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A descriptive study of the design, operation and evaluation of a competency based in-service module program in mainstreaming students with special needs for teachers of vocational education.

Gregory William Little  
*University of Massachusetts Amherst*

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A DESCRIPTIVE STUDY OF THE DESIGN, OPERATION AND EVALUATION  
OF A COMPETENCY BASED IN-SERVICE MODULE PROGRAM IN  
MAINSTREAMING STUDENTS WITH SPECIAL NEEDS FOR  
TEACHERS OF VOCATIONAL EDUCATION

A Dissertation Presented

By

GREGORY WILLIAM LITTLE

Submitted to the Graduate School of the  
University of Massachusetts in partial fulfillment  
of the requirements for the degree of

DOCTOR OF EDUCATION

February 1980

School of Education



Gregory William Little 1980

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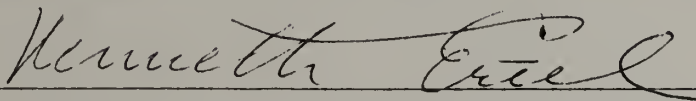
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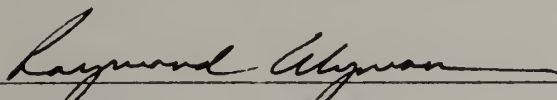
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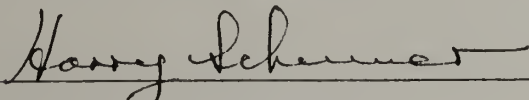
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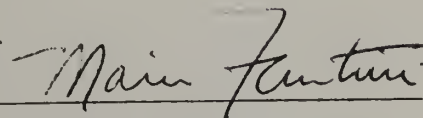
Dr. Kenneth A. Ertel, Chairperson of Committee



Dr. Raymond Wyman, Member



Dr. Harry Schumer, Member



Dr. Mario Fantini, Dean  
School of Education

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ABSTRACT

A Descriptive Study of the Design, Operation and Evaluation  
of a Competency Based In-service Module Program in  
Mainstreaming Students with Special Needs for  
Teachers of Vocational Education

(February 1980)

Gregory William Little, B.S. Westfield State College

M.Ed., Westfield State College

Ed.D., University of Massachusetts

Directed by: Professor Kenneth Ertel

A descriptive study of the design, operation, and evaluation of a competency based in-service program for selected teachers of vocational education in mainstreaming students with special needs was conducted. In order to facilitate in-service programs for vocational teachers, this study focused on the development and evaluation of five separate competency-based modules on mainstreaming special needs students in vocational education. The modules included competency statements, printed content material with self-correcting workbook exercises and supplementary information. The titles of the modules were: (1) Mainstreaming Students with Special Needs in Vocational Education: An Introduction; (2) An Orientation to Students with Special Needs; (3) Mainstreaming Students with Special Needs in Vocational Education: A Team Approach; (4) Assessing the Student with Special Needs in Vocational Education; and (5) Teaching Strategies for

Students with Special Needs. For the purposes of this study mainstreaming was defined as the temporal, instructional, and social integration of students with special needs into the least restrictive environment based on an ongoing individual evaluation and programming process which leads to academic and/or social gains.

A review of the literature revealed that the handicapped have historically been excluded or under-enrolled in vocational education programs. Due to recent federal and state legislation unprecedented attention is being directed at meeting the vocational needs of these students, and as a result, the handicapped are being mainstreamed into vocational environments. However, reports have indicated that many vocational teachers have not been prepared to work with these students, and even more important, few in-service programs or materials to assist vocational teachers in understanding the concept and procedures used in mainstreaming handicapped students have been developed.

Twenty-five vocational teachers from one vocational school in Massachusetts participated in the study. The in-service program consisted of seven workshop sessions (2 1/2 hours in length) over a two month period of time.

