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ABSTRACT

COMPARISON OF VOCATIONAL EDUCATION AND ON-THE-JOB TRAINING AS METHODS OF IMPROVING POST-SCHOOL EMPLOYABILITY OF THE EDUCABLE MENTALLY RETARDED

By

Jan Baxter

Public Act 198 of 1971 established mandatory special education in Michigan. The rules for implementing the act require educable mentally impaired students, whose disability precludes meeting the regular graduation requirements, to complete vocational education as a condition for graduation. Prior to this Act, on-the-job training was used almost exclusively to prepare the educable mentally impaired for employment.

Vocational education programs cost more to implement and operate than work study programs. This study was initiated to determine if the added cost of implementing vocational education programs for the educable mentally impaired could be justified.

The Michigan Department of Education was able to identify 67 districts with vocational education special needs projects and 47 districts with work study programs and no vocational education projects. A random sample of 25 districts was chosen from each group. One work study district was eliminated when it was learned subsequently that students

participated in vocational education special needs programs on a shared time basis.

Eighty percent (80%) of the Vocational Education Special Needs Coordinators and Work Study Program Coordinators responded to a survey that asked them to identify students who were to graduate in June of 1975. They identified 64 students with Intelligence Quotients of 70 or below.

The same program coordinators were asked to contact these students in April of 1976 and to report their work status.

Six of the 64 students, or 9.4 percent were in training programs, and two students, or 3.1 percent were listed as unpaid family workers or otherwise unavailable for employment. This left 54 students available for employment at follow-up. Thirty-six had completed vocational training and 16 the work study program.

Three preliminary statistical tests were included to determine if there were any differences in income or rate of employment due to sex, race, or level of intelligence of the subjects selected for this study. The only significant difference was that men earned 50 cents more per hour and \$22.24 more per week than women (significant at the .05 level).

There were three major hypotheses. The first stated that educable mentally impaired students who completed vocational training would have a higher rate of employment than students who completed on-the-job training as measured ten months after graduation. Vocational education graduates had

an employment rate of 67 percent compared to 44 percent for graduates of work study programs. The difference was not large enough to be statistically significant. The hypothesis was rejected.

The second hypothesis stated that vocational education graduates would earn more per hour, more per week, and have a greater income than work study graduates. Since there was an interaction between sex and income, a two-way analysis of variance was used in testing the hypothesis. The vocational education group earned 53 cents more per hour, \$14.05 more per week, and \$729.69 more for the ten-month period from graduation to follow-up than the work study group. The differences were not large enough to be statistically significant; therefore, the hypothesis was rejected.

The last hypothesis stated that the added cost of providing vocational education would be offset over a period of time as a result of increased income and taxes paid by students completing vocational training as compared to graduates assigned to on-the-job training. A cost-benefit analysis showed that the added cost of vocational education would be paid back in the form of increased student income within two years and the added cost would be returned to the taxpayer in the form of increased taxes within seven years. Based on these findings, the hypothesis was supported.

The evidence from this study was strong enough for the author to recommend the continuation of vocational education programs and to question the continued use of the on-the-job

Jan Baxter

training method for preparing educable mentally impaired
high school students for employment.

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AS METHODS OF IMPROVING POST-SCHOOL EMPLOYABILITY
OF THE EDUCABLE MENTALLY RETARDED

By
Morrison
Jan Baxter

A DISSERTATION

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1977

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TABLE OF CONTENTS

	Page
LIST OF TABLES	v
 Chapter	
1. INTRODUCTION	1
Background	1
Vocational Education As a Criterion for Graduation	2
Competency Based Programming	4
PROBLEMS RELATED TO VOCATIONAL EDUCATION FOR THE HANDICAPPED	6
PURPOSE OF THE STUDY	11
NEED FOR THIS STUDY	15
STATEMENT OF THE PROBLEM	16
2. REVIEW OF THE LITERATURE	17
Relationship Between Education and Income	17
On-The-Job Training as a Method of Improving Employability of the Retarded. .	21
Vocational Education as a Method of Improving the Employability of the Educable Mentally Impaired	27
Other Predictors of Employability of the Educable Mentally Impaired	28
Implications of Previous Studies	32
HYPOTHESES TO BE TESTED	33
Hypothesis I	33
Hypothesis II	33
Hypothesis III	34
Hypothesis IV	35
Hypothesis V	35
Hypothesis VI	35

Chapter	Page
3. RESEARCH DESIGN	36
Procedure for Identification and Selection of Subjects	37
Identification and Selection of School Districts	39
STUDENT IDENTIFICATION AND SELECTION	42
Evaluation of the Selection Design	45
Design of the Data Collection Instruments	46
Method of Collecting Data	53
Data Analysis Techniques	54
Methods of Measuring the Cost-Benefit Ratio	55
4. RESULTS	59
COMPARISON OF DISTRICT DATA	61
Summary of Analysis of District Data	65
ANALYSIS OF STUDENT DATA	66
Comparison of Subjects by Sex	67
Analysis of Subjects by Intelligence	74
Comparison of Subjects by Race	84
Comparison of Students Completing Vocational Education and Work Study Programs	91
Comparison of Vocational Education and Work Study Graduates' Rate of Employment at Follow-up	96
Comparison of Vocational Education and Work Study Graduates by Income at Follow-up	98
Analysis of the Costs and Benefits of Vocational Education Programs for the Educable Mentally Impaired	100
Summary of the Tests of the Hypotheses	105
5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	109
SUMMARY	109
Discussion of Significant Findings	109
Discussion of Other Findings	113

Chapter	Page
CONCLUSIONS	115
Limitations of the Study	117
RECOMMENDATIONS FOR FUTURE RESEARCH	121
BIBLIOGRAPHY	123
APPENDICES	
APPENDIX A. DATA COLLECTION FORMS SENT TO VOCATIONAL EDUCATION SPECIAL NEEDS DISTRICTS	127
APPENDIX B. DATA COLLECTION FORMS SENT TO WORK STUDY COORDINATORS	132
APPENDIX C. FOLLOW-UP SURVEY FORMS	136
APPENDIX D. MICHIGAN DEPARTMENT OF EDUCATION VOCATIONAL EDUCATION FOLLOW-UP SURVEY FORM	139
APPENDIX E. MICHIGAN DEPARTMENT OF EDUCATION VOCATIONAL REHABILITATION FOLLOW-UP SURVEY FORM	143
APPENDIX F. LETTER TO VOCATIONAL EDUCATION SPECIAL NEEDS COORDINATORS REQUESTING FOLLOW-UP DATA	145
APPENDIX G. LETTER TO SPECIAL EDUCATION WORK STUDY COORDINATORS REQUESTING FOLLOW-UP DATA	146
APPENDIX H. RESULTS OF THE EVALUATION BY THREE VOCATIONAL EDUCATION CONSULTANTS OF VOCATIONAL SKILLS OF STUDENTS SELECTED FROM VOCATIONAL EDUCATION DISTRICTS	148
APPENDIX I. TYPES OF JOBS HELD FROM GRADUATION TO FOLLOW-UP	149

LIST OF TABLES

Table	Page
1.1 Programs Leading to a High School Graduation	3
1.2 Special Education Students Age 16 Through 25 in Michigan Able to Benefit from Vocational Education	6
2.1 Income of the Head of the Family Listed by Educational Level (Total Population for Michigan)	18
2.2 Comparison of the Educational Level of Michigan's Disabled and Non-Disabled Ages 25-64 as Reported in the 1970 Census	19
2.3 Number and Percent of Retarded Students Who Dropped Out of Research Projects Prior to Completing On-The-Job Training	23
2.4 Relationship Between Intelligence Quotient and Employability	30
3.1 Districts Response: Survey to Identify Educable Mentally Impaired (EMI) Students Graduating in June of 1975	42
3.2 Number of Students Graduating From Districts With Vocational Education-Special Needs Projects in June of 1975	43
3.3 Number of Students Graduating from Districts With Work Study Programs in June 1975 . . .	44
3.4 Comparison of Items on the Vocational Education Special Needs Project Student Data Sheet (VE) and the Work Study Program Student Data Sheet (WS)	48
3.5 Selection of Students From Within Districts	51
3.6 Student Analysis Design	55

Table		Page
4.33	Frequency Distribution of Employers' Satisfaction Ratings of Educable Mentally Impaired Subjects of Various Races Who were Employed After Graduation	89
4.34	Frequency Distribution by Race of the Usefulness of High School Training as Reported by Educable Mentally Impaired Subjects Employed After Graduation	89
4.35	Comparison by Race of the Average Income of Educable Mentally Impaired Subjects Employed at Graduation and Ten Months After Graduation	90
4.36	Frequency Distribution of Educable Mentally Impaired Subjects Assigned to Vocational Education and Work Study Programs From Rural and Metropolitan Districts	91
4.37	Frequency Distribution of Educable Mentally Impaired Subjects by Intelligence Level and Type of Vocational Preparation	92
4.38	Frequency Distribution of Educable Mentally Impaired Subjects Assigned to Vocational Education and Work Study Programs by Race. .	93
4.39	Frequency Distribution of Educable Mentally Impaired Subjects Assigned to Vocational Education and Work Study Programs by Sex . .	93
4.40	Frequency Distribution of Educable Mentally Impaired Subjects Assigned to Vocational Education and Work Study Programs and Type of Classroom Placement Prior to Graduation	94
4.41	Frequency Distribution Comparing Vocational Rehabilitation (VRS) Referrals with Non-Vocational Rehabilitation Referrals by Type of Vocational Training	95
4.42	Frequency Distribution Listing the Employment Status of Educable Mentally Impaired Graduates Who Completed Vocational Education with Graduates Completing Work Study Programs	96

Table	Page
4.43 Frequency Distribution Comparing the Employment Rate of Educable Mentally Impaired Graduates Who Completed Vocational Education With Graduates Completing Work Study Programs	97
4.44 Average Income by Type of Training for Educable Mentally Impaired Subjects Ten Months After Graduation	99
4.45 Results of an Analysis of Variance Tests Measuring the Interaction Between Type of Training and Sex on Three Income Variables	100
4.46 Frequency Distribution Comparing the Satisfaction of Educable Mentally Impaired Graduates of Vocational Education and Work Study Programs on Jobs held after Graduation	101
4.47 Frequency Distribution Comparing Employers' Satisfaction with Work Done by Educable Mentally Impaired Graduates from Vocational Education and Work Study Programs	102
4.48 Added Benefits of Providing Vocational Education (VE) to Educable Mentally Impaired Students as Measured by Increased Income and Taxes Paid	104

Chapter 1

INTRODUCTION

Background

Public Act 198 of 1971 established mandatory special education in Michigan. One of the unique provisions of the act was the establishment of vocational training as a minimum program criterion for handicapped students who could not complete the regular education program. Section 10 of the Act reads:

The program shall include vocational training but need not include academic programs of college or university level.

Prior to this Act, on-the-job training (OJT) was used almost exclusively to prepare the educable mentally retarded (Intelligence Quotient 50-70) for employment. Retarded students were placed in employment as part of the school program and learned while on the job.

Michigan's mandatory legislation not only requires vocational training, but defines it in such a way as to require the traditional vocational education model. The definition of vocational education as stated in PA 198 reads as follows:

Vocational education means vocational or technical training or retraining which is given in schools or classes, including field or laboratory work incidental thereto, under public supervision and control, and is conducted as part of a program designed to fit individuals for gainful employment as semi-skilled or

skilled workers or technicians in recognized occupations, but excluding any program to fit individuals for employment in occupations which the Superintendent of Public Instruction determines, and specifies to be generally considered professional or as requiring a baccalaureate or higher degree. The term includes vocational guidance and counseling in connection with the training, instruction related to occupations for which the student is being trained or necessary for him to benefit from training, and the acquisition and maintenance and repair of instructional supplies, teaching aids and equipment, and construction or initial equipment of buildings and the acquisition or rental of land.

Note that the emphasis is on skill or semi-skill training which is given in schools or classrooms. The definition is so specific as to exclude the use of on-the-job training in lieu of vocational education. To date, Michigan is the only state with such a requirement. All other states are still placing heavy emphasis on on-the-job training as the primary delivery system. Many states have received deviation from the child labor provisions of the Fair Labor Act of 1938, as amended, which allows placement of educable mentally retarded in school-sponsored on-the-job training programs during school hours for students who are 14 or 16 years of age.

Vocational Education as a Criterion for Graduation

Handicapped persons have a right to remain in school until they graduate or reach age 26 (Section 298 c(1)f of PA 198 of 1971). One of the problems that faced the Department of Education was defining the conditions under which students could be graduated prior to age 26. Since the law defined vocational training as a minimum part of the curriculum, the Department chose completion of vocational education as one criterion for graduation.

The Special Education Code contains the rules promulgated by the State Board of Education for the implementation of Michigan's mandatory special education legislation. Rule 1, Subrule 5 defines the criteria for graduation.

"Normal course of study" means a regular education program leading to a high school diploma or a special education program approved in the intermediate plan leading to a high school diploma which as a minimum includes personal adjustment, pre-vocational and vocational training.

As defined above, there are two methods whereby a handicapped person can qualify for graduation which are described in Table 1.1.

Table 1.1

Programs Leading to a High School Graduation

Program	Regular Education	Special Education
Eligibility	Any student including the handicapped	Special education eligible students
Minimum Requirements	Set by the local Board of Education. Usually 16 units or credits including English, history, mathematics, science, and physical education	Set by the local district and approved by the Intermediate District. Includes personal adjustment, pre-vocational and vocational training including work study
Graduation Certificate	Regular diploma	Regular diploma

As used in Table 1.1, personal adjustment training means "instruction designed to assist the handicapped to develop personal and social skills needed for adult independent living, including, but not limited to activities of daily living, homemaking, mobility, personal health and appearance, recreation and the use of prosthetic devices and sensory aids." Pre-vocational education means "instruction needed as a prerequisite to vocational education, such as reading, writing, knowledge of commonly used tools, utensils and processes, familiarity with a broad range of occupations for which special skills are required and knowledge of the nature and extent of vocational limitations caused by a handicap and the use of prosthetic devices for the purpose of defining interest, aptitudes and abilities for individual vocational planning." Vocational education means "skilled or semi-skilled training given in a classroom or laboratory. The Michigan Special Education Code also specifies that students in special education programs must also include work study. Work study means on-the-job training, related counseling, and follow-up services." (R340.1701, sub-rule 1)

The terms on-the-job training (OJT) and work study (WS) will be used interchangeably in this document to refer to training that takes place while a student is being paid for producing goods and/or services for an employer.

Competency Based Programming

Traditionally, students have been required to take certain minimum courses and spend 12 years in school to

qualify for graduation. Michigan's mandatory special education legislation and the subsequent rules clearly change this pattern as it applies to special education students who cannot complete the regular education program.

Vocational training is defined in terms of skill or semi-skill training. Thus, the requirement for vocational training has moved special education automatically to a competency-based program rather than a program based on time in attendance or completion of a number of courses without specific criteria.

This study is based on the premise that the educable mentally impaired are capable of completing skill or semi-skill training. Baxter, Barber, and Thurber (1975) provide the following criteria for determining if training is at the skilled or semi-skilled level:

- (a) At the completion of the training sequence, special education students will have minimum skills to be employed in an occupation where vocational training is a prerequisite to employment. Welding, laboratory technician, and clerk typist are examples of occupations that require vocational training as a prerequisite to employment.
- (b) Students completing the vocational training sequence should be able to start work at a substantially higher job classification and/or rate of pay as a result of the training. This assumes that there are certain skills that a journeyman in this occupation generally learns on the job. It assumes that vocational training provides the student with some skills beyond those which are ordinarily brought to the job by any employee.

PROBLEMS RELATED TO VOCATIONAL EDUCATION
FOR THE HANDICAPPED

Programs for the educable mentally impaired have been affected most by the requirement for school districts to provide vocational education for students who cannot complete the regular education program. The data in Table 1.2, taken from actual enrollment in Michigan public schools during the 1974-75 school year, indicate that the educable mentally impaired comprise the largest category of students served in self-contained programs.

Table 1.2*

Special Education Students Age 16 Through 25 in Michigan
Able to Benefit from Vocational Education

Disability	Served in Regular Programs	Served in Self-contained Programs	Total
Physically Impaired	966	4754	5720
Emotionally Impaired	411	521	932
Learning Disabled	276	635	911
Educable Mentally Impaired	3180	5153	8333
Total	4833	11063	15896

*This table does not include students receiving speech, social work, or other supplemental services. Students too severely handicapped to benefit from vocational training such as the trainable mentally impaired have also been excluded.

At the present time, the Department of Education does not have any data on the number or percent of special education students whose disability is so severe as to preclude graduation from the regular program. It is assumed that the educable mentally impaired students who require placement in special education programs will not be able to meet the general education requirements for graduation.

This assumption cannot be made about the emotionally impaired, learning disabled, or physically impaired. These students are often placed in special classrooms because they need a special learning environment, teachers with special skills (sign language, braille, etc.), or because they receive therapy as part of the special education program. With the exception of students whose physical disability has affected their ability to learn to the point where they are academically retarded, most of the special education students in these categories can complete the minimum requirements needed to graduate from the regular education program.

It is difficult for many teachers and administrators to accept the requirement that vocational education must be part of the curriculum for the educable mentally impaired. Teachers are happy with the present method of using on-the-job training in place of vocational training. They cite a long and successful history with this type of delivery system.

Administrators are quick to point out that it may be more expensive to implement vocational education and that, even if they do, there is a lack of trained personnel.

It is true that the vast majority of special education teachers in Michigan were trained as elementary teachers. They are not prepared to implement a vocational education delivery system. This is further complicated by the fact that not one college or university is providing instruction to give special education teachers minimum competencies to provide skill or semi-skill training to the handicapped.

One alternative for resolving this problem would be to have vocationally certified teachers provide skill or semi-skill training to the educable mentally impaired.

Besides a present shortage of vocational education personnel, most do not feel qualified to meet the unique needs of students whose disability is so severe as to require placement in special classrooms.

Public hearings were held by the Michigan Department of Education staff in January of 1975 to solicit recommendations for changes in the rules for special education programs and services. Superintendents, directors of special education, and secondary special education teachers all requested the Department of Education to go to the Legislature and seek to have the requirement for vocational education for the handicapped removed from the law.

At the present time, the Michigan Department of Education has no data to validate the effectiveness of using the vocational education model versus the on-the-job training model for preparing the mentally retarded for employment.

New Federal legislation will force school districts to provide vocational training for the retarded in regular classrooms unless there is evidence to justify the continuation of work study or self-contained vocational education programs. Section 504 of the Rehabilitation Act of 1973, as amended, and Public Law 94-142, The Education Rights for Handicapped Act of 1975, both emphasize placing the handicapped in the least restrictive educational environment. However, at the present time, there is no method available for determining when placement of educable retarded students in regular vocational education classes is the least restrictive educational environment. Although authors like Anderson (1973), Dunn (1968), and Martin (1971) espoused mainstreaming, that is, placement of educable mentally impaired students in regular education classrooms, they provided no evidence as to its effectiveness.

It has been the policy of Vocational Education Services in the Michigan Department of Education to restrict the use of vocational education special needs funds, designated for the handicapped, to persons served in regular vocational education programs with supportive personnel. While this policy has been effective in increasing the number of special education students integrated into regular education programs from approximately 100 in 1969-70 to over 3800 in 1974-75, there is some question about the feasibility of successful integration of the educable mentally impaired functioning between the 50 and 60 Intelligence Quotient level.

When the policy was established in 1970, Michigan had no Intelligence Quotient cut-off score. There were many students assigned to special education programs for mentally impaired with Intelligence Quotients in the 80's.

According to the Department of Education statistics, 61.8 percent of educable mentally impaired students, age 16 and above, serviced during the 1974-75 school year, were placed in self-contained classrooms. It is assumed that the educable mentally impaired students, who require placement in special education classrooms, will not be able to meet general education requirements for graduation. This assumption is based on the fact that most self-contained programs for the educable mentally impaired have special criteria for graduation. Students assigned to special education programs designed for the retarded must complete vocational education in order to graduate. Therefore, there is a need for data to determine what percent of the educable mentally impaired can be integrated successfully into and complete regular vocational education programs and what percent of this population will need special vocational education programs designed to meet their unique learning needs.

This research was entered into in cooperation with the Michigan Department of Education in order to collect data to help resolve these problems.

