR SUPERVISOR ABOUT
* THE RULES.



4. WIPE THE DESK CLEAN WITH A CLOTH. BE SURE TO WIPE WITH THE GRAIN.



5. FOR A DESK WITH A GLASS TOP, SPRAY A LITTLE GLASS CLEANER ON THE DESK TOP.

APPENDIX D-7

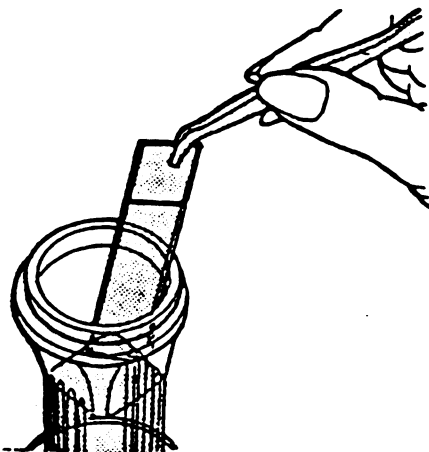
INSTRUCTIONAL MATERIAL, MEDICAL LABORATORY

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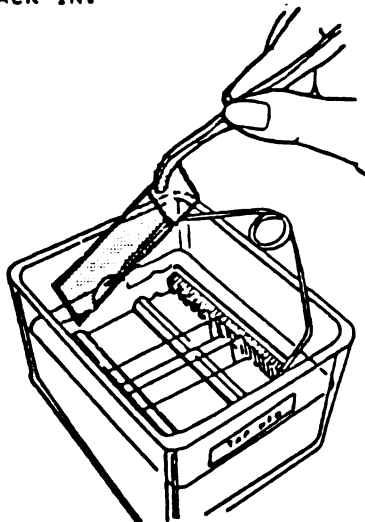
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JOB STEPS

8. DO
- *USING YOUR SLIDE FORCEPS, PLACE THREE SLIDES IN THE GROOVES IN YOUR COPLIN JAR, FROSTED END UP.
 - *PRACTICE PUTTING THE SLIDES IN AND PULLING THEM OUT. BE SURE TO HOLD THE FROSTED END ONLY.
 - *PRACTICE PLACING TWO SLIDES BACK TO BACK IN THE SAME GROOVE AND REMOVING THEM.



9. DO
- *USING YOUR SLIDE FORCEPS, PLACE THREE SLIDES IN A STAINING RACK AND PUT THEM INTO A STAIN DISH.
 - *PRACTICE PULLING SLIDES OUT OF THE RACK AND PUTTING THEM BACK IN.



APPENDIX D-8

INSTRUCTIONAL MATERIAL, FOOD SERVICE

4501 11 005

3

WORD GUIDE

CONTAMINATION - SPOIL WITH DIRT OR
GERMS.

INFORMATION

FOOD POISONING AND OTHER ILLNESSES CAN BE CAUSED BY HUMAN CONTAMINATION OF FOOD. TO BE SURE THAT YOU ARE WORKING AT YOUR BEST AND NOT PASSING ON AN ILLNESS, YOU MUST BE CAREFUL WHEN HANDLING AND MAKING FOOD.