Vocational teachers rated competency statements to identify their importance in mainstreaming and completed a needs assessment questionnaire. The participants reviewed, discussed, and rated each of the five modules on a Leikert type scale in the following areas: module objectives, subject matter content, workbook exercises, and total summary module evaluation. An attitude survey and knowledge

test were administered to the teachers before and after the in-service program to determine whether their attitudes would improve and knowledge would increase in mainstreaming special needs students in vocational education.

Responses from the competency ratings, needs assessment, and module evaluations were tabulated and analyzed by a computer. Means, frequency counts and percentages were the primary statistics used. The results revealed that the vocational teachers rated eighteen out of the nineteen competencies as being important or extremely critical in mainstreaming. Identifying the behavioral and learning characteristics of handicapped students received the highest rating. Also, the majority of teachers wanted to know more about most of the competency items.

All five of the modules generally received acceptable evaluations. In order to determine whether the vocational teachers were consistent in their ratings, the Spearman rank coefficient correlation test was utilized to see the relationship between the individual module components and the total summary module evaluations. The results revealed that positive correlations existed between the component parts and the summary evaluations on all five modules.

Means and standard deviations were computed for both the pre/post attitude survey and knowledge test. The results indicated that vocational teachers improved their attitudes from before to after the in-service program according to the Wilcoxon matched-pairs signed rank test and that this improvement was significant at less than the .05

level of confidence. The teachers also increased their knowledge of mainstreaming from before to after the in-service program and according to the Wilcoxon matched pairs signed rank test, this increase was significant at less than the .001 level of confidence.

A discussion of the results concluded that the vocational teachers felt that all of the modules were acceptable. Additionally, it was concluded that the in-service module program had a positive effect on changing teacher attitudes towards, and increasing their knowledge of, mainstreaming special needs students in vocational education.

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## CHAPTER I

### INTRODUCTION

#### Orientation to the Problem

In 1971, Edwin Martin, Associate Commissioner of the U.S. Office of Education, Bureau of Education for the Handicapped, pointed out the following disturbing statistics relative to the plight of our school age-handicapped population:

Over the next four years, 2.5 million handicapped children will be school leavers, either by graduation or the dropout route. Of that number, less than 1 in 4 will be fully employed or going onto college. Another 40%, that is one million handicapped young people, will be under employed. Another 25% of this population will probably require welfare assistance (p. 5).

These alarming figures direct one's attention to the failure of our educational system to properly prepare a segment of our school population to become "successful," productive members of our society. As a result of our failure to provide vocational education programs to handicapped students, they have been perceived as a surplus population (Farber, 1968). Due to their deviation from the normal pattern of behavior, physical appearance or educational attainment, the handicapped have been devalued by others (Meyerson, 1971) or viewed as economic liabilities (Phelps, 1976).

From the economic viewpoint, Martin (1972) reveals some startling figures if we continue to ignore the handicapped:

If each of these youngsters is faced with institutionalization

as an alternative to public school programming, the cost will be at least \$4,000.00 per student. Over a life-time of 60 years, that is approximately a quarter of a million dollars per student (p. 5).

Phelps (1976) adds to this warning:

General estimates suggest that approximately one of every ten children are handicapped. If society is not prepared to provide an appropriate education that enables these individuals to either successfully enter post-secondary education or the labor force with a marketable set of occupational competencies, we must be prepared to continue accepting the economic burden of supporting millions of potentially employable individuals in institutions and through welfare programs (p. 187).

Pressure to provide appropriate educational programs for students with special needs has come from many different sources. The establishment of new governmental agencies, the enactment of new state and federal legislation, and numerous litigation cases affirming equal educational opportunities for the handicapped has forced education and the general public at large to reconsider this waste of human potential from both an economic, legal, and humanitarian viewpoint (Phelps, 1975).