PURPOSE OF THE STUDY

The primary objective of this study is to compare vocational education and on-the-job training methods of preparing educable mentally impaired students for employment. If, in the long run, students who have had vocational training are not able to get more jobs, better jobs, or a higher rate of pay than students who have not had vocational training, there is no justification for providing the added cost to implement this delivery system. If, on the other hand, the provision of skill or semi-skill training results in substantial benefits for the educable mentally impaired, school districts should be encouraged to continue to change existing programs, retrain teachers, and update curriculum as needed to come into full compliance with the vocational education provisions of Michigan's Mandatory Special Education legislation.

The Michigan Legislature has asked the Department of Education to develop criteria to justify the expenditure of large amounts of taxpayers' money on educational programs for the handicapped. One output criterion recommended by the Bureau of the Budget is the number of special education students who are employed six months after graduation. A secondary objective of the study is to obtain follow-up data to enable the Department of Education to report on the employability of educable mentally impaired graduates.

Due to limited resources, this study focused on the effects of vocational education on the educable mentally

retarded. This population is the largest single disability group receiving special education (Table 1.2) and comprises the largest number of persons placed in Vocational Education Special Needs Programs for the Handicapped.

The definition of educable mentally impaired was changed when the Department of Education wrote new rules to accompany the mandatory law. Prior to October of 1973, a student could be certified as educable mentally impaired by a school psychologist if the psychologist felt the student was not functioning in the normal range of intelligence. There were no upper Intelligence Quotient limits. It was not uncommon to find students in special education programs with Intelligence Quotients of 80 and above.

As was indicated in Table 1.2, some of the educable mentally impaired are integrated into the general education program. The Department of Education does not know what percent of the students being integrated would qualify as educable mentally retarded under the new more restrictive definition. During the 1974-75 school year, there were approximately 3,000 students classified as educable mentally impaired integrated into regular vocational education programs with the aid of paraprofessionals funded under the Special Needs Provisions of the Vocational Education Act of 1968 (Public Law 90-576). Without data on the number or percent of these students who qualify under the old definition, it was impossible for the staff of Vocational Education and Special Education Services of the Department of Education

to determine the need for continued funding of the programs designed to integrate handicapped students into regular vocational education programs. Department data indicated that enrollment in these programs dropped from 4,000 in the 1973-74 school year to approximately 3,000 in 1974-75. The present guidelines for expenditures of these funds, in excess of \$1.5 million, gives first priority to programs designed to integrate handicapped students into the regular vocational education programs. These funds act as an incentive to encourage local school districts to integrate the educable mentally impaired into the regular vocational education program. To assure that the present policy is appropriate, the Department of Education needs data to determine if the students who qualify under the new more restrictive definition can succeed in integrated programs.

The Department of Education's new definition will be used to classify the educable mentally impaired for this research. The definition as stated in R340.1705 of the code reads as follows:

"Educable mentally impaired" means a person identified by an educational planning and placement committee, based upon a comprehensive evaluation by a school psychologist, certified psychologist, or certified consulting psychologist, and other pertinent information, as having all the following behavioral characteristics:

- (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) Unsatisfactory academic performance not found to be based on his social, economic, and cultural background.

The need for evaluating the effectiveness of Michigan's vocational education model for the handicapped cannot be overstated. It will have impact on program development, teacher training, and allocation of funds. Although this research is limited to Michigan, the problems are not unique to this state.

Sparks and Younie (1969), after a brief review of the literature on adult adjustment of the mentally retarded, concluded:

Close study of the reports mentioned here and other reports in the literature indicates that the educator cannot scientifically isolate the instructional factors or specify the school programs that will make the greatest contribution to the retarded student's vocational success.

The General Accounting Office (1974), reporting on the effectiveness of federal funds in improving services to the handicapped, summarized the problems which all states are having implementing vocational training programs for the handicapped.

State and local vocational education officials claim it is more difficult to acquire state and local funds for the handicapped. Funds are spread so thin among the localities that it is difficult to initiate vocational services adequate for the special needs of the handicapped. Most states have not adequately identified and considered the relative needs for special services for handicapped students. The five states with the highest percentage of federal vocational education expenditures for the handicapped in fund year 1973 were Florida, 16.9 percent; Pennsylvania, 16.6 percent; Nebraska, 15.5 percent; Louisiana, 15.4 percent; and Tennessee, 14.9 percent. The lowest five states were Maine, Oregon, and South Dakota, 7.8 percent; Michigan, 7.9 percent, and Texas, 8.6 percent.

The General Accounting Office report is critical of the Office of Education for its administration of the vocational education program. The major criticisms

include: (1) The Office of Education has not provided adequate guidance to help insure that the purposes envisioned by the Congress would be accomplished.

(2) There has been no systematic ongoing assessment of national needs or setting of priorities by the Office of Education. (3) Information about vocational education is not adequate for the purpose of formulating public policy and ascertaining whether current programs are working effectively. (4) Actual or anticipated opportunities for gainful employment have not generally been adequately considered in planning for and evaluating vocational education programs.

NEED FOR THIS STUDY

Michigan is the only state to require educable mentally impaired students to obtain vocational competencies as criteria for graduation. The establishment of this requirement has raised a number of issues:

- (1) Are all educable mentally impaired students capable of completing a vocational education sequence?
- (2) Is there a lower intelligence limit below which the educable mentally impaired cannot be reasonably expected to complete vocational training? If so, how is it determined which mentally impaired students should have access to vocational training?
- (3) What are the costs and benefits of providing vocational education programs for the educable mentally impaired?

This research is designed to measure the effects of the traditional vocational education training approach on improving employability of the educable mentally impaired. The theory is a simple one. Educable mentally impaired

students who have had formal training will be more employable than a similar group of persons who have not been trained.

This thesis is based on the following premises:

- (1) The educable mentally retarded, as a group, do not receive as much formal education as the non-retarded, and are therefore less employable.
- (2) Work-study or on-the-job training programs have little, if any, value in helping the retarded develop vocational competencies.

STATEMENT OF THE PROBLEM

It is more expensive to provide access to vocational education for students classified as educable mentally impaired than to provide access on-the-job training. The problem is to determine if the benefits of vocational training are significant enough to offset the added costs.

Chapter 2

REVIEW OF THE LITERATURE

An intensive review of the literature has revealed no studies that compare vocational education and on-the-job training (O.J.T.) methods of preparing the educable mentally impaired for employment. Therefore, the review of the literature was designed to identify critical factors related to the preparation of the educable mentally impaired for employment to be considered in the statement of the hypotheses.

This chapter presents the review of the literature organized under four major headings: (a) relationship between education and income, (b) on-the-job training as a method of improving employability of the retarded, (c) Vocational Education as a method of improving the employability of the educable mentally impaired, and (d) other predictors of employment of the educable mentally impaired. The review of the literature is followed by the statement of hypothesis.

Relationship Between Education and Income

Data from the 1970 census clearly shows the relationship between income and educational level. This data, as summarized by Vocational Rehabilitation Service (1974) is reported in Table 2.1.

Table 2.1

Income of the Head of the Family Listed by Educational
Level (Total Population for Michigan)

Educational Level	Median Income	Mean Income	Number of Families
Elementary			
5 years or less	\$ 6,916	\$ 8,081	65,195
5 to 7 years	8,133	8,984	165,162
8 years	9,106	9,874	289,829
High School			
1 to 3 years	10,386	11,020	490,633
4 years	11,598	12,255	699,089
College			
1 to 3 years	12,602	13,894	232,326
4 years	15,096	17,726	123,087
5 years or more	17,348	20,475	124,948

The Vocational Rehabilitation (1974) report provided substantial support that the handicapped, as a group, earn less than the non-handicapped. This data is presented in Table 2.2. This Vocational Rehabilitation Service analysis of 1970 census data indicated that 62 percent of the handicapped persons questioned did not graduate from high school as compared to 42 percent for the total population.

Table 2.2

Comparison of the Educational Level of Michigan's
Disabled and Non-Disabled Ages 25 - 64
as Reported in the 1970 Census

Educational Level	Disabled Totals		State-Wide Totals	
	Number	Percent	Number	Percent
Elementary				
Less than 8 years	71,877	16.79	300,506	7.82
8 years	72,877	17.02	412,159	10.73
High School				
1 to 3 years	119,349	27.88	889,320	23.16
4 years	113,740	26.57	1,440,870	37.52
College				
1 to 3 years	31,064	7.25	398,919	10.39
4 years (or more)	19,145	4.47	397,589	10.35
	<u>428,052</u>		<u>3,839,363</u>	

Given the relationship between education and income (Table 2.1) and the fact that the average years of education are significantly less for the handicapped (Table 2.2) than the non-handicapped, it is theorized that there is a direct relationship between formal education and post school income for the handicapped as well as the non-handicapped. If this theory holds true, then the educable mentally impaired, who have access to a formal vocational training program, should have a greater projected life earning than those without such training.

Conley (1973) reported on the employment status of non-institutionalized retarded (Intelligent Quotients 50 to 69) in 1970. He calculated that the median yearly income for employed males was \$7741, and \$4079 for females. Using his data, the combined average income for employed educable mentally impaired adults was figured at \$6729. This was less than what the average person with less than five years of education earned in the same year.

Based on Conley's findings, it is assumed that increased education in the form of vocational training will be equally effective in increasing earnings for the retarded, as it is for non-handicapped persons.

The traditional method of measuring this relationship is to compare the number of years in school with income. This method obviously is not applicable to the retarded, since they learn at a slower rate than the non-retarded. A comparison of competencies is another way to compare learning or achievement to income.

Brolin and Kokaska (1974) noted that retarded students should leave school with a vocational skill.

General work skills can be gained concurrent with specific skill training. Specific skill training greatly elevates self-confidence and is a definite selling point to an employer who may be concerned with the individual's ability to master vocational competencies. Recent developments in career education have been directed toward specific skill training for all students. It would be even more critical for the mentally retarded.

On-The-Job Training As a Method of Improving Employability
of the Retarded

An overview of the titles of articles on vocational education of the educable mentally impaired, (Berard and Halpern, 1970; C.E.C., 1972; Conard, 1972; Michigan State Library, 1968; Towne and Wallace, 1972; Young, 1969), revealed that special education and vocational rehabilitation personnel equate vocational education with on-the-job training.

The literature abounds with follow-up studies dealing with the post-school success of retarded students who have had successful on-the-job training experiences. An overview of the many studies on the subject, such as the one done by Cegelka (1970), would lead the casual reader to conclude that on-the-job training is, indeed, a good substitute for skill or semi-skill training in preparing the retarded for employment.

It is the conclusion of this writer that on-the-job training programs are of little value in providing the educable mentally impaired with salable vocational skills. Research reporting higher income and increased employability for retarded students who have completed on-the-job training successfully reflects two types of biases.

1. Only the most capable retarded students succeed in the on-the-job training program. Students must become employees and produce some goods and/or services as part of the on-the-job training. Retarded students, who are unable

to produce are either never placed, or, if placed, do not complete successfully the on-the-job program.

In an extensive review of the literature, few studies were found that compared the success of retarded students placed in on-the-job training with a control group. Geteles, Bierman, Goza, Kelly, and Rusolem (1967) did a follow-up of students who used a sheltered workshop as the site for on-the-job training. The total employability was 59 percent for the on-the-job students, and 43 percent for the control. The difference, although in favor of the on-the-job training group, was not statistically significant.

Howe (1967) compared educable mentally retarded students, who were placed in a community work study (on-the-job training), with a similar group of students who were placed in a work study setting within the school. Personal interviews were completed on 68 former students two to four years after follow-up. Eighty-five percent of both groups were employed at follow-up.

Burris (1967) compared the post-school employment of 120 retarded students who had on-the-job training with a control group of 155 subjects who did not have the benefit of on-the-job training. At follow-up, 50.8 percent of the on-the-job training students were employed as compared with 50.3 percent for the control group.

There is no evidence in the literature to validate that students who have had on-the-job training will earn more

or have a higher rate of income than students who have not had on-the-job training.

2. Educable mentally impaired students who cannot succeed in on-the-job training programs, tend to drop out before they ever get a chance to enter the work study program. Chaffin, Smith, and Haring (1967), reporting on a project in Kansas City, Kansas, noted that 91 percent of the graduates were employed at follow-up, as compared with 43 percent of dropouts.

Table 2.3 provides a summary of data from a number of typical follow-up studies on the educable mentally impaired.

Table 2.3

Number and Percent of Retarded Students Who
Dropped Out of Research Projects Prior
to Completing On-The-Job Training

Study	IQ	Total Pop.	Completing	Dropped Out	Dropout Rate
Beekman (1963)	48 - 81	200	72	128	64%
Burris (1967)	Mean 65	616	444	172	28%
Geteles, et al. (1967)	Mean 70	150	45	105	70%
Grate (1969)	49 - 84	63	50	13	20%
Lewis (1967)	62 -107	129	112	17	13%
Viscardi and Gentile (1962)	60 - 80	15	5	10	67%
Combined		1173	778	445	38%

The correlation between successful on-the-job training experience and post-school employment in all of the above studies, could have been predicted on the basis that high-risk students drop out before entering or completing on-the-job training.

Swanson (1970), in a study done in Muskegon, Michigan, entitled "The School Pushout," reported that 9 percent of the 151 drop outs he studied had Intelligence Quotients below 70. Warner (1963) reported 19 percent with Intelligence Quotients below 80 dropped out of school before graduation.

There is evidence in the literature to suggest that educable mentally impaired students, with less vocational ability or multiple handicaps, have a higher drop-out rate than educable students with good employment skills.

A report from the Eugene School District, Number Four, Eugene, Oregon (1966) stated:

The ones who withdrew appeared to have a multitude of problems in their total life adjustment, rather than having difficulty just in school. (Page 48)

Lewis (1967) reported the reason why students dropped out of a work-study program for the educable mentally impaired.

Seventeen students (14 percent) who were in school at the time of the project, dropped out of school during the project period. Reasons, as told by students, for dropping out were as follows: pregnancies (3 students), marriage (1 student), dislike of school (4 students), personal problems that interfered with school (1 student), cumulative absenteeism (2 students), no need to finish school because he did not receive a real diploma (1 student), desire to make money (1 student), desire to work full-time (1 student), lack of fulfillment of school requirements for graduation (1 student), prison sentence (1 student), and no reason (1 student). Some of these were perhaps the superficial reasons given for leaving

school, but it seems significant to note that less than half the drop-outs cited the school program specifically as the reason for leaving. It is also of some significance that 12 of the 17 (70 percent) drop-outs were evaluated by school psychologists as having emotional disabilities, 5 of them (29 percent) classified as severe. This percentage of drop-out students who had emotional problems (70 percent) was considerably higher than the percentage of the population that stayed in school who had emotional problems. (Page 38)

The evidence seems clear. The more severely handicapped, i.e., those who have less chance of being employed, often drop out prior to having the opportunity to enter on-the-job training.

An analysis of the literature ascribing the use of on-the-job training as a means of increasing the employability of the educable mentally impaired leads to the following conclusions:

- a. There is a relationship between education and income.
- b. The on-the-job training method is the primary method for preparing the educable mentally impaired for employment in the United States.
- c. On the average, educable mentally impaired persons employed after on-the-job training are in the lowest income bracket.
- d. There is evidence in the literature to conclude that the higher income of educable mentally impaired students is the result of natural selectivity, and not necessarily due to the treatment effects of on-the-job training. Students with less skill, social or behavior problems, and

the multiple handicapped tend to either drop out of school or fail in on-the-job training.

e. There is no evidence in the literature to validate that the on-the-job training method causes an increase in academic or vocational skills.

Based on the previous research, it is the conclusion of this author that the schools play only a minor part in the success or failure of a student placed in an on-the-job training program. Typically, school personnel locate the job site, and usually help the student fill out application forms, arrange for transportation, as well as monitor attendance.

The employer describes the job to the student and usually provides the same on-the-job training that would be provided to any new employee. The employer supervises the student's work on an on-going basis. Other than an occasional check from the work study coordinator, the major role played by school personnel is to encourage the student to be punctual, dress appropriately, and work hard, as well as counseling the student when difficulties arise.

If this description is accurate, there is little emphasis on the development of vocational skills. The emphasis is on the development of social skills and work habits. For all practical purposes, the student is an employee. Success is measured by the ability to produce goods and services. While this method may be appropriate for rehabilitation counselors and others responsible for helping the retarded find employment, it is not seen as a substitute for vocational training.

Brolin and Kokaska (1974) noted that "mental deficiency does not connote vocational deficiency." They recommend that the educable mentally impaired should leave school with a specific vocational skill.

Vocational Education as a Method of Improving the Employability of the Educable Mentally Impaired

Harris (1975) collected data on 1,942 students who received vocational training in the state of Kansas during the 1973-74 school year. She found that: (1) Educable mentally impaired students assigned to vocational training had a dropout rate of 24 percent compared to 15 percent for non-handicapped students assigned to vocational education. The difference was statistically significant to the .01 level of confidence. (2) The job placement rate for educable mentally impaired was 82 percent versus 86 percent for non-handicapped students completing vocational education in the same year. The 4 percent difference in placement rate was statistically significant to the .01 level of confidence. (3) Harris evaluated the effectiveness of providing special programs and services to help the mentally retarded succeed in vocational education programs. These included learning skills laboratories, addition of teacher aides, special summer school programs and availability of job placement coordinators. Since the educable mentally impaired had a higher dropout rate and a lower rate of employment than the regular vocational education students, Harris makes the following statement:

On the basis of the conclusions, it seems reasonable to recommend a moratorium be placed on developing special education services and programs for the disadvantaged and handicapped. The recommendation seems appropriate because the services and programs appear to be potentially damaging to students; further, they seem to be a waste of taxpayers' money.

There was a major problem with the study by Harris (1975). Harris compared the dropout rate of educable mentally impaired with regular education students. This was not a fair comparison. There is substantial evidence, as indicated in Table 2.3, that the educable mentally impaired have a higher dropout rate than their non-handicapped peers.

Harris made a similar mistake in comparing the employment rate of educable mentally impaired vocational education graduates with regular vocational education graduates. Conley (1973), after review of 22 studies concluded that the employment rate of retarded was between 4 and 20 percent below non-retarded. The Kansas study completed by Harris indicated that the employment rate of the educable mentally impaired was 4 percent below that of the non-retarded students who graduated in the same year. Since the expected employment rate would be between 4 and 20 percent less for the retarded, this would indicate that vocational education may have had an effect in reducing the dropout rate for educable mentally impaired students in Kansas.

Other Predictors of Employability of the Educable Mentally Impaired

A competency-based comparison is another way of looking at the relationship between achievement and income.

The traditional variables used for comparing learning to income have been reading and mathematics abilities.

Sparks and Younie (1969), reporting on the adult adjustment of the educable mentally impaired, provided the following summary:

Voelker (1963) has also studied the apparent determinants of adult adjustment. He indicates that academic competency may be more important than has been traditionally considered. Illiteracy and secondary disabilities, other than retardation, were found by Guralnick (1956). Peckham (1951) listed the inability to read as one of the problems faced in placing the retarded, but also enumerated several other factors that were closely related to the retarded student's social awareness.

Kaufman (1970) compared the mean arithmetic ability as measured on the wide-range achievement for a group of employed and unemployed retarded individuals, Intelligence Quotients 42 to 80 and ages 17 to 21. The mean grade level for the employed group was 4.06 compared to 2.96 grade average for the unemployed. The difference was statistically significant at the .001 level.

Jackson and Butler (1963) reported the mean reading achievement for successfully placed students was 4.46 as compared to 4.02 for unsuccessful students. The difference is significant at the .05 level. The mathematics achievement scores were 4.52 and 4.13 respectively. This difference was significant at the .01 level.

A number of studies have used Intelligence Quotient as an intellectual variable for predicting employability. Although there is conflicting evidence, the vast majority of studies, designed specifically to measure this relationship,

indicate a direct correlation between Intelligence Quotient and the ability to be employed.

Kaufman (1970) reported mean Intelligence Quotient on the WAIS of 74.06 for the employed group, and 68.32 for the unemployed group (significant at the .01 level). Jackson and Butler (1963) reported mean Intelligence Quotients of 68.9 for the employed group in their study, and a mean of 65.3 on Wechsler for the control group (significant at the .01 level).

Perhaps the best data to show the relationship between Intelligence Quotient and employability was developed by Conley (1973). This data has been summarized in Table 2.4.

Table 2.4

Relationship Between Intelligence Quotient
and Employability

IQ Range	Percent of Men Employed	Percent of Women Employed	Percent of Total Employment
0 - 24	0	0	0
25 - 39	0	0	0
40 - 49	45%	12%	28%
50 - 69	87%	33%	69%

Summary of data on the employment status of 1,776,000 non-institutionalized retarded, ages 20 to 64 employed in 1970.