FIVE WAYS TO SAFE FOOD

1. CLEAN HANDS--DIRTY HANDS SPREAD GERMS. HANDS AND FINGERNAILS SHOULD BE WASHED THOROUGHLY WITH SOAP AND WATER BEFORE WORK, AFTER USING THE TOILET AND EVERY TIME THEY ARE SOILED.
2. CLEAN SERVICE--AFTER USE, UTENSILS SHOULD BE SCRAPED, WASHED CLEAN IN HOT, SOAPY WATER AND SANITIZED AS REQUIRED BY THE HEALTH DEPARTMENT. STORE UTENSILS AND PAPER SERVICE IN A CLEAN, PROTECTED PLACE.
3. CLEAN FOOD--FOOD MAY BE INFECTED BY COUGHS, SNEEZES, HANDLING, DIRTY EQUIPMENT, VERMIN, ANIMALS AND WASTE. KEEP FOOD CLEAN AND PROTECTED DURING STORAGE, PREPARATION, DISPLAY AND SERVICE.
4. SAFE TEMPERATURE--COLD STOPS GERMS FROM GROWING. HEAT KILLS THEM. COLD FOODS SHOULD BE KEPT COLD; HOT FOODS SHOULD BE KEPT HOT. NEVER LEAVE PREPARED FOOD STANDING AT ROOM TEMPERATURE.
5. HEALTHY WORKERS--FOOD WORKERS SHOULD BE FREE OF COLDS, DIARRHEA AND CERTAIN OTHER DISEASES WHICH MAY BE PASSED TO OTHERS THROUGH FOOD. FOOD POISONING MAY BE CAUSED BY GERMS FROM INFECTED CUTS, PIMPLES AND BOILS. IF YOU HAVE ANY OF THESE CONDITIONS TELL YOUR SUPERVISOR AND SEE YOUR DOCTOR.

APPENDIX D-9

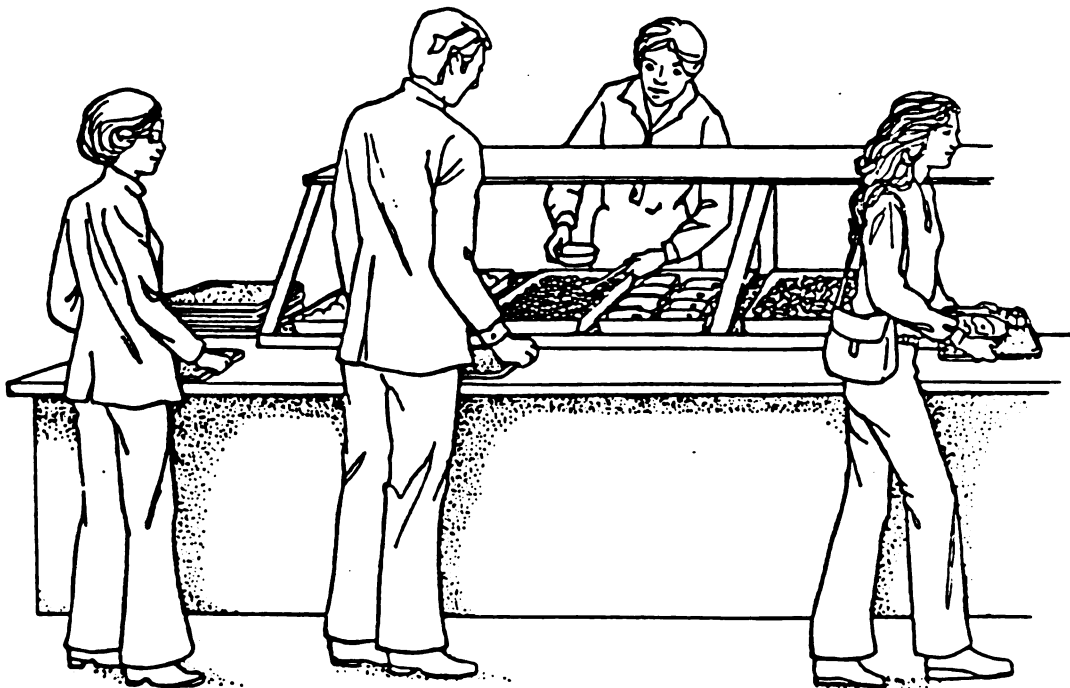
CAREER RELATED INSTRUCTIONAL MODULE, FOOD SERVICE

FPSFS09001

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JOB STEPS:

1. In this module you will learn what a runner is and what a runner does.
2. Have you ever been to a cafeteria? Below is a picture of a cafeteria service line.



Food workers behind the line serve food to customers.

The customers tell the food workers what they want. In some lines the customer can pick up some food themselves, like a salad.

FPSFS09001

5

3. Many people use a cafeteria service line. The food will run out after awhile. Someone must put more food out.



A runner is a person who puts more food on the cafeteria line. It is his/her job to see that the food does not run out.

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