A number of studies have indicated that there is a relationship between age and earning. Conley (1973) reviewed 27 studies and concluded that the relationship does exist.

As can be noted in Table 2.4, the rate of employment is significantly higher for retarded men than retarded women. Burris (1967) reported that 30 percent of the males were employed as compared with 25 percent of the females in his study of students serviced in a cooperative special education-vocational rehabilitation program.

Kolstoe (1961) pointed out that social skills are often mentioned in the literature as predictors of vocational success, but that it is difficult to classify what is meant by "adequate" social behavior. Daniels and Stewart (1970) reviewed the literature and found reports that self-concept was thought to be an important variable. Although they had questions about the research methods, their own investigation did not reveal any relationship between self-concept, perceived parental behavior, and vocational adjustment.

Chaffin (1969) noted that personality factors and self-concept have been alluded to as primary factors related to employability of the retarded.

The accurate assessment of personality factors is difficult and their relationship to job success is hard to substantiate. Windle (1962) suggested that explanations of behavior in terms of personality are frequently used to "disguise a lack of knowledge," and Patterson (1964) noted in his review of vocational assessment methods for the retarded that "neither objective nor projective personality tests appear to be useful in evaluation or prediction of employability."

Chaffin went on to measure the relationship between productivity and job success of the educable mentally retarded. Although he had a small sample (N of 10 in each group), he found that the ten students who had been rated

by their employers as successful produced more goods and/or services than ten like students (matched for age, Intelligence Quotient, and work experience) who were rated as unsuccessful.

If Chaffin's findings are reliable, then the educable mentally impaired students who have completed skill or semi-skill training should be able to produce at a higher rate than a like group of subjects who have not had training. Access to vocational training should result in a higher rate of employment and increased earning for the retarded.

Implications of Previous Studies

The following assumptions have been made as a result of the review of the literature:

1. There is a direct relationship between the amount of vocational training and life earnings of the educable mentally impaired.
2. Income at follow-up and projected life income will be greater for educable mentally impaired men than women.
3. Persons classified as educable mentally impaired completing vocational training will earn more at follow-up and will have a greater projected life income than a similar group of persons completing on-the-job training or work study programs but who did not have the benefit of vocational training.
4. There is a direct relationship between intelligence as measured by standardized tests and the ability of persons classified as retarded to obtain employment.

5. Vocational success of persons classified as educable mentally impaired is directly related to their ability to produce goods and/or services. Providing the educable mentally impaired with vocational education should improve their ability to produce goods and/or services which should result in a higher rate of employment and increased earnings.

HYPOTHESES TO BE TESTED

Sex was identified in the review of the literature as a factor that could confound the study. Hypothesis I was included to control for sex as a possible confounding variable.

Hypothesis I. There will be a relationship between sex and earning with educable mentally impaired men earning more per hour and per week than women based on data from the Follow-Up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

There was some evidence from previous research to indicate that income may be related to intelligence as measured on individual tests of mental maturity. Hypothesis II was added to control for the effects of intelligence on income.

Hypothesis II. There will be a direct relationship between intelligence as measured on individually administered standardized intelligence tests and earning, with educable

mentally impaired subjects with higher Intelligence Quotients earning more per hour and per week than subjects with lower Intelligence Quotients based on earnings reported on the Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

Most studies that were reviewed either did not include an analysis by race or found that race was not a significant factor relating to the employability of the educable mentally impaired. However, since Conley (1973) reported on two studies that indicated black mentally impaired persons had a lower rate of employment than whites or Puerto Ricans, Hypothesis III was added to eliminate race as a possible confounding variable.

Hypothesis III. There will be a relationship between race and earnings with white educable mentally impaired graduates earning more per hour and per week than non-whites based on data from the Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

The primary purpose of the study was to test the premise that educable mentally impaired students who completed vocational education programs and graduated would have a greater chance of being employed and would earn more than a similar group of graduates who did not have the benefit of vocational education.

Hypothesis IV. Graduates classified as educable mentally impaired who have completed a vocational education program will have a higher rate of employment ten months after graduation than a similar group of graduates assigned on-the-job training without the benefit of vocational education as reported on the Follow-Up Form For Special Education Graduates (Appendix C).

Hypothesis V. Members of the experimental group will earn more per hour and more per week than members of the control group based on data from the Follow-Up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

The added cost of providing vocational training to educable mentally impaired will result in increased earnings and a higher rate of employment. These benefits will extend the cost to the point where the public schools are justified in the expenditure of funds to provide vocational training for all educable mentally impaired high school students capable of completing vocational education.

Hypothesis VI. The cost of providing vocational education to the experimental group will be offset over a period of time as a result of increased income and taxes paid by members of the experimental group as compared to the control group with income and taxes being calculated from data reported on the Follow-Up Form For Special Education Graduates (Appendix C) measuring total income from a ten-month period following graduation.

Chapter 3

RESEARCH DESIGN

Butler and Browning (1970) did an extensive study of the methods used to predict employability of the mentally impaired. The study pointed out that much of the research has emphasized subject variables rather than non-subject variables such as treatment or training.

This research is designed to compare two treatments or training methods, on-the-job training and vocational training of a skill or semi-skill nature. Man months employed and income at follow-up ten months after graduation are used as dependent variables to measure the effects of the two treatments in improving the level of employability.

Previous research has shown that there is a relationship between intelligence and income as well as sex and income. In order to control these variables, they have been included in the research design.

The design consisted of:

A. An experimental group of students, classified as educable mentally impaired, who completed a training sequence which included special education (SE), vocational education (VE), and on-the-job training (OJT).

B. A control group of students, classified as educable mentally impaired who had special education (SE) and

on-the-job training (OJT), but who did not have the benefit of vocational education (VE).

The design is expressed symbolically as follows:

$$\begin{array}{ll}
 \text{A. Experimental Group} & \text{SE} + \text{OJT} + \text{VE} \rightarrow X_1 \\
 \text{B. Control Group} & \text{--- (SE + OJT)} \rightarrow X_2 \\
 \hline
 \text{Difference Between Groups} & \text{VE} \rightarrow X_1 - X_2
 \end{array}$$

The symbol X in the above formula represents the measurement of a dependent variable. The difference between the experimental and the control group can be considered to be the results of the effect of vocational education. Using X to represent earnings at follow-up for example, the design would indicate that the difference in earnings between the experimental and control group would be the result of vocational training.

Procedure for Identification and Selection of Subjects

This research project was limited to students classified as educable mentally impaired (EMI) who graduated from Michigan Public Schools in June of 1975.

The term educable mentally impaired was defined for the purpose of this study to include individuals with Intelligence Quotients of 70 or below on a nationally recognized individual intelligence test.

Two methods were considered for selecting subjects for this study. The first method would require drawing a random sample of educable mentally impaired graduates and

assigning them to the experimental group if they completed vocational training. The second method considered was to identify school districts that offered vocational education and districts that did not. Students attending districts offering vocational education who completed training would be assigned to the experimental group and students attending districts not offering vocational education would be assigned to the control group.

The direct selection method was not used since there was no way to control for possible selection bias. This could occur if districts operating vocational education programs only assigned select students, i.e. those with better academic ability, males, and so forth, to vocational training while assigning those thought to be less motivated or to have less potential to an on-the-job training program.

The decision was made to select students by districts to assure that students were similar in ability and maturation between groups.

The design called for selecting one group of subjects from school districts with vocational education special needs projects for the handicapped approved by Michigan Department of Education Vocational Education Services. The Department of Education's approval of special needs projects was based upon the submission of a set of minimal performance objectives. The competencies obtained by the handicapped who mastered these objectives were considered sufficient to prepare them for skilled or semi-skilled employment. Districts

in this group were limited to those with State approved vocational education special needs projects to assure program consistency across districts.

The second group was selected from school districts that had special education work study coordinators and which did not have vocational education special needs programs for the handicapped.

Since Michigan's Mandatory Law did not take effect until October of 1973, it was possible that some educable mentally impaired students graduating in June 1975 were determined eligible for special education prior to the implementation of the law. Since the purpose of this study was to evaluate the effects of Michigan's Vocation Education Model under the mandatory legislation, selection of subjects was limited to students with measured Intelligence Quotients between the second and third standard deviation below the mean as measured on an individual intelligence test. An Intelligence Quotient of 70 on the Wechler Intelligence Scale for children was chosen as the upper limit for selection of students for this study. This assured that all students chosen for the study met current requirements for eligibility.

Identification and Selection of School Districts

Vocational Education Services of Michigan Department of Education identified 67 districts with skills centers or high schools that had special needs programs for the handicapped. Special Education Services identified 60 districts with work study coordinators. In most cases the

districts operating special needs and on-the-job training or work study programs were serving other districts. Many of the work study and vocational education special needs programs were operated by intermediate districts which were servicing all constituent districts.

Work study coordinators working for districts with vocational education special needs projects were eliminated from the list to assure that the work study group represented districts which did not have access to vocational education special needs programs. As a result of this procedure, there were 47 school districts identified with work study coordinators from which the subjects in the control group were to be selected.

The Department of Education could not provide data on the number of educable mentally impaired students who graduated from special education programs. After consultation with the Research Consultation Center and the doctoral committee, a decision was made to choose 25 districts from each group and to ask each district to report on five graduates. It was hoped that this procedure would provide data on at least 100 students in each group. Each of the 114 districts were assigned a number. A table of random numbers was used to draw the sample districts from each group.

Letters were sent out in early May of 1975 to the vocational education special needs coordinators (Appendix A) and work study coordinators (Appendix B) asking them to participate.

Separate letters and data sheets were developed for each group as a means of reducing reporting bias. This procedure honestly informed the district contact person of the nature of the research without making them aware that vocational education and on-the-job training were being compared for effectiveness. After the initial mailing, correspondence was received from one district with a special needs project indicating that the district had its own research department which would have to approve the project before data collection could be authorized. The procedure for obtaining approval from this district was so complicated and time consuming, it was decided to eliminate the district from the study and replace it with another randomly selected district.

One district identified as having work study programs reported its students had access to vocational education special needs projects. This district was eliminated from the work study sample. By the time this information was received, most school districts were no longer in session. Due to the date, the decision was made not to select a replacement.

Table 3.1 provides data on the number of districts responding to the survey.

Of the 49 districts selected for the study, 39 or 80 percent responded. Twenty-one (21) or 54 percent of the districts responding graduated students with Intelligence Quotients of 70 or below.

Table 3.1

Districts Response: Survey to Identify Educable
Mentally Impaired (EMI) Students
Graduating in June of 1975

	Districts With Vocational Education Special Needs Projects	Districts With Work Study Programs	Total
Number of Districts Within the State	67	47	114
Number Contacted	25	24	49
Number Responding	20	19	39
Number Responding With EMI Graduates	18	15	33
Districts Respond- ing With Graduates With IQ's of 70 or Below	15	9	21

STUDENT IDENTIFICATION AND SELECTION

The May, 1975, letters sent out to the school district contact person included a program information sheet and a set of five student data sheets. Copies of these forms can be found attached to the letter sent to vocational education special needs coordinators (Appendix A) and work study coordinators (Appendix B). Data from the program information sheets was used for gaining information on the educable mentally impaired population. Student data sheets were used to provide preliminary data on students identified for the study.

The district contact person was asked to complete a student data sheet on no more than five students with Intelligence Quotients of 70 or below who graduated in June of 1975. A maximum of five was chosen to make the task of collecting follow-up data manageable and thus encourage participation. In districts with more than five graduates, the contact persons were asked to list students alphabetically and complete the student data sheet on the first five. Data on the number of students graduating from districts with Vocational Education-Special Needs Projects is summarized in Table 3.2, and the number of students from work study districts is found in Table 3.3.

Table 3.2

Number of Students Graduating From Districts With
Vocational Education-Special Needs Projects
in June of 1975

District	Number Graduating	No. IQ 70 or below	No. Selected for Study	No. Located at Follow-Up
1	13	2	2	2
2	5	4	4	3
3	11	2	2	1
4	5	3	3	2
5	1	1	1	1
6	3	2	2	2
7	27	unknown	5	5
8	10	3	3	3
9	7	1	1	1
10	6	1	1	0
12	5	1	1	1
13	4	3	3	2
14	4	2	2	2
15	3	3	3	3
16	2	0	0	0
17	1	0	0	0
18	7	0	0	0
Totals	114	28	33	28

Table 3.3

Number of Students Graduating From Districts
With Work Study Programs in June 1975

District	Number Graduating	No. IQ 70 or Below	No. Selected for Study	No. Located at Follow-Up
1	7	5	5	5
2	10	5	5	3
3	9	3	3	3
4	2	1	1	1
5	2	2	2	2
6	13	4	4	4
7	8	3	3	3
8	2	2	2	2
9	8	Unknown	5	5
10	6	0	0	0
11	6	0	0	0
12	2	0	0	0
13	4	0	0	0
14	2	0	0	0
15	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>
Totals	85	25	30	28

As can be seen from Tables 3.2 and 3.3, only two districts--one with vocational education and one with work study--had more than five students with Intelligence Quotients below 70 who graduated. In accordance with the directions, both districts selected students for the study by identifying the first five alphabetically. Although the use of alphabetical selection is not the best method for drawing a sample, it was chosen because it was less complicated than other methods. Since there were a number of persons involved in the collection of the data, it was decided to use the least complicated method to assure consistency between districts.

Using this method of selection, 33 students were identified as graduating from districts with Vocational

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Education Special Needs Projects with Intelligence Quotients of 70 or below and 30 students were identified as graduating from districts which had work study programs, but did not have Vocational Education Special Needs Projects.

Evaluation of the Selection Design

According to Campbell and Stanley (1963) the major problem associated with this type of post hoc design is that it does not allow students to be randomly selected when assigned to the experimental or control group. Student selection is dependent upon the choice of the school district either to operate or not to operate vocational education programs for handicapped students. Therefore, this type of design can be easily biased due to selection criteria.

An analysis of school districts indicated that school districts with larger student populations tended to have a higher proportion of Vocational Education Special Needs Projects than smaller districts.

This was partially explained by the rules established by the Department of Education for obtaining Vocational Education Special Needs Project funds. According to these rules, districts had to have a minimum of five handicapped students in any one vocational area in order to qualify for funding. Data reported in Michigan Education Statistics 1975-76 indicates that handicapped students served in basic classroom programs made up approximately 2 percent of the total school population during the 1974-75 school year. The small percent of handicapped students combined with the

requirement that a minimum of five handicapped students enroll in each program before a Vocational Education Special Needs Project would be approved favored large districts.

The two methods that could have been used to control for bias in selection of districts were matching districts and random assignment of districts. Due to the difficulty in controlling all variables using the matching technique, districts were chosen by random assignment.

Another possible source of invalidity in this type of research design listed by Campbell and Stanley (1963) is subject mortality. In this study, mortality refers to the difference in the percent of students in the experimental and control groups who dropped out of the project between graduation and follow-up. Table 3.2 shows that 5 of the original 33 students in the vocational education group could not be located at follow-up. The mortality rate for the vocational education group is 5 out of 33 or 15.2 percent. Table 3.3 indicates that 2 out of 30 students could not be located in the work study group for a mortality rate of 6.7 percent. The reason given in all cases was that the student had moved and could not be located. Based on a test of the difference between two population means, the differences between the two groups are not statistically significant (Z score = 1.1; probability level is more than .26).

Design of the Data Collection Instruments

The research designed called for three data collection forms. The first was designed to obtain demograph data on the

district; the second was designed to identify students for the study; and the third was designed to collect data at the time of the follow-up.

1. The "Vocational Education Special Needs Program Information Sheet" (Appendix A, item 2) and the "Work Study Program Information Sheet" (Appendix B, item 2) were designed to obtain information on the number of students classified as educable mentally impaired, the types of programs offered and the number of school districts served. The program information sheets were designed to provide information to: (a) compare districts, (b) project the number of educable mentally impaired graduates in the state, (c) determine the number and percent of educable mentally impaired graduates with Intelligence Quotients below 70, and (d) the number and percent of graduates referred to Vocational Rehabilitation Services (VRS).

2. The "Vocational Education Special Needs Project Student Data Sheet" (Appendix A, item 3) and the "Work Study Program Student Data Sheet" (Appendix B, item 3) were designed to obtain information needed to classify students and assign them to the appropriate intelligence and training levels.

The forms were made as similar as possible. Due to the differences between programs, certain questions that were not comparable were included. Table 3.4 contains a comparison of the items.

Table 3.4

Comparison of Items on the Vocational Education
Special Needs Project Student Data Sheet (VE)
and the Work Study Program Student
Data Sheet (WS)

Item Description	V E Item Number	W S Item Number	Comments
Referral to Vocational Rehabilitation	1	1	Same wording
Type of Educational Program			
a) Fulltime regular educ.	4a	2a	Similar wording
b) Partially integrated	4b	2b	Similar wording
c) Fulltime spec. educ.	4c	2c	Similar wording
Data on Employment at Graduation	5	6	Same wording
Number of Months in V E	2		Not on W S form
Number of Months in W S		4	Not on V E form
Name of V E course	3		Not on W S form
Number of employers		5	Not on V E form
Completed Regular V E	Back of Vocational Education form	3a	The rating cri- teria was the same. V E students were scored by raters based on listed competencies.
Completed Adapted V E	Back of Vocational Education Form	3b & c	The rating cri- teria was the same. V E students were scored by raters based on listed competencies
Did not complete V E	Back of Vocational Education Form	3d & e	The rating cri- teria was the same. V E students were scored by raters based on listed competencies

Data on the number of months in vocational education, question 2 on the vocational education student data sheet, was collected to determine if there is a relationship between the length of time in training and income at follow-up.

The data on the number of months in the work study program, question 4 on the work study student data sheet, was collected to measure the relationship between months in work study and status at follow-up. The data was also to be used for determining the amount of income work study students earned during school. This data was included for calculating cost-benefit of work study. Unfortunately, the researcher failed to ask the number of months vocational education students were employed as part of the vocational education work study sequence.

Students were selected by district on the assumption that students in districts with Vocational Education Special Needs Projects would have access to vocational education and students in work study districts would not have access to vocational training. Question 3 on the Work Study Program Student Data Sheet was included to determine which students had vocational education and which did not. The five items were collapsed into three categories: (1) those who completed regular vocational education programs (item a), (2) those who completed adapted vocational training (items b and c), and (3) those who did not complete a vocational education program (items d and e). The question was worded in five parts to make it easier for the raters to evaluate the level of training provided each student.

Since vocational education special needs project coordinators were required to identify specific performance objectives students must achieve to complete a program, they were asked to provide a rating of each student's vocational competency on the back of the Vocational Education Special Needs Project Student Data Sheet. The design called for the three consultants responsible for approving the vocational education program for the Michigan Department of Education to independently rank each student and make an assignment to one of three categories: (1) completed a regular vocational sequence, (2) completed a vocational special needs program, or (3) enrolled in, but did not complete, vocational education.

The rating of students on question 3 of the Work Study Form and the rating of students from the data on the back of the Vocational Education Special Needs Student Data Sheet were used to assign students to one of these three categories for the purpose of measuring the effects of vocational education on post-school income and employment. It was expected that students graduating from districts with special needs projects would be assigned to the experimental group and students graduating from the work study districts would be assigned to the control group. This did not happen. There was no relationship between the type of district and the type of program. In reality, not all students in districts with vocational education special needs projects were assigned to vocational training. Likewise, some students in work study districts had access to vocational education programs.

Table 3.5 shows how students were chosen from between districts and assigned to the experimental and control groups.

Table 3.5
Selection of Students From Within Districts

	Students completing regular vocational education	Students completing vocational education special needs programs	Students not completing vocational education
Districts with vocational education special needs	Experimental Group	Experimental Group	Control Group
Work Study Districts	Experimental Group	Experimental Group	Control Group

The Follow-up Form For Special Education Graduates (Appendix C) was to collect data at follow-up on students from districts with vocational education special needs projects and students from work study districts.

This form is an adaptation of the Michigan Department of Education Vocational Education Services follow-up survey (Appendix D) sent to all students completing State-approved vocational educational programs. The adaptation was required since the Vocational Educational Service form was developed and validated for mail survey, whereas interviewers completed the data for this research.

This vocational education form was chosen as a model because it had been developed, field tested, and determined to be a reliable and valid instrument to evaluate high school vocational training programs by the Michigan Department of Education.

The items used on the follow-up form relating to employment status are similar to those used by Vocational Rehabilitation Services on its "Follow-Up Survey of Vocational Rehabilitation Clients" form (Appendix E). The items measure the nine categories of data recommended as minimal for rehabilitation studies by Engelkes, Livingston and Vandergoot (1974).

Individual letters were sent to each Vocational Education Special Needs coordinator (Appendix F) and Special Education Work Study coordinator (Appendix G) during the first week of March, 1976. The letter included a "Follow-Up Form For Special Education Graduates" for each June 1975 graduate. The first part of the form contained each student's identification number, birth date, sex and Intelligence Quotient. This data was provided as a check to assure the coordinators collected follow-up data on the right subjects.

The coordinators were requested to contact the graduates, complete the follow-up forms, and return the data by April 9, 1976. Most participants returned the data on schedule. One packet was lost in the mail and staff from three other districts did not complete the follow-up on

schedule. The follow-up was completed by 100 percent of the districts who agreed to participate by the end of May, 1976.

As reported in Tables 3.2 and 3.3, 56 of the 63 students originally identified were located at the time of follow-up. The coordinators reported that the seven students not included in the follow-up had all moved.

The 89 percent response rate was considered higher than average for this type of follow-up study. Struthers (1976) reports a response rate of 64 to 75 percent for a mail survey followed by phone contact for those who did not respond by mail on a two-year follow-up. Michigan Department of Education had a 65 percent response rate to a mail survey completed in 1975 for vocational education graduates surveyed five months after graduation. The higher rate of response in this study may be attributable to the personal contact by special education and vocational education personnel.

Method of Collecting Data

Vocational Education Special Needs coordinators and Special Education Work Study coordinators were mailed the forms. Data on the Program Information Sheets (Appendix A, item 2 and Appendix B, item 2) was provided by the coordinators based on their knowledge of the programs. Since the coordinators were responsible for placement, it was assumed they had access to the information requested about their district programs.

Information on the student data sheets (Appendix A, item 3 and Appendix B, item 3) required access to student records as well as knowledge of the type of training and work study placement provided.

Vocational Education and Work Study coordinators were requested to contact the students and obtain the information needed to complete the follow-up form (Appendix C). The success of the study was dependent on the ability and willingness of the Vocational Education Special Needs and Work Study coordinators to locate students ten months after graduation and to report their findings to the researcher.

Data Analysis Techniques

The analysis of data considered Intelligence Quotient, sex, and method of training as fixed effects treatments. Differences in income and rate of employment were considered significant at or below the 5 percent level for this study.

The review of the literature indicated that differences in intelligence between members of the control and experimental group could bias the results.

The design called for the use of multivariate analysis to control for the effects of intelligence. The original design required grouping candidates into three levels of intelligence for comparison. Since intelligence test scores have a normal distribution, there are fewer people in the population as the Intelligence Quotient score goes down. Using the area under the normal curve, Intelligence test scores between the second and third deviation were

set up on three levels so that each level was theoretically equal in size. The resulting Intelligence Quotient ranges were 70-68, 67-64, and 63 and below. Table 3.6 contains the design of the primary analysis to measure the effects of vocational education as compared with work study programming.

A number of other comparisons were included to measure the effects of race, geographical location of the school district, and supplemental services provided by Vocational Rehabilitation Services.

Table 3.6
Student Analysis Design

	Intelligence Quotient		
	63 and below	64-67	68-70
	Group 1	Group 2	Group 3
Vocational Education (Experimental Group)			
Work Study (Control Group)	Group 4	Group 5	Group 6

Methods of Measuring the Cost Benefit Ratio

The purpose of this study is to measure the impact of adding vocational education to the special education curriculum. Borus and Tash (1970) defined the goals of impact evaluation in manpower programs as follows:

The purpose of the evaluation process is to provide policy makers with the basic data necessary for them to make decisions wisely. Impact evaluation in manpower programs should provide five essential sets of information; first, they should provide all of the data necessary to determine if a particular manpower program should be continued; second, they should determine which of the alternative programs achieved the greatest gains for a given cost; third, evaluation should present information on the components of each program and the mixes of components which are most effective for a given expenditure so that maximum operating efficiency can be achieved; fourth, evaluation should provide the first three types of information for persons with different characteristics so that a decision maker may determine which individuals are best served by each program. Finally, in the course of evaluating existing programs, data should be gathered which would suggest new methods to attack manpower programs. To date, no evaluation of manpower programs had provided all of this information.

This study is designed to (a) look at the effectiveness of vocational education and work study programs as they relate to preparing the educable mentally impaired for employment, (b) determine which alternative achieves the greatest gains for a given cost, (c) analyze the components of these programs as they relate to student success and determine if any segments of the populations are better served in work study and/or vocational education, (d) provide cost-benefit data for persons with difference characteristics so that decision makers may determine which individuals are best served by these programs and (e) determine whether either or both programs are valuable in and of themselves for continuation.

Borus and Tash (1970) go on to identify four types of manpower programming goals that can be measured: (a) manpower program objectives for society with related social impact such as improved distribution of income, increased

national productivity, and reduced unemployment; (b) manpower program objectives related to needs of employers measured by such indicators as the number of job vacancies filled, or the number of trained journeymen available; (c) manpower program objectives for government, such as reduced costs of operating educational programs and (d) manpower program objectives measured as they impact on the individual by increasing income, job satisfaction, employment opportunities, and so forth.

The objective of this study is to measure the impact of vocational education on individuals and to determine the value of governmental expenditure based on benefits to individuals. To achieve this end, government costs related to providing vocational education are included in the formula for measuring the cost-benefit ratio used in this study. Vocational Education Services, Michigan Department of Education reports that there were 3815 students in Special Needs Programs for the Handicapped during the 1974-75 school year. The total cost was \$2,072,070 and the average cost per student was \$543. This figure multiplied by the number of years of training will be used to determine the added cost of vocational education. The cost for special education and work study service were not calculated and were not included as an added cost since they are constant for both the experimental and control groups.

The original design called for comparing data on income of participants prior to graduation. It was assumed that work

study students would earn more money since they would be working while the vocational education students were in class. Income loss prior to graduation was to be included in the cost-benefit formula. However, due to an error in the design of the student data sheets, this could not be calculated. The researcher failed to identify the number of months students in vocational education programs were employed prior to graduation.

The design called for use of the average cost of vocational training of \$543 times the number of years of vocational training for measuring the added cost of vocational education. Benefits were to be measured by the total amount of income of each group for the first ten months after graduation. This data would then be projected for a minimum of five years using income at graduation as the starting point.

The cost-benefit ratio will be calculated by taking the total earning at follow-up over total costs for each group.

Chapter 4

RESULTS

The purpose of this chapter is to present the findings of this study as they relate to the six hypotheses listed at the end of Chapter 2.

Data analysis was done in the following sequence:

(1) Comparison of districts, within groups, (2) Comparison of students within districts, and (3) Comparison of the experimental and control groups. The comparison of districts and students within districts was made to determine if any selection bias existed. This was done on the assumption that the majority of students from districts with vocational education special needs projects would be assigned to the experimental group and students from the work study districts would be assigned to the control group.

The data in this chapter is presented in the same sequence as analysis was completed. The following sections are included:

- A. A comparison of districts will be presented to validate that there were no differences between the experimental and control groups due to bias in selection.
- B. Subject data will be reviewed by sex, race, and intelligence to determine if any of the independent

variables had an effect on the students' income or employability at follow-up. Hypothesis 1 which tested the relationship between sex and income; Hypothesis 2 which tested the relationship between intelligence, income, and earnings; and Hypothesis 3 which tested the relationship between race and income, will be reported in this section. These hypotheses were included to control for extraneous variables which might confound the findings. Therefore, they will be treated prior to the major hypothesis.

- C. The comparison of students who have completed vocational education programs with students who have completed work study programs will be in this section. The primary purpose of this section will be to report the results of the study as it relates to the three major hypotheses. Hypothesis 4 will compare the rate of income for students who have had vocational education (experimental group) with students who have had on-the-job training without the benefit of vocational education (control group). Hypothesis 5 will test the assumption that the experimental group have a higher rate of employment after graduation than the control group, and Hypothesis 6 will test the assumption that the cost of vocational education would be offset by added benefits which accrue after graduation.
- D. The chapter ends with a summary of the hypotheses and the findings related to each hypothesis.

COMPARISON OF DISTRICT DATA

This section will present an analysis on the data collected on the Vocational Education Special Needs Program Information Sheet (Appendix A, item 2) and Work Study Program Information Sheet (Appendix B, item 2). Tables 4.1 through 4.4 provide summary information taken from district data.

Table 4.1

A Comparison of the Number of Educable Mentally Impaired Students Served in Districts with Vocational Education Special Needs Projects and Districts with Work Study Programs

Program	No. of Districts	Total No. of Students	Range	Mean No. of Students	Difference
Vocational Education	14	263	1-57	18.8	6.2*
Work Study	9	101	2-24	12.6	
Total	23	364		15.8	

* $T=1.02$ with 20 degrees of freedom. The probability level of .15 is not statistically significant.

As seen in Table 4.1, districts with vocational education special needs projects had a slightly larger average enrollment of students classified as educable mentally impaired subjects than districts which had work study programs only.

It should be noted, that the contact person listed all students classified as educable mentally impaired; therefore, this data includes students with Intelligence Quotients over 70. This information was obtained to determine

the relative size of Vocational Education Special Needs Projects and Work Study Programs included in the research.

Table 4.2

Districts Providing Service to Educable Mentally Impaired Students from Other School Systems

	Vocational Number	Education Percent	Work Study Number	Percent	Total Number	Percent
Serving Other Districts	9	64%	5	56%	14	61%
Not Serv- ing Other Districts	5	36%	4	44%	9	39%

Chi Square = .00036 with 1 degree of freedom. The probability level of .98 is not statistically significant.

The information from Table 4.2 indicates that 61 percent of the districts chosen for this study provided service for other districts. Data was not available on the actual number of districts in Michigan providing secondary special education programs for non-resident students. It was known that 419 of the 590 districts in the state operated junior or senior high programs. There was no significant difference in the percentage of non-resident students served by districts with Vocational Education Special Needs Projects as compared to districts which operated Work Study Programs.

Data from the 1970 census was used to classify each district as being rural or metropolitan. All classifications

were by the county in which the district was located. This was done since some data was collected from intermediate school districts operating area skill centers and other data was collected from local districts serving as the special education center for a number of other local districts.

At the time of the study, 24 of Michigan's 83 counties or 30 percent had populations of 50,000 or more. Districts located in counties with 50,000 or more population were classified as metropolitan for this study. Districts and counties with population of under 50,000 were classified as rural.

The comparison between rural and metropolitan districts was designed to determine if there were a difference in the size of the community that had Vocational Education Special Needs Projects and those without such projects. A two-by-two chi-square was used to compare the difference in the percentage of rural and metropolitan districts within the experimental and control groups. Table 4.3 contains the results of this analysis.

Table 4.3
Comparison of Districts by the Size of the
County in Which They are Located

	Vocational Education Special Needs Districts		Special Education Work Study Districts		Total	
	Number	Percent	Number	Percent	Number	Percent
Metropolitan (County Pop. 50,000 or more)	10	71%	7	78%	17	74%
Rural (County Pop. under 50,000)	4	29%	2	22%	6	26%

Chi Square = .02192 with 1 degree of Freedom. The probability level of .88 is not statistically significant.

As indicated in Table 4.3, there were no significant differences in the size of communities from which sample districts were chosen.

Data was collected on the number of graduates who were integrated into regular vocational education, adapted vocational education or special needs projects, and students who did not complete vocational training. This information is reported in Table 4.4.

Table 4.4
Percent of Subjects Within Districts
by Type of Training

Type of Training	Type of District		Analysis of Variance			
	Vocational Education	Work Study	Degree of Freedom	MS	F-Ratio	Prob.*
Regular Vocational Education	9%	3%	21	233	1.02	.32
Vocational Education Adapted for Educable Mentally Impaired	61%	85%	21	3110	1.85	.19
Did not complete Vocational Education	30%	12%	21	1640	1.13	.30

*Statistically significant at .05 or below.

It was expected that districts with Vocational Education Special Needs Projects would have a higher percent of graduates who completed regular or adapted vocational

education. As can be seen in Table 4.4, this assumption did not hold true. There were no statistically significant differences in the type of training provided to students from the two types of districts.

It was originally assumed that students to be assigned to the experimental group would come primarily from districts with vocational education special needs projects, and students to be assigned to the control group would come primarily from districts which offered work study programs but did not provide vocational education special needs opportunities for educably mentally impaired students. The data in Table 4.4 indicated that the original assumption was not true; therefore, in the final analysis, subjects were fairly evenly drawn from districts operating vocational education special needs projects and work study programs.

Summary of Analysis of District Data

Analysis of information on districts indicated that districts which had vocational education special needs projects tended to have a large number of educably mentally impaired students enrolled in the secondary special education program. Information for Table 4.1 indicated that the average district with vocational education special needs projects had 19 students as of June of 1975, while the average work study district had approximately 11 students.

Skills centers and school districts with larger high schools did tend to have a higher proportion of

vocational education special needs projects. This was attributed to the requirement that a minimum of five handicapped students be available for each state funded vocational education special needs program.

There were no other significant differences between districts. Contrary to what was originally expected, there were no significant differences between the type of training provided to subjects selected from within vocational educational special needs and work study districts. The assumption that districts with vocational education special needs projects would assign a significantly larger proportion of students to vocational education training programs than districts without such projects was not found. As a result of the information provided in Table 4.4, it was determined that subjects assigned to the experimental and control groups were chosen fairly equally from both types of districts. This eliminated the possibility of any bias in selection due to the district's size or the availability of vocational education special needs projects.

ANALYSIS OF STUDENT DATA

Students were compared by sex, race, and Intelligence Quotient. These comparisons were completed to determine the significant factors about the population to be considered when interpreting the findings.

The analysis of subject variables was considered an important prerequisite to testing the major hypothesis. Subject variables were tested first so that those variables that resulted in significant differences in income could be included as part of the multi-variate analysis to be used to test the major hypothesis. This was done to assure that all variables that could possibly bias the results would be identified and included in the design for testing the major hypothesis.

Comparison of Subjects by Sex

Hypothesis I stated that there would be a relationship between sex and earnings with male subjects earning more per hour and per week than female educable mentally impaired graduates at the time of follow-up.

Tables 4.5 through 4.13 provide an analysis of data related to the selection of subjects by sex. These data were analyzed to determine if there were any selection bias that may have had an effect on income of male or female subjects. This table provides data on income by sex which is used to test Hypothesis 1.

Table 4.5 provides information on the distribution of subjects by sex and population density of the county of residence. There was a larger percent of students from metropolitan districts than rural districts. The distribution of male and female subjects from counties with population under 50,000 (rural) and populations of 50,000 or more (metropolitan) was not significantly different.

Table 4.5

Frequency Distribution of Educable Mentally Impaired
Subjects at Graduation from Rural and
Metropolitan Districts by Sex

Sex	Rural District		Metropolitan District		Total	
	Number	Percent	Number	Percent	Number	Percent
Male	13	32%	27	68%	40	64%
Female	5	22%	18	78%	23	36%
Combined	18	28%	46	72%	64	100%

Chi Square = .31508 with 1 degree of freedom. The probability level of .58 is not statistically significant.

Table 4.6 presents the racial distribution by sex for all subjects. It should be noted that the race of eight subjects was not reported. There were no statistically significant differences between males and females by race.

Table 4.6

Frequency Distribution of Educable Mentally Impaired
Students at Graduation by Race and Sex

Sex	Race				Other		Total	
	White		Black					
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Male	27	75%	7	19%	2	6%	36	64%
Female	15	75%	5	25%	0	--	20	36%
Combined	42	75%	12	21%	2	4%	56*	100%

Chi Square = 1.2963 with 2 degrees of freedom. The probability level of .53 is not statistically significant.

*Eight subjects were missing.

The type of educational programs subjects were placed in are listed by sex in Table 4.7. There were no significant differences in the proportion of males and females placed in the three types of programs.

Table 4.7

Frequency Distribution of Educable Mentally Impaired
Students by Sex and Type of Classroom Placement
Prior to Graduation

Sex	Full-Time Regular Ed.		Part-Time Regular Ed.		Full-Time Special Ed.		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Male	1	2%	32	78%	8	20%	41	64%
Female	3	13%	15	65%	5	22%	23	36%
Combined	4	6%	47	73%	13	21%	64	100%

Chi Square = 3.01734 with 2 degrees of freedom. The probability level of .22 is not statistically significant.

The placement of subjects by sex and type of vocational training is listed in Table 4.8. There were no significant differences in the proportion of males and females assigned to regular vocational education, adapted vocational education, or work study programs.

There were no significant differences in the percent of males and females referred to Vocational Rehabilitation. As reported in Table 4.9, referrals included 78 percent females and 73 percent males.

Table 4.8

Frequency Distribution of Educable Mentally Impaired
Students at Graduation by Sex and Type of
Vocational Placement

Sex	Type of Vocational Placement						Total	
	Regular Vocational Education		Adapted Vocational Education		Work Study Only			
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Male	6	14%	22	54%	13	32%	41	64%
Female	4	17%	9	39%	10	44%	23	36%
Combined	10	16%	31	48%	23	46%	64	100%

Chi Square = 1.28181 with 2 degrees of freedom. The probability level of .53 is not statistically significant.

Table 4.9

Frequency Distribution Comparing the Sex of Educable
Mentally Impaired Subjects Referred to Vocational
Rehabilitational Service (VRS) Prior to Graduation

Sex	VRS Referrals Number Percent		Non VRS Referrals Number Percent		Total Number Percent	
Male	30	73%	11	27%	41	64%
Female	18	78%	5	22%	23	36%
Combined	48	75%	16	25%	64	100%

Chi Square = .02262 with 1 degree of freedom. The probability level of .88 is not statistically significant.

Table 4.10 lists employment status by sex at follow-up. There is no significant difference in the proportion of male and female students who were in training, employed, unemployed or otherwise not in the employment market. The category of "otherwise" includes unpaid family workers, housewives, and persons physically unable to work.

Table 4.10

Frequency Distribution by Sex and Employment Status
of Educable Mentally Impaired Subjects
Ten Months After Graduation

Sex	Status 10 Months After Graduation								Total	
	In-Training No. Per.		Employed No. Per.		Unemployed No. Per.		Otherwise No. Per.		No.*	Per.
Male	3	8%	22	58%	13	34%	0	--	38	68%
Female	1	5%	9	45%	8	40%	2	10%	20	34%
Combined	4	7%	31	53%	21	36%	2	4%	58	100%

Chi Square = 4.48815 with 3 degrees of freedom. The probability level of .21 is not statistically significant.

*Six subjects who could not be located at follow-up were not included.

Two subjective questions were included on the "Follow-Up Survey Form" (Appendix C). The first was designed to measure the overall job satisfaction at follow-up as reported by subjects. The second was designed to determine how satisfied employers were with the work done by the educable mentally impaired graduates. Job satisfaction of subjects is reported in Table 4.11 and employer satisfaction is found in Table 4.12.

Table 4.11

Frequency Distribution by Sex of the Job Satisfaction
of Educable Mentally Impaired Subjects
Employed After Graduation

Sex	Satisfaction with the Job								Total No. Per.	
	Very Satisfied No. Per.		Somewhat Satisfied No. Per.		Not Very Satisfied No. Per.		Not at All Satisfied No. Per.			
Male	13	45%	11	38%	4	14%	1	3%	29	69%
Female	8	62%	4	31%	1	8%	0	--	13	31%
Combined	21	50%	15	36%	5	12%	1	2%	42	100%

Chi Square = 1.35915 with 3 degrees of freedom. The probability level of .51 is not statistically significant.

Table 4.12

Frequency Distribution of Employer Satisfaction Ratings
of Male and Female Educable Mentally Impaired
Subjects who were Employed Ten Months
After Graduation

Sex	Employer Rating								Total No. Per.	
	Excellent No. Per.		Good No. Per.		Fair No. Per.		Poor No. Per.			
Male	2	11%	9	50%	4	22%	3	17%	18	60%
Female	2	17%	7	58%	1	8%	2	17%	12	40%
Combined	4	13%	16	53%	5	17%	5	17%	30	100%

Chi Square = 1.09375 with 3 degrees of freedom. The probability level of .44 is not statistically significant.

Subjects were asked if they used any training received in high school on the jobs held since graduation. The data was reported on the Follow-up Form (Appendix C). The responses are found in Table 4.13. There were no significant differences between males and females.

Table 4.13

Frequency Distribution by Sex of the Usefulness of High School Training as Reported by Educable Mentally Impaired Subjects Employed After Graduation

Sex	Use of High School Training								Total No. Per.	
	A Lot No. Per.		Some No. Per.		Hardly Any No. Per.		None No. Per.			
Male	12	41%	9	31%	4	14%	4	14%	29	71%
Female	4	33%	5	42%	0	--	3	25%	12	29%
Combined	16	39%	14	34%	4	10%	7	17%	41	100%

Chi Square = 2.70135 with 3 degrees of freedom. The probability level of .72 is not statistically significant.

Table 4.14 lists the average income by sex at graduation and follow-up. Hourly wage and weekly wage were chosen as measures of income. Weekly wage was calculated by multiplying the hourly wage by the number of hours each subject worked. Individual weekly wages were then totaled and divided by the number of persons to determine the average weekly wage. This procedure was used to determine the average weekly wage in Table 4.14 as well as other tables in this chapter reporting on income.

Table 4.14

Comparison by Sex of the Average Income of Educable
Mentally Impaired Subjects Employed at Graduation
and Ten Months After Graduation

Sex	Average Income At Graduation				Average Income At Follow-Up			
	No.	Hourly Wage	Hours Worked	Weekly Wage	No.	Hourly Wage	Hours Worked	Weekly Wage
Male	27	\$2.46	26	\$68.87	31	\$2.78	35.6	\$100.08
Female	15	2.22	22.7	48.52	13	2.28	33.5	77.84
Difference (Male minus Female)		.24	4.7	20.35		.50	2.1	22.24
T Value		.70	.89	1.45		1.76	.80	1.73
Probability*		.25	.25	.10		.05	.25	.05

*Statistically significant at or below .05.

Males earned more per hour and worked more hours than females at both graduation and follow-up. Differences in hourly wage and weekly wage were statistically significant.

Hypothesis I stated that there would be a relationship between sex and earnings. It was predicted from previous research that men would earn more than women at follow-up. Hypothesis I was substantiated by this analysis. Men earned more per hour and per week than women.

Analysis of Subjects by Intelligence

Hypothesis II stated that there would be a relationship between intelligence as measured on individually administered

intelligence tests and earnings, with subjects with higher Intelligence Quotients earning more per hour and more per week than subjects with lower Intelligence Quotients.

Tables 4.14 through 4.24 provide an analysis of data related to the selection of subjects by level of intelligence. These data were analyzed to determine if there were any factors related to the distribution of subjects by level of intelligence that may have had an effect on income. Tables 4.25 through 4.27 provide data on income by level of intelligence used to test Hypothesis II.

The unit of analysis used in this section are scores on individual intelligence tests. All subjects used in the study had scores of 70 or below on the Stanford-Binet or Wechsler tests. Two of the students from districts with vocational education special needs projects or 6 percent were tested on the Stanford-Binet. Five or 17 percent of the students from work study districts were given the Stanford-Binet.

The scores ranged from 48 to 70. Students were placed in one of three groupings for the purpose of comparison: (a) scores 50 - 63, (b) 64 - 67, and (c) 68 - 70. These groupings were used since they theoretically contained an equal number of persons. Subjects with a 48 and one with a 49 Intelligence Quotient were included. These subjects were enrolled in programs for the educable mentally impaired. The 50 - 62 category was expanded to include these subjects.

The distribution of subjects by intelligence and population density of the county of residence is included in Table 4.15. The distribution is fairly equal.

Table 4.15

Frequency Distribution of Educable Mentally Impaired
Graduates from Rural and Metropolitan Districts
by Intelligence Quotient

Intelligence Quotient	Types of District				Total Number Percent	
	Rural		Metropolitan			
	Number	Percent	Number	Percent		
48 - 63	7	27%	19	73%	26	41%
64 - 67	3	27%	8	73%	11	17%
68 - 70	8	30%	19	70%	27	42%
Combined	18	28%	46	72%	64	100%

Chi Square = .0527 with 2 degrees of freedom. The probability level of .97 is not statistically significant.

Table 4.16

Frequency Distribution of Educable Mentally Impaired
Students at Graduation Listed by Intelligence
Quotient and Sex

Intelligence Quotient	Sex				Total Number Percent	
	Male		Female			
	Number	Percent	Number	Percent		
48 - 63	17	42%	9	39%	26	41%
64 - 67	7	16%	4	17%	11	17%
68 - 70	17	42%	10	37%	27	42%
Combined	41	64%	23	36%	64	100%

Chi Square = .03479 with 2 degrees of freedom. The probability level of .98 is not statistically significant.

Table 4.16 shows intelligence distribution by sex. There are no significant differences.

The distribution of subjects of various races by Intelligence Quotient scores is listed in Table 4.17. There is no significant difference in the distribution of intelligence by race.

Table 4.17

Frequency Distribution of Educable Mentally Impaired
Graduates Listed by Intelligence
Quotient and Race

Intelligence Quotient	White No. Per.		Race		Other No. Per.		Total No. Per.	
			Black No. Per.					
48 - 63	17	40%	5	42%	0	--	22	39%
64 - 67	7	17%	3	25%	1	50%	11	20%
68 - 70	18	43%	4	33%	1	50%	23	41%
Combined	42	75%	12	21%	2	4%	56	100%

Chi Square = 2.3676 with 4 degrees of freedom. The probability level of .67 is not statistically significant.

The type of educational programs subjects were placed in by intelligence are listed in Table 4.18. The general trend was for a larger percentage of students to be placed in regular education programs on a full or part-time basis as intelligence increased. This trend was not strong enough to be statistically significant.

Table 4.18

Frequency Distribution of Educable Mentally Impaired
Subjects by Intelligence Quotient and Type
of Classroom Placement Prior to Graduation

Intelligence Quotient	Educational Program						Total No. Per.	
	Full Time Regular Education		Part Time Regular Education		Full Time Special Education			
	No.	Per.	No.	Per.	No.	Per.		
48 - 63	2	8%	13	58%	9	34%	24	41%
64 - 67	1	9%	8	73%	2	18%	11	17%
68 - 70	1	4%	24	89%	2	7%	27	42%
Combined	4	6%	45	74%	13	20%	62	100%

Chi Square = 7.1218 with 4 degrees of freedom. The probability level of .13 is not statistically significant.

The type of vocational training programs subjects were enrolled in prior to graduation are categorized by intelligence level in Table 4.19. There was no relationship between intelligence as measured on an individual intelligence test and type of vocational training program subjects completed.

Table 4.20 provides data indicating that intelligence levels were similar between students referred to Vocational Rehabilitation as compared to non-vocational rehabilitation referrals.

Table 4.19

Frequency Distribution of Educable Mentally Impaired
Subjects by Intelligence Quotient and
Type of Vocational Preparation

Intelligence Quotient	Type of Vocational Training						Total No. Per.	
	Regular Vocational Education		Adapted Vocational Education		Work Study Only			
	No.	Per.	No.	Per.	No.	Per.		
48 - 63	3	12%	15	58%	8	30%	26	41%
64 - 67	2	18%	6	55%	3	27%	11	17%
68 - 70	5	19%	10	37%	12	44%	27	42%
Combined	10	16%	31	48%	23	36%	64	100%

Chi Square = 2.7043 with 4 degrees of freedom. The probability level of .61 is not statistically significant.

Table 4.20

Frequency Distribution Comparing the Level of Intelligence
of Educable Mentally Impaired Subjects Referred to
Vocational Rehabilitation Services (VRS)
Prior to Graduation With Non-Referrals

Intelligence Quotient	VRS Referrals		Non-VRS Referrals		Total Number Percent	
	Number	Percent	Number	Percent		
48 - 63	17	65%	9	35%	26	41%
64 - 67	9	82%	2	18%	11	17%
68 - 70	22	82%	5	18%	27	42%
Combined	48	75%	16	25%	64	100%

Chi Square = 2.1597 with 2 degrees of freedom. The probability level of .34 is not statistically significant.

Table 4.21 lists employment status of subjects by intelligence at follow-up. Subjects in the 64-67 intelligence range had the lowest rate of employment in this study. Subjects in the 48-63 and 68-70 categories tended to be similar when compared by employment status. The difference between groups was not statistically significant.

Table 4.21

Frequency Distribution Showing the Employment Status
By Level of Intelligence of Educable Mentally
Impaired Subjects Ten Months After Graduation

Intelligence Quotient	Status Ten Months After Graduation						Total No. Per.			
	In Training No. Per.		Employed No. Per.		Un- Employed No. Per.				Other No. Per.	
48 - 63	1	4%	14	58%	8	33%	1	4%	24	41%
64 - 67	0	-	2	20%	7	70%	1	10%	10	17%
68 - 70	3	13%	15	63%	6	25%	0	-	24	41%
Combined	4	7%	31	53%	21	36%	2	3%	58	100%

Chi Square = 10.76 with 6 degrees of freedom. The probability level of .10 is not statistically significant.

Table 4.22 contains information on job satisfaction of subjects with various Intelligence Quotients. There were no statistically significant differences between groups.

Table 4.22

Frequency Distribution by Level of Intelligence Listing
the Job Satisfaction of Educable Mentally Impaired
Subjects Employed After Graduation

Intelligence Quotient	Satisfaction With The Job								Total	
	Very Satisfied		Somewhat Satisfied		Not Very Satisfied		Not at All Satisfied			
	No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
48 - 63	10	50%	7	35%	2	10%	1	5%	20	48%
64 - 67	3	75%	0	-	1	25%	0	-	4	9%
68 - 70	8	44%	8	44%	2	11%	0	-	18	43%
Combined	21	50%	15	36%	5	12%	1	2%	42	100%

Chi Square = 4.1733 with 6 degrees of freedom. The probability level of .65 is not statistically significant.

Employer satisfaction for persons in the sample was mixed as is reported in Table 4.23. Seventy percent were rated fair to good. There were no statistically significant differences among the various groups.

Table 4.23

Frequency Distribution of Employer Satisfaction Ratings
of Educable Mentally Impaired Subjects Employed
After Graduation Listed by Level of Intelligence

Intelligence Level	Employer Rating								Total	
	Excellent		Good		Fair		Poor			
	No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
48 - 63	3	20%	6	40%	1	7%	5	33%	15	50%
64 - 67	0	-	2	67%	1	33%	0	-	3	10%
68 - 70	1	8%	8	67%	3	25%	0	-	12	40%
Combined	4	13%	16	53%	5	17%	5	17%	30	100%

Chi Square = 9.025 with 6 degrees of freedom. The probably level of .17 is not statistically significant.

Table 4.24 contains the subjects' rating of the usefulness of high school training on jobs held since graduation. There were no statistically significant differences among groups of subjects classified by intelligence levels.

Table 4.24

Frequency Distribution by Level of Intelligence of the Usefulness of High School Training as Reported by Educable Mentally Impaired Subjects Employed After Graduation

Intelligence Quotient	Use of High School Training								Total	
	A Lot		Some		Hardly Any		None			
	No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
48 - 63	11	55%	5	25%	1	5%	3	15%	20	49%
64 - 67	1	25%	1	25%	1	25%	1	25%	4	10%
68 - 70	4	23%	8	47%	2	12%	3	18%	17	41%
Combined	16	39%	14	34%	4	10%	7	17%	41	100%

Chi Square = 5.6612 with 6 degrees of freedom. The probability level is .46. Not statistically significant.

Table 4.25 lists the average income by level of intelligence at follow-up.

Table 4.25

Average Income by Intelligence Quotient for Educable Mentally Impaired Students Employed Between Graduation and Follow-up

Intelligence Quotient	Average Income At Follow-up			
	Number	Hourly Wage	Hours Worked	Weekly Wage
48 - 63	21	\$2.55	35.1	\$92.93
64 - 67	5	\$2.45	33.1	\$84.26
68 - 70	18	\$2.70	35.5	\$95.48

Hypothesis II stated that there would be a direct relationship between intelligence as measured on individually administered standardized intelligence tests and income for both the experimental and control groups. Hourly wage and weekly income were used as measures of income in testing Hypothesis II. Table 4.26 provides the results of a one-way analysis of variance used to determine if there were any significant differences between hourly wage of subjects by level of intelligence. The difference in hourly wage was not significant.

Table 4.26

The Effects of Intelligence on the Hourly Wage of Educable Mentally Impaired Subjects Employed After Graduation

Analysis of Variance					
Source	D.F.	Sums of Square	Mean Squares	F Ratio	F Prob.*
Between Groups	2	5602.34	2801.17	.369	.694
Within Groups	<u>40</u>	<u>303421.52</u>	7585.54		
Total	42	309023.86			

*Statistically significant at or below .05.

Table 4.27 provides the results of the one-way analysis of variance used to measure the difference between weekly wage by level of intelligence. This analysis indicated that the differences were not statistically significant.

Table 4.27

The Effects of Intelligence on the Weekly Wage of
Educable Mentally Impaired Subjects Employed
After Graduation

Analysis of Variance					
Source	D.F.	Sums of Square	Mean Squares	F Ratio	F Prob.*
Between Groups	2	12977504	6488752	.412	.661
Within Groups	<u>40</u>	<u>619651510</u>	15491287		
Total	42	632629015			

*Statistically significant at or below .05.

The data reported in Tables 4.26 and 4.27 indicated that there is not a relationship between intelligence as measured on an individual intelligence test and income. Therefore, Hypothesis II is rejected.

Comparison of Subjects by Race

Hypothesis III predicted a relationship between race and earnings with white subjects earning more per hour and per week than black and other non-white subjects at the time of follow-up.

Tables 4.28 through 4.34 provide an analysis of data related to selection of subjects by race. These data were analyzed to determine if there were any factors related to the distribution of educable mentally impaired subjects of various races that may have had an effect on income. Table 4.35 provides data on income by race used to test Hypothesis III.

The type of educational programs subjects of various races were placed in prior to graduation are listed in Table 4.28. There is no significant difference in the distribution of students of various races by type of educational program.

Table 4.28

Frequency Distribution of Educable Mentally Impaired
Students by Race and Type of Classroom Placement
Prior to Graduation

Race	Educational Program						Total No. Per.	
	Full-Time Regular Education No. Per.		Part-Time Regular Education No. Per.		Full-Time Special Education No. Per.			
White	1	2%	31	74%	10	24%	42	75%
Black	3	25%	7	58%	2	17%	12	21%
Other	0	--	2	100%	0	--	2	4%
Combined	4	7%	40	72%	12	21%	56	100%

Chi Square = 8.05 with 4 degrees of freedom. The probability level of .09 is not statistically significant.

The type of vocational training provided to students is reported by race in Table 4.29. There were no significant differences by race for the types of vocational programs where students were placed.

Table 4.29

Frequency Distribution of Educable Mentally Impaired
Students at Graduation by Race and
Type of Vocational Placement

Race	Type of Vocational Preparation						Total	
	Regular Vocational Education		Adapted Vocational Education		Work Study Only			
	No.	Per.	No.	Per.	No.	Per.	No.	Per.
White	8	19%	23	55%	11	26%	42	75%
Black	1	8%	4	34%	7	58%	12	21%
Other	1	50%	1	50%	0	--	2	4%
Combined	10	18%	28	50%	18	32%	56	100%

Chi Square = 6.32381 with 4 degrees of freedom. The probability level of .18 is not statistically significant.

Table 4.30

Frequency Distribution by Race of Educable Mentally
Impaired Subjects Referred to Vocational
Rehabilitation Services (VRS)
Prior to Graduation

Race	VRS Referral		Non VRS Referrals		Total	
	Number	Percent	Number	Percent	Number	Percent
White	30	71%	12	29%	42	75%
Black	11	92%	1	8%	12	21%
Other	0	--	2	100%	2	4%
Combined	41	73%	15	27%	56	100%

Chi Square = 7.61843 with 2 degrees of freedom. The probability of .0222 is statistically significant.

There were significant differences in the racial distribution of persons referred to Vocational Rehabilitation prior to graduation as shown in Table 4.30. More blacks were referred for Vocational Rehabilitation Services than whites or students of other races.

Table 4.31 lists employment status of subjects by race at the time of follow-up. There were more blacks in training than non-blacks. The unemployment rate was 43 percent for whites and 27 percent for blacks. The two persons of other races were both unemployed. The differences between groups were not statistically significant.

Table 4.31

Frequency Distribution by Race and Employment Status
of Educable Mentally Impaired Subjects
Ten Months After Graduation

Race	Status Ten Months After Graduation In								Total No. Per.	
	Training No. Per.		Employed No. Per.		Unemployed No. Per.		Other No. Per.			
White	1	3%	20	50%	17	42%	2	5%	40	76%
Black	3	27%	5	46%	3	27%	0	--	11	21%
Other	0	--	2	100%	0	--	0	--	2	3%
Combined	4	8%	27	51%	20	38%	2	4%	53	100%

Chi Square = 10.15343 with 6 degrees freedom. The probability level of .12 is not statistically significant.

Job satisfaction at follow-up by race is listed in Table 4.32. There were no significant differences in job satisfaction as reported by persons of various races.

Table 4.32

Frequency Distribution by Race of Educable Mentally Impaired Subjects Rating of Their Job Satisfaction Ten Months After Graduation

Race	Very Satisfied No. Per.	Satisfied With the Job				Total No. Per.
		Somewhat Satisfied No. Per.	Not Very Satisfied No. Per.	Not at All Satisfied No. Per.		
White	14 50%	9 32%	4 14%	1 4%	28 76%	
Black	3 43%	4 57%	0 --	0 --	7 19%	
Other	2 100%	0 --	0 --	0 --	2 5%	
Combined	19 51%	13 35%	4 11%	1 3%	37 100%	

Chi Square = 4.3762 with 6 degrees of freedom. The probability level of .63 is not statistically significant.

Employer satisfaction with workers is listed in Table 4.33. There were no significant differences between the employer satisfaction with workers of various races in this study.

Table 4.33

Frequency Distribution of Employers' Satisfaction
Ratings of Educable Mentally Impaired
Subjects of Various Races Who Were
Employed After Graduation

Race	Employers' Rating of Work				Total No. Per.	
	Excellent No. Per.	Good No. Per.	Fair No. Per.	Poor No. Per.		
White	3 16%	10 53%	2 11%	4 20%	19	73%
Black	1 17%	4 67%	1 16%	0 --	6	23%
Other	0 --	1 100%	0 --	0 --	1	4%
Combined	4 15%	15 58%	3 12%	4 15%	26	100%

Chi Square = 2.38333 with degrees of freedom. The probability level of .88 is not statistically significant.

The report of the usefulness of high school training by subjects of various races is listed in Table 4.34. As can be seen from this table, there were no differences in utility of the various training programs, as identified students of various races.

Table 4.34

Frequency Distribution by Race of the Usefulness of High
School Training as Reported by Educable Mentally
Impaired Subjects Employed After Graduation

Race	Use of High School Training				Total No. Per.	
	A Lot No. Per.	Some No. Per.	Hardly Any No. Per.	None No. Per.		
White	11 40%	8 30%	4 15%	4 15%	27	75%
Black	3 42%	2 29%	0 --	2 29%	7	19%
Other	0 --	2 100%	0 --	0 --	2	6%
Combined	14 39%	12 33%	4 11%	6 17%	36	100%

Chi Square - 5.9728 with 6 degrees of freedom. The probability level of .43 is not statistically significant.

Table 4.35 lists the average income by race at graduation and follow-up. This data was used to test Hypothesis III. Hypothesis III indicated that there would be a relationship between race and earnings. The prediction was that white subjects would earn more than non-whites at the time of follow-up. Hourly wage and weekly wages were used as indicators of income. Based on the findings reported in Table 4.35, Hypothesis III was rejected.

Table 4.35

Comparison by Race of the Average Income of
Educable Mentally Impaired Subjects
Employed at Graduation and
10 Months After Graduation

Race	Average Income At Graduation				Average Income At Follow-up			
	No.	Hrly. Wage	Hours Worked	Wkly. Wage	No.	Hrly. Wage	Hours Worked	Wkly Wage
White	29	\$2.42	25.2	\$64.07	31	\$2.62	35.4	\$94.06
Black and Other	8	2.39	22.4	57.33	9	2.91	30.4	94.22
Difference (White minus Other.)		.03	2.8	1.74		.29	5	.16
T Value		.06	.60	.31		.39	1.62	.01
Probability*		.90	.30	.35		.35	.10	.70

*Statistically significant at or below .05.

Comparison of Students Completing Vocational Education and Work Study Programs

Hypotheses IV and V compare the rate of employment and income of educable mentally impaired subjects completing vocational education and work study programs. The hypotheses were based on the assumptions that there were significant differences in the types of students assigned to the vocational education and work study groups.

Prior to testing the hypothesis, it was necessary to compare students assigned to the vocational education and work study to assure that there was no selection bias. The results of these comparisons are reported in Tables 4.36 through 4.41.

The distribution of subjects by type of training and population density of the county of residence is listed in Table 4.36. This analysis was included to determine if educable mentally impaired students from rural and metropolitan areas had equal access to both types of programs. The distribution, as reported in Table 4.36, is fairly equal.

Table 4.36
Frequency Distribution of Educable Mentally Impaired Subjects Assigned to Vocational Education and Work Study Programs From Rural and Metropolitan Districts

Type of Vocational Preparation	Type of District				Total Number Percent	
	Rural Number Percent		Metropolitan Number Percent			
Voc. Educ.	18	44%	23	56%	41	64%
Work Study	16	70%	7	30%	23	38%
Combined	34	53%	30	47%	64	100%

Chi Square = .00033 with 1 degree of freedom. The probability level of .98 is not statistically significant.

Table 4.37 lists the distribution of subjects by level of intelligence and type of training. There was no significant difference in the level of intelligence as measured on an individual intelligence test between groups.

Table 4.37

Frequency Distribution of Educable Mentally Impaired
Subjects by Intelligence Level and
Type of Vocational Preparation

Type of Vocational Preparation	Level of Intelligence						Total No. Per.	
	48 - 63		64 - 67		68 - 70			
	No.	Percent	No.	Percent	No.	Percent		
Voc. Educ.	18	44%	8	19%	15	37%	41	64%
Work Study	8	35%	3	13%	12	52%	23	36%
Combined	26	41%	11	17%	27	42%	64	100%

Chi Square = 5.4035 with 2 degrees of freedom. The probability level of .07 is not statistically significant.

The racial distribution of subjects assigned to the experimental and control groups is listed in Table 4.38. The difference between groups by race were not statistically significant.

Table 4.38

Frequency Distribution of Educable Mentally Impaired
Subjects Assigned to Vocational Education
and Work Study Programs by Race

Type of Vocational Preparation	Race				Total	
	White		Black and Others			
	Number	Percent	Number	Percent	Number	Percent
Voc. Educ.	31	74%	11	26%	42	75%
Work Study	7	50%	7	50%	14	25%
Combined	38	68%	18	32%	56	100%

Chi Square = 1.7466 with 1 degree of freedom. The probability level of .19 is not statistically significant.

Table 4.39 lists the distribution of subjects by type of vocational preparation and sex. There were no significant differences between groups.

Table 4.39

Frequency Distribution of Educable Mentally Impaired
Subjects Assigned to Vocational Education
and Work Study Programs by Sex

Type of Vocational Preparation	Sex				Total	
	Male		Female			
	Number	Percent	Number	Percent	Number	Percent
Voc. Educ.	28	68%	13	32%	41	64%
Work Study	13	57%	10	43%	23	36%
Combined	41	64%	23	36%	64	100%

Chi Square = .4497 with 1 degree of freedom. The probability level of .50 is not statistically significant.

There was a concern that the study could be bias if subjects in the experimental and control groups did not have equal access to school and community resources. Access to general education programs and rate of referral to Vocational Rehabilitation were chosen as indicators to measure access to school and community resources.

Table 4.40 contains the results of a comparison of subjects who were served in regular education, on a full or part-time basis, and subjects who were assigned to a special education program. There were only slight differences between groups.

Table 4.40

Frequency Distribution of Educable Mentally Impaired
Subjects Assigned to Vocational Education
and Work Study Programs and Type of
Classroom Placement Prior to
Graduation

Type of	Type of Classroom Placement							
Vocational Preparation	Full-Time Regular Education No. Per.		Part-Time Regular Education No. Per.		Full-Time Special Education No. Per.		Total No. Per.	
Voc. Educ.	2	5%	30	73%	9	22%	41	64%
Work Study	2	9%	17	74%	4	17%	23	36%
Combined	4	6%	47	74%	13	20%	64	100%

Chi Square = .4955 with 2 degrees of freedom. The probability level of .78 is not statistically significant.

Table 4.41 shows the results of a comparison of subjects from the experimental and control groups who were referred to Vocational Rehabilitation Services. There was no significant difference in the percent receiving the Rehabilitation Services.

Table 4.41

Frequency Distribution Comparing Vocational Rehabilitation (VRS) Referrals with Non-Vocational Rehabilitation Referrals by Type of Vocational Training

Type of Vocational Training	VRS Referrals		Non VRS Referrals		Total	
	Number	Percent	Number	Percent	Number	Percent
Vocational Education	28	68%	13	32%	41	64%
Work Study	20	87%	3	13%	23	23%
Combined	48	75%	16	25%	64	100%

Chi Square = 1.8325 with 1 degree of freedom. The probability level of .18 is not statistically significant.

This section was included to provide data to show that there was no statistical difference between students assigned to the vocational education and work study groups to test the assumption made in Hypotheses IV and V, that is, that students assigned to the vocational education and work study groups were similar. Data provided on Tables 4.36 through 4.41 indicate there were no significant differences between groups when compared by sex, race, level of intelligence, size of district, type of classroom placement, or availability of Vocational Rehabilitation Service.

Using this data as evidence that there was no bias in the selection of students assigned to the vocational education and work study groups, Hypotheses IV and V were then tested.

Comparison of Vocational Education and Work Study Graduates'
Rate of Employment at Follow-Up

Hypothesis IV was designed to test the assumption that educable mentally impaired subjects who completed a vocational training sequence and graduated would have a higher rate of employment than a similar group of subjects who had not had the benefit of vocational training. Only subjects who indicated they were available for employment at the time of the follow-up were counted in determining the rate of employment. Table 4.42 presents their employment status at follow-up.

Table 4.42

Frequency Distribution Listing the Employment Status
of Educable Mentally Impaired Graduates Who
Completed Vocational Education With
Graduates Completing Work
Study Programs

Type of Training	Status Ten Months After Graduation								Total No. Per.	
	In Training No. Per.		Employed No. Per.		Unemployed No. Per.		Other No. Per.			
Voc. Educ.	2	5%	24	63%	12	32%	0	--	36	66%
Work Study Only	2	10%	7	35%	9	45%	2	10%	20	34%
Combined	4	7%	31	54%	21	36%	2	3%	58	100%

Chi Square = 6.8220 with 3 degrees of freedom. The probability level of .08 is not statistically significant.

There were 58 of the original 64 subjects who could be located at follow-up. Four subjects were in training and two were not available for employment (housewives, ill, or otherwise not available). This left a total of 52 subjects who were interested in and available for employment; 36 of these were in the experimental group and 16 in the control group.

A chi square analysis was completed to compare the employment rate of subjects assigned to the experimental and control group. The purpose of this analysis was to test Hypothesis IV. Table 4.43 contains the results of this comparison.

Table 4.43

Frequency Distribution Comparing the Employment Rate
of Educable Mentally Impaired Graduates
Who Completed Vocational Education
With Graduates Completing
Work Study Programs

Type of Training	Employment Status Ten Months After Graduation					
	Employed		Unemployed		Total	
	Number	Percent	Number	Percent	Number	Percent
Vocational Education	24	67%	12	33%	36	69%
Work Study	7	44%	9	56%	16	31%
Combined	31	60%	21	40%	52	100%

Chi Square = 1.55816 with 1 degree of freedom. The probability level of .21 is not statistically significant.

Hypothesis IV stated that graduates classified as educable mentally impaired who completed a vocational education program would have a higher rate of employment ten months after graduation than a similar group of graduates assigned to work study programs without the benefit of vocational education. As reported in Table 4.43, the experimental group had a 67 percent rate of employment as compared to a 44 percent employment rate for the control group. Although the difference between the two groups was 23 percent, it was not large enough to be statistically significant given the size of the sample. Therefore, it is not known if the differences in the rate of employment between subjects who completed vocational education and subjects completing work study are true differences or due to sampling error. Based on these findings, Hypothesis IV was rejected.

Comparison of Vocational Education and Work Study Graduates By Income at Follow-up

Hypothesis V was included to test the assumption that educable mentally impaired students, who completed a vocational education program and graduated, would earn more than a similar group of graduates who had access to a work study program without the benefits of vocational education. Three types of income were chosen for comparison, hourly wage, weekly wage and total income from graduation to follow-up. Weekly wage was determined by multiplying the hourly wage times the number of hours worked per week. Total income from

graduation to follow-up was calculated by multiplying the weekly wage by the number of weeks worked.

The average income of subjects assigned to the experimental and control groups are listed in Table 4.44. The types of jobs graduates worked in to earn this income are listed in Appendix I.

Table 4.44

Average Income by Type of Training For Educable
Mentally Impaired Subjects Ten Months
After Graduation

Type of Training	Number	Hourly Wage	Weekly Wage	Total Income Graduation to Follow-Up
Vocational Education	36	\$2.34	\$81.99	\$2,605.28
Work Study	16	1.81	67.94	1,875.59
Difference (VE-WS)		.53	14.05	729.69
T Value		1.42	.95	.87
Probability*		.10	.20	.20

*Statistically significant at or below .05.

Data analysis reported earlier in this chapter revealed that there was a relationship between sex and earnings (Table 4.14). A two-way analysis of variance was computed to determine if there were a significant interaction by sex and type of vocational training. Data presented in Table 4.45 indicates that there was not a significant interaction between sex and type of training.

Table 4.45

Results of An Analysis of Variance Tests Measuring the
Interaction Between Type of Training and Sex on
Three Income Variables

Source of Variation*	Variable		Total Income Since Graduation
	Hourly Wage	Weekly Wage	
Mean Square	\$4.45	\$23.29	\$2,223.12
F Ratio	3.08	1.04	.028
F Probability	.09	.30	.87

*Degrees of freedom were 2 and 48 for all tests with probability considered statistically significant at or below .05.

The vocational education graduates earned \$797.40 or 43 percent more than the work study graduates. The difference was not large enough to be considered statistically significant given the size of the sample and the variance in income. Therefore, it is not known if the differences are real or due to sample selection.

Hypothesis V states that the experimental group will have a higher rate of income than the control group at follow-up. Hypothesis V must be rejected since the differences in incomes between the two groups were not statistically significant.

Analysis of the Costs and Benefits of Vocational Education Programs for the Educable Mentally Impaired

Hypothesis VI was based on the assumption that the added cost of vocational education programs for the educable mentally impaired would result in increased benefits. This

study measured four types of benefits: (1) employee job satisfaction, (2) employer satisfaction with graduates, (3) increased lifetime earnings, and (4) increased taxes paid.

Vocational education special needs and work study coordinators asked subjects how satisfied they were with the jobs they were in at the time of follow-up. Table 4.46 contains a summary of the responses received. There were no significant differences in the rating of job satisfaction.

Table 4.46

Frequency Distribution Comparing the Satisfaction of
Educable Mentally Impaired Graduates of Vocational
Education and Work Study Programs on Jobs
Held After Graduation

Type of Training	Very Satisfied		Somewhat Satisfied		Not Very Satisfied		Not at All Satisfied		Total	
	No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
Vocational Education	17	54%	11	34%	3	9%	1	3%	32	76%
Work Study	4	40%	4	40%	2	20%	0	-	10	24%
Combined	21	50%	15	36%	5	12%	1	2%	42	100%

Chi Square = 1.3650 with 3 degrees of freedom. The probability of .71 is not statistically significant.

Employers were asked to indicate their satisfaction with the work done by educable mentally impaired graduates. The responses of the 30 employers contacted by vocational education special needs and work study co-ordinators are listed in Table 4.47. There was no difference in the employers' rating of satisfaction of work done by subjects in the experimental and control groups.

Table 4.47

Frequency Distribution Comparing Employers' Satisfaction With Work Done by Educable Mentally Impaired Graduates from Vocational Education and Work Study Programs

Type of Training	Employers' Rating of Work								Total	
	Excellent		Good		Fair		Poor			
	No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
Vocational Education	3	13%	13	53%	4	17%	4	17%	24	80%
Work Study	1	17%	3	49%	1	17%	1	17%	6	20%
Combined	4	13%	16	53%	5	17%	5	17%	30	100%

Chi Square = .07812 with 3 degrees of freedom. The probability of .99 is not statistically significant.

A cost-benefit analysis was computed to determine if the added costs of vocational education could be justified. The yearly added cost of vocational education special needs projects for handicapped students as reported by the Michigan Department of Education was used as an estimate of the added cost of vocational education over work study. Since data were not available on the amount of public support being spent

to maintain educable mentally impaired graduates who were unemployed or who otherwise qualified for supplemental security income, welfare, unemployment compensation, and so forth, reduction in public assistance costs could not be included in the calculation of benefits.

Student benefits were calculated by dividing the increased income earned by vocational education graduates by the added cost of vocational education. Increased income was calculated in the following manner: (a) The difference in average income of \$729.69 was determined by subtracting the average income of persons in the work study group from the average income of persons in the vocational education groups using data in Table 4.44; (b) The difference of \$729.69 was divided by ten months to obtain the average monthly income of \$72.97; and (c) The increased monthly earnings of vocational graduates as compared to work study graduates of \$72.97 was multiplied by 12 for the projected yearly difference in earning between the two groups of \$875.64.

Taxpayers' benefits were based on an estimated 20 percent combined state and federal tax rate. Benefits to taxpayers were calculated by multiplying the projected yearly income of \$875.64 times 20 percent to yield an estimated difference of \$35.03 paid by vocational education graduates in excess of work study graduates.

Data from the Vocational Education Special Needs Project Student Data Sheet (Appendix A, item 3, question 2) indicated that the average vocational education student spent

eighteen months or two school years in vocational education. The total added cost was calculated by multiplying the yearly student cost of the vocational education special needs program of \$553 by two years for a total added cost of vocational education over work study of \$1106. The resulting benefit-cost ratios for student and taxpayers' benefits is listed in Table 4.48.

Table 4.48

Added Benefits of Providing Vocational Education (VE)
to Educable Mentally Impaired Students as
Measured by Increased Income
and Taxes Paid

Benefit-Cost Ratio			
Student Benefits		Taxpayer Benefits	
Year 1	$\frac{875}{1106} = .79$		$\frac{175}{1106} = .16$
Year 2	$\frac{1751}{1106} = 1.58$		$\frac{350}{1106} = .32$
Year 5	$\frac{4378}{1106} = 3.96$		$\frac{875}{1106} = .79$
Year 10	$\frac{8756}{1106} = 7.92$		$\frac{1751}{1106} = 1.58$

The projected returns listed in Table 4.48 assumed that the benefits of vocational education and work study training would remain constant. Based on this assumption, the added cost of vocational education would be returned in

the form of increased income to the average educable mentally impaired graduate in less than two years. The added costs are returned in the form of increased taxes within seven years.

Hypothesis VI, which stated that the cost of vocational education would be offset as a result of increased income and taxes paid by educable mentally impaired subjects completing vocational training as compared to a similar group of work study graduates, was substantiated.

Summary of the Tests of the Hypotheses

Hypothesis I: There will be a relationship between sex and earnings with educable mentally impaired men earning more per hour and per week than women based on data from the Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

Test: Table 4.14 reveals that men earned more per hour and per week than women at the time of follow-up. The difference in income was statistically significant at the .05 level, which supported the hypothesis.

Hypothesis II: There will be a direct relationship between intelligence as measured on individually administered standardized intelligence tests and earning with educable mentally impaired subject with higher Intelligence Quotients earning more per hour and per week than subjects with lower Intelligence Quotients, based on earnings reported

on the Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

Test: Data reported in Tables 4.25, 4.26, and 4.27 indicate that there is no relationship between intelligence and income. Therefore, Hypothesis II was rejected.

Hypothesis III: There will be a relationship between race and earnings with white educable mentally impaired graduates earning more per hour and per week than non-whites based on data from the Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

Test: Data used to test this hypothesis is summarized in Table 4.35. There was no significant difference in income by race. Therefore, the hypothesis was rejected.

Hypothesis IV: Graduates classified as educable mentally impaired who have completed a vocational education program will have a higher rate of employment ten months after graduation than a similar group of graduates assigned to on-the-job training without the benefit of vocational education as reported on the Follow-up Form For Special Education Graduates (Appendix C).

Test: As described in Table 4.42, graduates of vocational education programs had a 23 percent higher rate of employment than graduates from work study programs at the time of follow-up. The difference was not large enough to be statistically significant given the size of the sample (chi-square probability = .22). It was not determined if the 23 percent difference in employment rate was a true difference or due to sampling error. Based on these findings, Hypothesis IV was rejected.

Hypothesis V: Members of the experimental group will earn more per hour and more per week than members of the control group based on data from The Follow-up Form For Special Education Graduates (Appendix C) reporting income ten months after graduation.

Test: Tables 4.44 and 4.45 summarize the data used to test this hypothesis. Although vocational education graduates earned more per hour, more per week, and had a greater income than work study graduates, differences were not large enough to be statistically significant; therefore, the hypothesis was rejected.

Hypothesis VI: The cost of providing vocational education to the experimental group will be offset over a period of time as a result of increased income and taxes paid by members of the experimental group as compared to the control group, with income and taxes being

calculated from data reported on the Follow-up Form For Special Education Graduates (Appendix C) measuring total income for the 10-month period following graduation.

Test: The Cost-Benefit analysis, listed in Table 4.48, shows that the added cost of vocational education over on-the-job training would be paid back in the form of increased student income within two years and the added cost to taxpayers would be returned within seven years. Based on these findings, Hypothesis VI was supported.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

The purpose of the study was to determine if vocational education programs are more effective than work study programs in preparing the educable mentally impaired for employment. This chapter will review the findings of the study and present the conclusions drawn from those findings. The chapter concludes with an analysis of the limitations inherent in the study and recommendations for further research.

Discussion of Significant Findings

The first three hypotheses looked at the effects that the subject variables of sex, intelligence, and race had on the employability of the educable mentally impaired. As was mentioned in Chapter 2, there is no conclusive evidence from other research to indicate the relationship between these factors and the employability of the educable mentally impaired.

Conley (1973) summarized 22 studies which analyzed the relationship between sex and employment. The findings of this study are similar to those found by Conley, that is, females have a more difficult time finding employment and have a significantly lower rate of pay than males.

A number of analyses were completed as part of this study to determine if a relationship existed between intelligence and income. There was no significant correlation between intelligence and income at follow-up ($R=.06$). As reported in Tables 4.23, 4.24, 4.25, and 4.27, there was no significant relationship between intelligence and income. These findings agree with those of Conley:

Intelligence deficiency alone does not cause vocational failure among retardates with Intelligence Quotients above 40. When vocational failure occurs, it is usually associated with other impediments to employment, such as adverse attitudes toward work, physical or emotional disability, job discrimination, etc.

A review of the literature indicated there is little information to verify the relationship between race and employability of the educable mentally impaired. The data from this study supported the conclusion that race is not a significant factor affecting the rate of employment or income of educable mentally impaired high school graduates.

The major hypotheses were designed to measure the benefits of providing vocational education to educable mentally impaired students. As reported in Tables 4.43 and 4.44, students completing vocational training had a 23 percent higher rate of employment, earned 53 cents more per hour, \$14.05 more per week, and \$729.69 more in total income between graduation and follow-up than work study students. In every case in this study, the vocational education students did better than the work study students. Even though the differences in income were not statistically significant, there were

indications of economic benefits for those completing vocational education programs. There is one major confounding variable that was not tested in this study. The dropout rate, prior to graduation, may have had an effect on the results of this study. Table 2.3 provided evidence of the high dropout rate of students assigned to work study programs. The combined dropout rate from six studies of educable mentally impaired students placed in work study programs was 38 percent. This compared to a dropout rate of 24 percent reported by Harris (1975) on a sample of 1812 educable mentally impaired students completing vocational training in the Kansas study.

Based on this information, it would be expected that 14 percent more students would graduate from vocational education programs than would graduate from work study programs. Using the test differences between two population means, one finds this to be significant at the .001 level. This data would indicate that vocational education enables 14 percent of the marginal students, that is, students who would have dropped out of school and probably not have been employed if they were placed in a work study program, to have graduated as a result of vocational training. Data presented in Chapter 2 indicated that the work study students who dropped out had more behavioral and social problems than work study students who graduated. Because of these behavioral characteristics, one could expect that these students would have a more difficult time finding and maintaining employment. Based on this information, it could be expected that these

students would obtain marginal jobs, that is, jobs that pay less. If this did occur, the inclusion of 14 percent marginal students would bring down the average income for the vocational education group. Further study is needed which includes a comparison of the dropout rate between work study and vocational education subjects to measure the real difference in income, and the rate of employment resulting from vocational education as compared to work study programs. All available evidence indicated that there was a substantial benefit to students who completed vocational education. This is confirmed in the cost-benefit analysis provided in Table 4.50 which showed that the increased earnings of the vocational education group over the work study group would surpass the amount spent on the added cost of vocational training within two years after graduation, and the taxes on the increased earnings would generate enough revenue to return the public investment for the added cost of vocational education in seven years.

Conley (1976) reports that most follow-up studies on the retarded report low earnings because the studies were done shortly after the retarded left school and while they were still teenagers. Conley points to the fact that the rate of employment for all teenagers is low. He further estimated that there is an average growth of earning for the mildly retarded of 2.5 percent. Based on this information, the cost-benefit analysis contained in Table 4.50 is considered to be a conservative one.

Discussion of Other Findings

A comparison was made between subjects referred to Vocational Rehabilitation Services prior to graduation and subjects who were not referred. There were no significant differences in the sex, intelligence, type of program assignment, type of district (rural or metropolitan), or type of training, that is, vocational education versus work study of students referred to Vocational Rehabilitation Services. As reported in Table 4.30, there was a significant difference in the proportion of black students referred to Vocational Rehabilitation Services as compared to whites, and other non-white students. There was no significant difference in the rate of employment at follow-up between the two groups. There was, however, a significant difference in the average income at both graduation and follow-up. The average hourly income at graduation for the 30 subjects referred to Vocational Rehabilitation Services was \$2.12 as compared to \$2.98 for the 12 subjects who were not referred. The difference of 86 cents was significant at the .025 level. The hourly wage at follow-up was \$2.49 for subjects referred to Vocational Rehabilitation as compared to \$2.96 for non-Rehabilitation referrals. The difference of 47 cents was significant to the .05 level. Subjects referred to Vocational Rehabilitation Services earned \$48.63 per week at graduation as compared to \$94.05 for non-Rehabilitation graduates. The difference of \$45.42 was significant at the .05 level. At follow-up the subjects referred to Vocational Rehabilitation Services were

earning \$86.80 as compared to \$110.37 for non-Rehabilitation referrals. The difference of \$25.57 was significant at the .05 level.

The above data clearly indicate that students referred to Vocational Rehabilitation Services earned significantly less at both graduation and follow-up. This may indicate that the school districts referred marginal students, that is, students who were more difficult to place, to Vocational Rehabilitation at the time of graduation. It is interesting to note that the gap in income between Vocational Rehabilitation referrals and non-Rehabilitation referrals decreased between the time of graduation and the time of follow-up. There was an 86-cent difference between non-Rehabilitation referrals and Vocational Rehabilitation referrals at the time of graduation compared to a 47-cent difference in hourly wage at follow-up. The difference in weekly wage at graduation was \$45.42 compared to a weekly wage of \$25.57 at follow-up. Based on these findings, it may be speculated that the school districts tended to refer the more difficult students to Vocational Rehabilitation and that rehabilitation services were effective in closing the gap in the difference in income between the two groups as a function of the amount of time on the job.

Another unexpected finding was that there were no studies available which produced evidence of the value of the work study or on-the-job training method of preparing the educable mentally impaired for employment. As noted in the

review of literature, only two studies were found that used a control group. In each case, there was no significant difference in the rate of employment between the two groups at follow-up.

While there were reports that graduates of work study programs earned more than dropouts, and reports that the graduates who were able to find employment while in high school earn more than graduates of work study programs who were not able to find employment, these reports were judged unreliable since they were based on differences between non-comparable groups.

Since special education in virtually every state have used work study in place of vocational education, they have evidently assumed that work study is a good method of preparing the educable mentally impaired for employment. As indicated in the conclusion to Chapter 2, this assumption was not based on any empirical evidence documented in the literature.

CONCLUSIONS

The data from this study are strong enough in the author's judgment to recommend the continuation of vocational education programs for the educable mentally impaired and to question the continuation of work study programs for students who have not had vocational education. This conclusion is based on the following evidence:

1. An extensive review of the literature produced only two studies that used control groups to measure the effects

of the work study program in increasing the post-school employment rate of educable mentally impaired. There was no significant difference between students who were placed in community work study versus students who remained in school without the benefit of the work study experience.

2. There was evidence in the literature that educable mentally impaired students with behavioral problems and low academic ability did not have access to the work study programs since they were unable to succeed in obtaining or maintaining employment.

3. While the differences in rate of employment and hourly and weekly income between graduates assigned to the work study and vocational education groups were not large enough to substantiate statistically the value of vocational education, students graduating from the vocational education program had a 23 percent higher rate of employment and earned 53 cents an hour and \$14.05 more per week on the average than graduates of the work study program ten months after graduation.

4. A cost-benefit analysis indicated that the added cost of vocational education over work study was returned in the form of higher income to the vocational education graduate and higher taxes paid.

Based on these findings, it is concluded that formal vocational training is more beneficial than no training or less structured training that students receive from employers while participating in a work study or on-the-job training program.

Limitations of the Study

This was a post hoc study, that is, the students were assigned to vocational education or work study programs prior to the initiation of the study. One of the problems with post hoc studies is the possibility of selection bias. Although sex, race, Intelligence Quotient, type of general or special education program, and rehabilitation status were compared to determine if students assigned to vocational education and work study were similar, it cannot be said with 100 percent certainty that the two groups were identical. One of the findings was a reported 14-percent difference in the dropout rate of students assigned to work study programs as compared to vocational education. Selecting subjects at the time of graduation made it impossible to control this variable in the data analysis.

The sample size could have been larger to be more truly representative of all programs for the educable mentally impaired in Michigan. Since there was no data available from the Michigan Department of Education, data collected from this study along with data collected from a student follow-up project in Kalamazoo Intermediate District were used to project the number of educable students who graduated in the Spring of 1975. This study covers 44 of 408 districts in Michigan with secondary special education programs. The sample represented 10.6 percent of Michigan school districts and 6 percent of enrollment. Based on this sample, it was estimated that 719 educable mentally impaired students

graduated at the end of the 1974-75 school year. Of these, 69.8 percent or 502 had Intelligence Quotients over 70 and 217 fell within the definition of educable mentally impaired used for this study. This research project obtained follow-up data on 58 of the estimated 217 educable graduates with intelligence below 70 for an estimated 26.7 percent of the population sampled. While this is within the acceptable rate for studies of this type according to standards established by Engelkes, Livingston, and Vandergoot (1974), the sample size approaches the lower acceptable limit.

Students were selected alphabetically in those districts that had more than five students who met the selection criteria. The alphabetical method was chosen because of its ease of administration. The alphabetical method of selection is not the best statistical method since there is a possible selection bias favoring races and nationalities which use the first letters of the alphabet for the family name.

As can be seen in Tables 3.2 and 3.3, only two districts, one in the experimental group and one in the control group, had more than five students with Intelligence Quotients below 70. Although the use of alphabetical selection was a possible confounding variable, it was determined that it did not bias the study since the method was held constant between groups and since it was only used in selecting subjects in two out of 23 districts from which subjects were chosen for this study.

A problem arose as the result of the decision to develop separate student data collection forms. The questions designed to find out if students were assigned to regular or special education programs while in high school were not comparable. Question 4 on the Vocational Education Special Needs Project Student Data Sheet (Appendix A, item 3) was limited to vocational class placement whereas question 2 on the Work Study Program Student Data Sheet (Appendix B, item 3) included all programs. This raises questions about the validity of the data in Tables 4.7, 4.18, 4.28, and 4.40.

Consideration was given to the use of multivariate analysis and multiregression equations as methods of including intelligence, sex, race, and rehabilitation status in the analysis of income of subjects assigned to the vocational education and work study groups. Multivariate analysis could not be used with any reliability due to the uneven distribution of subjects and the fact that some cells would have no subjects. The multiregression equation was considered but was rejected on the advice of the research consultant in favor of the individual analysis of the relationship between these variables and income. There were insufficient numbers of subjects to obtain reliable results. Two-way analyses of variance were computed to determine if there were any interaction among sex, race, intelligence, and rehabilitation status compared by type of training using hourly wage, weekly wage, and total income as the dependent variable. There were no significant interactions.

The equation used to figure the cost-benefit analysis was not as extensive as those recommended by Borus and Tash (1970) and Conley (1976) for the use of cost-benefit analysis techniques in measuring the impact of manpower programs. Data were not collected on the amount of public assistance being received by subjects in this study. Had the data been collected, reduction in public assistance payments could have been included in the formula.

The information collected on the Student Data Sheet was not sufficient to provide data on the amount of income earned during training. This data could not be included in the calculation of the benefit-cost ratio.

The decision was made not to include a "discount rate" or an "annual growth rate" in the cost-benefit analysis. The "discount rate" represents the cost to the taxpayer for using funds to support the excess cost of vocational education rather than investing these funds elsewhere. The effect of the discount rate is to reduce the benefits. There is no set procedure for determining the discount rate.

The "annual growth of earnings rate" represents the increase in wages over time due to increased productivity, longevity raises, and so forth. The annual growth of earnings rate increases benefits over time.

Rather than develop arbitrary formulas, it was decided to leave both the discount and the annual rate of return factors out of the cost-benefit formula. Since the discount rate reduces benefits and the annual rate of return increases

benefits, and since there is no uniform method for calculating these factors, it was assumed that they would tend to equalize themselves over time and were thus left out of the formula used to calculate the benefit-cost ratio.

RECOMMENDATIONS FOR FUTURE RESEARCH

The data from this study indicated that school districts tend to refer the more severely vocationally handicapped for Vocational Rehabilitation Services. The information would indicate that Vocational Rehabilitation enables students to increase their income between graduation and follow-up. Further research should be conducted to determine what would happen if the better students were also referred to Vocational Rehabilitation. Would this increase their ability to obtain employment or to find jobs with higher rates of pay?

Harris (1975) reported that special services such as access to learning skills laboratories, summer orientation programs, provision of teacher's aides, and access to other supplementary services to mentally impaired students assigned to vocational education programs was not beneficial. Based on her comparison of the dropout rate and job placement rate, Harris concluded that the mentally handicapped would be better off without any special services. An analysis of the Harris study indicated that conclusions were drawn from a comparison of retarded subjects with general education students. Based on data from Conley (1974 and 1976), it was determined that these were non-comparable groups. Based on these findings,

it is recommended that new studies be undertaken to determine the benefit of adding special services or developing special vocational training programs for the retarded.

Section 504 of The Rehabilitation Act of 1973, The Education Rights for the Handicapped Act of 1975, and The Vocational Education Amendments of 1976 prohibit discrimination against the handicapped. Based on the data presented in this study, there is no valid evidence to show that handicapped students are not able to succeed in completing vocational education programs. Until evidence is presented to the contrary, the public schools are obliged to provide the handicapped with equal access to vocational education programs and to provide vocational education programs specifically designed to meet the needs of persons, who by virtue of physical or mental impairment, are not capable of accessing regular vocational education programs.

Further study is needed to confirm these findings and identify methods, materials, and techniques that are most effective in helping the educable mentally impaired prepare for employment. Future studies should use control groups and should include comparison of dropouts as well as comparison of graduates in determining the final benefits.

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APPENDICES

APPENDIX A

**DATA COLLECTION FORMS SENT TO VOCATIONAL EDUCATION
SPECIAL NEEDS DISTRICTS**

APPENDIX A, ITEM 1

420 S. Jenison
Lansing, Michigan
48915

As you probably know, there is some controversy over the present law that requires educable mentally impaired students to complete vocational training in order to graduate from a special education program. The purpose of this letter is to request your help with a study designed to measure the effectiveness of vocational education in preparing the educable mentally impaired for employment. This study is being conducted with the approval of both Special Education Services and Vocational Education Services in the Michigan Department of Education. The data you are being asked to provide is needed to judge the value of vocational education programs for the mentally retarded. This study will also provide needed data on the post-school employment rate of educable mentally impaired graduates.

All information collected in this study will be treated as confidential. Data will be reported in general terms and will not include your name or the name of your district.

1. Please complete the "Vocational Education Special Needs Program Information Sheets". This provides general information about the students served in your program.

2. Please complete a "Vocational Education Special Needs Project Student Data Sheet" on students with IQ's of 70 or below who will graduate in June. If there are more than five (5) students with IQ's of 70 or below who will be graduating in June, list the students alphabetically and complete the Student Data Sheet on the first five.

The Student Data Sheet is designed so you can use student numbers or other coding systems to identify students. This procedure is being used to protect each student's rights to privacy and complies with the Family Education Rights and Privacy Act

of 1974. Please use a student number, student's first and last initial, or some other identification code which will enable you to easily identify who each student is. You will be asked to complete a short follow-up on the post-school employment of each student in February of 1976.

3. Please complete the attached forms and return them to me in the enclosed envelope by June 4, 1975.

Your help will be greatly appreciated. If you have any questions or problems with the survey, please feel free to call me collect at (517) 373-0923 between 8:00 a.m. and 5:00 p.m.

Sincerely yours,

129
APPENDIX A ITEM 2
VOCATIONAL EDUCATION SPECIAL NEEDS
PROGRAM INFORMATION SHEET

NAME _____ TITLE _____

SCHOOL DISTRICT _____

ADDRESS _____ CITY _____ ZIP _____

BUSINESS PHONE _____ HOME PHONE _____

1. Are educable mentally impaired students from more than one school district?
_____ yes _____ no
2. How many students classified as educable mentally impaired are enrolled in vocational education programs?
3. How many of these students are expected to complete vocational training and graduate in June?
4. How many of the educable students graduating in June have been referred to Vocational Rehabilitation Services?
5. Please list the number of educable mentally impaired students expected to graduate in June by the type of program they were enrolled in.
 - a) Regular vocational education without para-professionals _____
 - b) Regular vocational education with para-professionals assigned to help the handicapped
 - c) Special vocational education classes designed primarily for handicapped and/or disadvantaged students
6. How many of the educable students graduating in June were placed in co-op or work-study programs
7. Please classify educable mentally impaired students expected to graduate in June by skill level.
 - a) Skilled - prepared for employment in a job for which vocational training is a prerequisite to employment such as welding or cosmetology
 - b) Semi-skilled prepared for employment in occupations that require skills which can be learned on-the-job. Students have sufficient skill to start at a higher rate of pay than untrained persons. Nurses-aide, short order cook, and janitor are included in this category.
 - c) Unskilled-students who have not obtained skilled or unskilled training but who can hold a job such as sweeping floors, washing dishes, or pumping gas.

Please complete a Vocational Education Special Needs Project Student Data Sheet only for students graduating in June with IQ's of 70 or below.

Thank You!

APPENDIX A, ITEM 3
VOCATIONAL EDUCATION SPECIAL NEEDS PROJECT
STUDENT DATA SHEET

SCHOOL DISTRICT _____

CONTACT PERSON _____

STUDENT NUMBER OR IDENTIFICATION CODE _____

STUDENT SOCIAL SECURITY NUMBER _____

BIRTH DATE _____ SEX _____ M _____ F _____

FULL SCALE IQ _____ DATE TESTED _____ TEST USED _____

1. Has the student been referred to VR3? ____ yes ____ no
2. How many months was the student in vocational education program?

3. Name the vocational education course completed.

4. Check the type of program that the student was placed in.
 - a) Regular vocational classroom _____
 - b) Regular class with a para-professional _____
 - c) Segregated or special class _____
5. Please provide the following information for students presently employed.
 - a) Type of employer (laundry, garage) _____
 - b) Job title _____
 - c) Hourly wage _____
 - d) Hours worked per week _____
6. Please complete the back.

131
CHECK LIST OF VOCATIONAL SKILLS

Check only those items the student has mastered according to minimum vocational standards.
Complete description of each item can be found in the Performance Objectives Development
Project published by the Michigan Department of Education 1974. A copy of this document
has been provided to each High School, Skills Center, and Intermediate School District
Educational Director.

TRIBUTIVE EDUCATION

___ Advertising
___ Display
___ Merchandising
___ Salesmanship

EL AND LODGING

___ Hotel Management
___ Institutional Feeding
___ Front Office Operation
___ Housekeeping Operation
___ Property Management

ES AIDE

___ Collect Specimens
___ Measure Vital Signs
___ Feeding Patient
___ Shave and Hair Care
___ Give Enema
___ Make Occupied Bed
___ First Aid
___ Record Fluid Intake

D CARE

___ Child Growth & Development
___ Schedule Activities
___ Menu Planning
___ First Aid
___ Supervise Play
___ Lead Activities
(Finger play, songs, games, etc.)

MANAGEMENT

___ Cook Vegetables
___ Cook Meats
___ Make Sauces
___ Bake Bread
___ Salad Preparation
___ Sandwiches
___ Machine Dishwashing
___ Food Storage

OFFICE CLERK

___ Type 20 wpm
___ Type 30 wpm
___ Type 40 wpm
___ Type Letters
___ Filing
___ Spirit Duplicator
___ Mimeograph
___ Offset
___ Calculators

CONSTRUCTION

___ Read Blueprints
___ Install Furnace
___ Plumbing
___ Wiring
___ Rough Carpentry
___ Finish Carpentry
___ Mix Mortar
___ Lay Bricks
___ Paint

PRINTING

___ Paste Up
___ Photo Plate
___ Run Offset
___ Set Type

AUTOMOTIVE TECHNOLOGY

___ Tune Engine
___ Repair Engine
___ Repair Ignition
___ Change Brakes
___ Repair Carburetor
___ Diagnosis Elec-
___ trical System
___ Change Tires
___ Lubrication
___ Replace Exhaust
___ System

CUSTODIAL SERVICE

___ Floor Cleaning
___ Carpet Shampoo
___ Strip Floors
___ Lawn Cutting
___ Fertilize Lawn
___ Weed Control
___ Change Electrical
___ Fictures
___ Window Cleaning
___ Faucet Repair
___ Record Keeping
(Purchase orders,
inventories, etc.)

WELDING AND CUTTING

___ Gas Weld
___ Arc Weld
___ Cutting
___ TIG and MIG Weld
___ Solder
___ Braze
___ Read Blueprints

WAITER - WAITRESS

___ Sanitation
___ Table Setting
___ Interpret Menu
___ Take Order
___ Serve Order
___ Run Cash Register
___ Clean Table and
___ Bus Dishes

OTHER - Please list skill area & key skills

APPENDIX B

DATA COLLECTION FORMS SENT TO WORK STUDY DISTRICTS

APPENDIX B, ITEM 1

420 S. Jenison
Lansing, Michigan
48915

As you probably know, there is some controversy over the present law that requires educable mentally impaired students to complete a work-study program in order to graduate from a special education program. The purpose of this letter is to request your help with a study designed to measure the effectiveness of work-study programs in preparing the educable mentally impaired for employment. This study is being conducted with the approval of Special Education Services, Michigan Department of Education. The data you are being asked to provide is needed to judge the value of work-study programs for the mentally retarded. This study will also provide needed data on the post-school employment rate of educable mentally impaired graduates.

All information collected in this study will be treated as confidential. Data will be reported in general terms and will not include your name or the name of your school district.

1. Please complete the "Work-Study Program Information Sheet". This provides general information about the students served in your program.

2. Please complete a "Work-Study Program Student Data Sheet" on students with IQ's of 70 or below who will graduate in June. If there are more than five (5) students with IQ's of 70 or below who will be graduating in June, list the students alphabetically and complete the student data sheet on the first five.

The student data sheet is designed so that you can use student numbers or other coding systems to identify students. This procedure is being used to protect each student's right to privacy and complies with the Family Education Rights and Privacy Act of 1974. Please use a student number, student's first and last initial, or some other identification code which will enable

you to easily identify who each student is. You will be asked to complete a short follow-up on the post-school employment of each student in February of 1976.

3. Please complete the attached forms and return them to me in the enclosed envelope by June 4, 1975.

Your help will be greatly appreciated. If you have any questions or problems with the survey, please feel free to call me collect at (517) 373-0923 between 8:00 a.m. and 5:00 p.m.

Sincerely yours,

134
APPENDIX B, ITEM 2
WORK-STUDY PROGRAM INFORMATION SHEET

NAME _____ TITLE _____

SCHOOL DISTRICT _____

ADDRESS _____ CITY _____ ZIP _____

BUSINESS PHONE _____ HOME PHONE _____

1. Are the educable mentally impaired students from more than one school district enrolled in your program? _____ yes _____ no
2. How many educable students were in the work-study program this year? _____
3. What was the age of the youngest student to receive work-study services this year?

4. How many educable mentally impaired students are expected to graduate in June?

5. How many of the educable students graduating in June have been referred to VRS?

6. Please list the number of educable mentally impaired students expected to graduate in June by the type of program they were in.
 - a) Regular program with the aid of a teacher consultant _____
 - b) Part-time special class, part-time regular class _____
 - c) Full-time special class placement _____
7. Please list the number of educable students expected to graduate who had vocational education courses.
 - a) Completed a regular vocational education program with the same competencies as regular education students _____
 - b) Completed a regular vocational education program at a lower level of competency than regular education students _____
 - c) Completed a vocational education program designed for educable students _____
 - d) Was enrolled in but did not complete vocational education _____
 - e) Never took vocational education _____

Please complete a "Work-Study Program Student Data Sheet" only for students graduating in June with IQ's of 70 or below.

Thank You!

APPENDIX B, ITEM 3
WORK-STUDY PROGRAM STUDENT DATA SHEET

SCHOOL DISTRICT _____

CONTACT PERSON _____

STUDENT NUMBER OR IDENTIFICATION CODE _____

STUDENT SOCIAL SECURITY NUMBER _____

BIRTH DATE _____ SEX _____ M _____ F _____

FULL SCALE IQ _____ DATE TESTED _____ TEST USED _____

1. Has the student been referred to VRS? ____ yes ____ no
2. Check the type of program the student was placed in.
 - a) Regular education with the aid of a teacher consultant _____
 - b) Part-time special and part-time regular class _____
 - c) Full time special class _____
3. Check the type of training the student received.
 - a) Completed a regular vocational education program with the same competencies as regular education students _____
 - b) Completed a regular vocational education program at a lower level of competency than regular students _____
 - c) Completed a vocational education program designed for educable students _____
 - d) Was enrolled in but did not complete vocational education _____
 - e) Never had vocational education _____
4. How many months was the student in the work-study program? _____
5. How many different employers was the student placed with? _____
6. Please provide the following information for students presently employed.
 - a) Type of employer (laundry, garage) _____
 - b) Job title _____
 - c) Hourly wage _____
 - d) Hours worked per week _____

APPENDIX C

FOLLOW-UP SURVEY FORMS

FOLLOW-UP FORM FOR SPECIAL EDUCATION GRADUATES

School District _____ Contact Person _____
Student Identification No. _____ Social Security No. _____
Birth Date _____ Sex _____
Race (check one) _____ white _____ black _____ other

1. Labor Force Status (check one)

- _____ in training
_____ employed
_____ unemployed
_____ housewife, unpaid family worker, or not in labor force

2. Starting with June of 1975, how many months has this person been employed? _____

3. How many jobs has this person held since graduation? _____

4. Please complete the following items for persons who have been employed since graduation, beginning with present employment. If the person had more than one job since graduation, please continue on the back of this page.

a. Job description _____

b. Hourly wage \$ _____

c. Hours worked per week _____

d. Number of months employed on this job _____

e. Overall, how satisfied is the person with the job?

- _____ very satisfied
_____ somewhat satisfied
_____ not very satisfied
_____ not at all satisfied

f. If you contacted the employer, how is this person's work rated?

- _____ excellent
_____ good
_____ fair
_____ poor

5. Relationship between high school training received and employment

- a. List the course title(s) of vocational programs this person completed in high school _____

- b. List other vocational experiences this person reports being provided as part of the high school training program _____

- c. Has the graduate used any training received in high school?

On the present job

On previous jobs

 a lot

 a lot

 some

 some

 hardly any

 hardly any

 none

 none

6. Months of training received since graduation _____

7. Post high school training was received at

 community college

 trade school

 armed forces

____ other, please specify _____

8. List the course title(s) of post high school training this person is taking or has completed _____

9. List any agencies this person indicates which have provided help in finding employment since graduation from high school

Vocational Rehabilitation Services

Michigan Employment Security Commission

___ High School Personnel

____ Others, please specify _____

10. Has the graduate used the services of Vocational Rehabilitation since the time of graduation? yes no

- a. Job description _____

- b. Hourly wage \$ _____
- c. Hours worked per week _____
- d. Number of months employed on this job _____
- e. Overall, how satisfied was the person with the job?
- ___ very satisfied
 - ___ somewhat satisfied
 - ___ not very satisfied
 - ___ not at all satisfied

- a. Job description _____

- b. Hourly wage \$ _____
- c. Hours worked per week _____
- d. Number of months employed on this job _____
- e. Overall, how satisfied was the person with the job?
- ___ very satisfied
 - ___ somewhat satisfied
 - ___ not very satisfied
 - ___ not at all satisfied

APPENDIX D

MICHIGAN DEPARTMENT OF EDUCATION VOCATIONAL EDUCATION
FOLLOW-UP SURVEY FORM

4/75

Please return survey form to:

SCHOOL DISTRICT LABEL

FOLLOW-UP SURVEY OF 1975 GRADUATES

By answering the following questions you can help us to plan better educational programs for present high school students. The information you return will be used for educational purposes only. Thank you for your cooperation and assistance in completing this survey. Your name will not be released or otherwise connected with the information you provide.

PART I.

DIRECTIONS: Everyone should complete Part I.

1. Racial-Ethnic Group:

- 14 ☐ 1 American Indian
☐ 2 Black
☐ 3 Oriental
☐ 4 Spanish Surnamed American
☐ 5 White
☐ 6 Other

2. Sex:

- 15 ☐ 1 Male
☐ 2 Female

3. Check the WORD that best describes how well your high school (or area vocational education center) courses prepared you to do what you are doing now.
 (Check ONE only.)

- 16 ☐ 1 Excellent
☐ 2 Good
☐ 3 Fair
☐ 4 Poor

4. Which of the following statements describe your present status?
 (Check ALL that apply.)

A. 17 ☐ 1 I am now employed.I work about _____ hours per week.
18B. 20 ☐ 1 I am not now employed.C. 21 ☐ 1 I am looking for a job.☐ 2 I am not looking for a job.D. 22 ☐ 1 I am a full time student.☐ 2 I am a part time student.E. 23 ☐ 1 I am a homemaker.F. 24 ☐ 1 I am in (or will be by January 1976) the military service.

SAMPLE

PART 3.

DIRECTIONS FOR PART 3.

If you are now attending school or are enrolled in a training or apprenticeship program, please complete this part of the questionnaire. Otherwise, go directly to Part 4, question 14.

Name of School, Training or Apprentice Program	City	State
--	------	-------

10. Check the type of school or program you are now attending.
(Check ONE only)

- 46 ☐ 1 2 year college (vocational-technical training program)
☐ 2 2 year college (liberal arts program)
☐ 3 4 year college or university
☐ 4 Business or trade school
☐ 5 Apprenticeship Program
☐ 6 Other (Please specify.) _____

11. My major area of study (or training) is _____

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

(Check ONE only.)

- 47 ☐ 1 A lot
☐ 2 Some
☐ 3 Hardly any
☐ 4 None

13. Check all who assisted you in finding and/or getting into your present educational program..
(Check ALL that apply)

- 48 ☐ 1 High school or area vocational education center counselor
49 ☐ 1 Teacher or co-op coordinator
50 ☐ 1 Relative or friend
51 ☐ 1 School or area vocational education center placement office
52 ☐ 1 Training or apprenticeship program recruiter
53 ☐ 1 Other (Please specify) _____

PART 4.

DIRECTIONS FOR PART 4.

If you are presently unemployed and are looking for a job, complete this part of the questionnaire. Otherwise, go directly to Part 5.

14. Whom have you asked for help in finding a job?
(Check ALL that apply.)

- 54 ☐ 1 High school or area vocational education center counselor
55 ☐ 1 Teacher or co-op coordinator
56 ☐ 1 Relative or friend
57 ☐ 1 High school or area vocational education center placement office
58 ☐ 1 Public employment agency
59 ☐ 1 Private employment agency
60 ☐ 1 College placement office
61 ☐ 1 Other (Please specify) _____
62 ☐ 1 None of the above

PART 2. DIRECTIONS FOR PART 2

If you are employed full or part time now, or if you are in the military, please complete this part of the questionnaire. Otherwise, go directly to Part 3, question 10.

Name of Company	City	State
Your Job Title		

5. What did your HIGH SCHOOL or AREA VOCATIONAL EDUCATION CENTER do to help you find a job?

(Check ALL that apply.)

- 25 ☐ Told me about job openings.
- 26 ☐ Sent me for an interview.
- 27 ☐ Taught me to fill out a job application.
- 28 ☐ Gave information about me to my employer.
- 29 ☐ Other (please specify) _____
- 30 ☐ None of the above

6. Who helped you to find a job?

(Check ALL that apply.)

- 31 ☐ High school or area vocational education center counselor
- 32 ☐ Teacher or co-op coordinator
- 33 ☐ Relative or friend
- 34 ☐ High school or area vocational education center placement office
- 35 ☐ Public employment agency
- 36 ☐ Private employment agency
- 37 ☐ College placement office
- 38 ☐ Other (Please specify) _____
- 39 ☐ None of the above

7. On your present job, how much do you use the vocational training you received in high school or area vocational education center?

(Check ONE only.)

- 40 ☐ 1 A lot
- ☐ 2 Some
- ☐ 3 Hardly any
- ☐ 4 None

8. Overall, how satisfied are you with your present job?

(Check ONE only.)

- 41 ☐ 1 Very satisfied
- ☐ 2 Somewhat satisfied
- ☐ 3 Not very satisfied
- ☐ 4 Not at all satisfied

9. On my present job I am paid about \$_____ per hour.

PART 5.

DIRECTIONS FOR PART 5

Any comments or suggestions you may have can be written in the space below. (Include any type of assistance you might need now or things you would have liked to have had in your high school program.)

Comments and/or Suggestions:

SCHOOL USE ONLY

1. ⁶⁶ ☐ 1.
☐ 2.

2. ⁶⁴ ☐ 1.
☐ 2.

If an AREA CENTER, report
student's home district identification.

CEPD		CODE			

73.

3. O. E. Code ⁶⁵ _____

Name of Program _____

4. ⁷¹ ☐ 1.
☐ 2.

5. ⁷² ☐ 1.
☐ 2.

APPENDIX E

**MICHIGAN DEPARTMENT OF EDUCATION VOCATIONAL
REHABILITATION FOLLOW-UP SURVEY FORM**

FOLLOW-UP SURVEY OF VOCATIONAL REHABILITATION CLIENTS

LABEL

COMPLETE THIS ITEM

Name

Address (STREET) (CITY) (ZIP)

Telephone AREA CODE/LOCAL NUMBER

MAILING INSTRUCTIONS: Return the completed survey form in the attached postage-paid envelope.

INSTRUCTIONS: Please answer all questions. Mark Yes or No questions with an "X" in the proper box. Answer other questions on the right. ALL INFORMATION WILL BE CONFIDENTIAL.

YES NO

14 ☐ ☐ 1. Are you working at a job?

If you are NOT working, please answer questions 2 - 10.

15 ☐ ☐ 2. Do you want to work at this time?

16 ☐ ☐ 3. Have you looked for a job in the past 4 weeks?

17 ☐ ☐ 4. Do you do craft work at home for money?

18 ☐ ☐ 5. Are you a homemaker as your primary activity?

19 ☐ ☐ 6. Are you a student as your primary activity?

20 ☐ ☐ 7. Are you too disabled to work?

21 ☐ ☐ 8. Are you permanently out of the labor force due to a disability?

22 ☐ ☐ 9. Are you over 65 or receiving retirement benefits?

23 ☐ ☐ 10. How long has it been since you last worked? _____ (months) or _____ (years)

If you ARE working, please answer questions 11 - 17.

YES NO

25 ☐ ☐ 11. Do you work at a rehabilitation center or workshop?

YES NO

26 ☐ ☐ 12. In general, are you satisfied with your job?

27 _____ 13. What is your job (occupation)? _____

29 _____ 14. How long have you worked for your current employer? _____ (months) or _____ (years)

31 _____ 15. How many hours do you usually work per week? _____ (hours)

16. How much do you usually earn per hour? \$ _____ (per hour)

_____ 17. How much do you usually earn per week before deductions? \$ _____ (per week)

EVERYONE complete questions 18 - 38.

35 _____ 18. In the past 12 months, how many months did you work? _____ (months)

37 _____ 19. In the past 12 months, what were your average weekly earnings while working? \$ _____ (per week)

40 _____ 20. In the past 12 months, how many different jobs (employers) did you have? _____

YES NO

DO YOU CURRENTLY RECEIVE:

41 ☐ ☐ 21. public welfare assistance (AFDC, General Assistance, etc.)?

42 ☐ ☐ 22. social security disability insurance (SSDI)?

43 ☐ ☐ 23. supplemental security income (SSI)?

44 ☐ ☐ 24. workmen's compensation?

45 ☐ ☐ 25. veterans' benefits?

46 ☐ ☐ 26. unemployment benefits?

47 ☐ ☐ 27. support from your family, friends or other private sources?

48 ☐ ☐ 28. Did your vocational rehabilitation services help you improve your job status or your ability to function as a homemaker?

49 ☐ ☐ 29. Did your vocational rehabilitation services help improve your ability to function mentally or physically?

50 ☐ ☐ 30. Did your vocational rehabilitation services benefit you in any other way? (If "Yes," please describe.)

In the following items, mark either YES, NO or SNR (SERVICE mentioned was NOT RECEIVED).

YES NO SNR

WHEN YOU WERE A CLIENT OF THE MICHIGAN VOCATIONAL REHABILITATION SERVICE:

51 ☐ ☐ ☐ 31. were you satisfied with the information provided by your counselor for understanding your disability?

52 ☐ ☐ ☐ 32. were you satisfied with your counselor's willingness to listen to your ideas and suggestions in developing your individual rehabilitation plan?

53 ☐ ☐ ☐ 33. were you satisfied with the promptness of rehabilitation services you received?

54 ☐ ☐ ☐ 34. if you received medical services, were you satisfied with the results of the medical services which you received?

55 ☐ ☐ ☐ 35. if you received training as part of your rehabilitation plan, were you satisfied with the kind of training received?

56 ☐ ☐ ☐ 36. if you received training, were you satisfied with the benefits which resulted from your training?

57 ☐ ☐ ☐ 37. were you satisfied with the assistance provided in seeking a job and in final employment?

58 ☐ ☐ ☐ 38. Would you recommend the services of the Michigan Vocational Rehabilitation Service to a disabled friend?

Please add any comments you wish about your rehabilitation services or your current status.

THANK YOU FOR ANSWERING THESE QUESTIONS. PLEASE RETURN THE QUESTIONNAIRE IN THE ENCLOSED POSTAGE-PAID ENVELOPE.

**DO NOT WRITE
IN THIS SPACE**

59			
60			
62			
64			
67			
69			
73			

APPENDIX F

**LETTER TO VOCATIONAL EDUCATION SPECIAL NEEDS
COORDINATORS REQUESTING FOLLOW-UP DATA**

March 5, 1976

Dear

Last May you were kind enough to offer to help me with a study to measure the effectiveness of vocational education programs in preparing the educable mentally impaired for employment. Enclosed are the follow-up forms for students you identified as educable mentally impaired who graduated in June of 1975. I would appreciate it if you could contact the students and obtain the information needed to complete the follow-up forms by April 9.

A complete summary will be forwarded as soon as I have completed the study and related thesis. Data from the preliminary data sent in May of 1975 reveal that approximately 20 percent of the districts surveyed did not graduate students. Most of these districts had just started vocational education programs for the handicapped. One half of the educable mentally impaired students were placed in coop or work study programs prior to graduation. The mean income of students was \$25.13 with most earning between \$2.10 and \$2.35 per hour.

The final report will list average income at follow-up by area of vocational training. It will also include a breakdown of earning at follow-up by sex and I.Q. categories.

Your help in completing the follow-up form will be gratefully appreciated. If you have any questions or problems with the form, please call me at (517) 373-1695.

Sincerely,

Jan Baxter
6605 W. Galway
Dimondale, Michigan 48901

Enclosures

APPENDIX G

**LETTER TO SPECIAL EDUCATION WORK STUDY COORDINATORS
REQUESTING FOLLOW-UP DATA**

APPENDIX G

March 4, 1976

Last May you were kind enough to offer to help me with a study designed to measure the effectiveness of special education work study programs. Enclosed are the follow-up forms for students you identified as educable mentally impaired who graduated in June of 1975. I would appreciate it if you could contact the students and obtain the information needed to complete the follow-up forms by April 9.

The Legislature has asked Special Education Services of the Michigan Department of Education to report on the number of special education students employed 6 months after graduation as a measure of program effectiveness. Return of this information by April 9 will allow time to summarize the data for use by Special Education Services.

A complete summary will be forwarded as soon as I have completed the study and related thesis. Data from the preliminary data sent in May of 1975 shows that the average educable mentally impaired student receiving work study services was earning \$50.56 at graduation. The following is a breakdown by sex and I. Q. category.

I.Q. 51-60 (Mean I.Q. 55)			I.Q. 61-70 (Mean I.Q. 67)		I.Q. 71 + (Mean I.Q. 74)	
	No.	Average Weekly Income	No.	Average Weekly Income	No.	Average Weekly Income
Male	4	\$118.25	13	\$48.65	9	\$51.78
Female	3	31.33	10	29.59	5	72.90
TOTAL	7	81.00	23	40.37	14	59.33

It is interesting to note that work study coordinators have been successful in finding good paying jobs for students in the lower I.Q. ranges. The 2 highest paid persons were both in the 51 to 60 I.Q. range and earned \$179.60 and \$150.00 a week. The final report will list the type of jobs educable students are placed in and data from the 9-month follow-up.

Name

2

March 4, 1976

Your help in completing the follow-up form will be gratefully appreciated. If you have any questions or problems with the survey, please call me at (517) 373-1695.

Sincerely,

Jan Baxter, Supervisor
State Assistance for
the Handicapped Program
Special Education Services

JB:mf

Enclosures

APPENDIX H

RESULTS OF THE EVALUATION BY THREE VOCATIONAL EDUCATION
CONSULTANTS OF VOCATIONAL SKILLS OF STUDENTS
SELECTED FROM VOCATIONAL EDUCATION DISTRICTS

APPENDIX H

Please review the Check List of Vocational Skills in the back of the "Vocational Education Special Needs Project Student Data Sheet" and rank each student. A complete description of each item can be found in the Performance Objectives Development Project published by the Michigan Department of Education. Using these objectives, please rate the type of training you think the student received:

- A completed the regular vocational education program
- B Completed a Special Needs program designed for the educable
- C Was enrolled in, but did not complete, vocational education

Student # Rater					Student # Rater				
Rater	1	2	3	Average	Rater	1	2	3	Average
33	C	C	B	C	50	C	C	C	C
34	C	C	A	C	51	B	C	C	C
35	A	B	A	A	52	C	C	C	C
36	A	B	B	B	53	C	C	C	C
37	B	B	B	B	54	C	C	C	C
38	C	C	B	C	55	A	B	C	B
39	A	B	A	A	56	C	C	C	C
40	A	A	B	A	57	C	C	A	C
41	C	C	B	C	58	A	A	A	A
42	A	C	B	B	59	C	B	A	B
43	C	C	B	C	60	C	C	C	C
(no #44)					61	B	B	B	B
45	C	B	B	B	62	C	B	B	B
46	C	C	B	C	63	B	B	A	B
47	A	B	A	A	64	C	C	C	C
48	C	C	A	B	65	A	C	A	A
49	C	C	B	C	66	A	A	A	A
					67	B	C	B	B

Students completing the regular vocational education program and the Special Needs program were assigned to the experimental group and those not completing vocational education were assigned to the control group.

APPENDIX I

TYPES OF JOBS HELD FROM GRADUATION TO FOLLOW-UP

APPENDIX I

TYPES OF JOBS HELD FROM GRADUATION TO FOLLOW-UP

Vocational Education Graduates		Work Study Graduates	
No.	Job Title	No.	Job Title
2	Loading trucks	1	Food preparation and cleanup
1	Slaughter house "Breaker"		
3	Custodian	2	Kitchen cleanup
1	Porter	1	Bus boy
1	Sheltered Workshop	2	Grounds and Building Maintenance
1	Machine Repairman		
1	Laundry man	1	Stock boy
3	Motel Maid	1	Laborer
2	Production work -- steel mill	1	Assembly -- Auto Industry
1	Teacher's aide	1	Custodian Trainee
1	Press operator	1	Housekeeper's Aide
1	Assistance to Maintenance	1	Custodian
1	Sewing Machine operator	1	Supermarket employee
1	General kitchen helper	1	Stock clerk and Cashier
1	Food preparation and cleanup	1	Dishwasher
1	Nurses aide assistant		
1	Assembler		
1	Baling hay		
1	Spot Welder		
1	Furniture Veneer helper		
1	Hospital Housekeeper		

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