The passage of the Education for All Handicapped Children's Act (P.L. 94-142) by the United States Congress in 1975 culminated a national movement begun in the 1960's to guarantee the basic rights of handicapped students to free, appropriate educational programs. This federal law mandates that the handicapped not only have the right to their education, but whenever possible, within the mainstream of our public schools and classrooms. In order to meet these challenges, educators have been forced to examine their programs at all levels, and it has been called to their attention that they have been negli-

gent in creating options at the secondary level for handicapped youngsters in general, and vocationally oriented ones in particular (Metz, 1973; Robinson and Robinson, 1976).

Many reasons have been given to explain the extremely low enrollment of special needs students in vocational education. Negative attitudes of vocational educators, prior uncertainty of federal and state funding to support programs for the handicapped, and the lack of cooperative planning between special and vocational education personnel are a few reasons that have been highlighted (Telford and Sawrey, 1972; Groves, 1966; Pellegrino, 1975; Clark and Evans, 1973; Weisenstein, 1977).

The issue of whether to include the handicapped in vocational education is no longer debatable. Vocational education must now be provided to handicapped students. The problem now being addressed is, "Are vocational educators prepared to meet these new challenges before them?" and even more important "What preparation do they need?"

#### Problem Statement

Prominent educators have recently expressed considerable dissatisfaction with the lack of vocational programs that have been developed and implemented for handicapped students. Even though federal and state legislation now mandate that special needs students receive vocational education, only minimal progress has been made to date (Massachusetts Advocacy Center, 1975; Goldmeir, 1977; Tindall, 1978).



One important factor which is inhibiting the inclusion of handicapped youths in vocational education programs is that many vocational education teachers are not prepared to work with these students. A General Accounting Office Study (1976) revealed that approximately eighty percent of vocational educators had little or no preparation to work with the handicapped:

. . . the vast majority of regular vocational teachers in 78 percent of the nation's 11,700 school districts with enrollments of 300 or more pupils do not have sufficient training in instructing the handicapped, and teachers in most of the remaining districts have only marginal training. OE reported that in fiscal year 1974 about 266,000 teachers were teaching in vocational education programs. Approximately 1000 teachers had received inservice training but only about 500, less than one-half of 1 percent, had received special training in working with the handicapped (p. 32).

A report issued by the Special Education Manpower Project (1976) in Massachusetts states in reference to the demand for vocational teachers who are trained to work with the handicapped states:

. . . The handicapped are usually excluded from the regular public school vocational education programs and are limited to segregated classes offering few career choices. One major barrier preventing them from participating in regular vocational programs is that vocational educators generally lack training in dealing with the handicapped. For this reason and because of their apprehension, vocational educators generally exclude the handicapped from the regular vocational programs (p. 28).

Teacher educators, particularly at the university level, have not kept pace with federal and state legislation requiring the involvement of handicapped youth in vocational education. A national assessment by Kruppa (1973) of 160 colleges and universities offering industrial teacher education programs revealed that only 11 institutions offered programs to train teachers to work with handicapped students. Clark

and Evans (1976) report that while there have been some excellent in-service programs developed for vocational teachers in serving handicapped students, at the local level, more "significant steps should be taken at the university level to provide avenues for the improvement of practicing teachers as well as those planning to teach special needs students in vocational programs" (p. iii).

A report prepared by the Special Education Manpower Project (1976) in Massachusetts states:

This is an area of emerging needs, both for special education personnel trained in vocational education, and vocational education personnel with some training in special education. Increasing numbers of students with special needs are being enrolled in vocational education programs, but few personnel have been prepared to work in these programs. Data on quantitative and qualitative dimensions of personnel supply and demand in these areas are not yet available (p. 39).

A survey of Massachusetts Institutions of Higher Education (Massachusetts Department of Education, 1977) reported only two colleges (Boston College, Boston University) had existing training programs for vocational/special education teachers, one college (Westfield State) developing a new program, and one college (Fitchburg State) considering a program for vocational/special education personnel.

Although federal and state legislation has been in place for ten years, teacher training institutions are just now becoming responsive to the needs of vocational education teachers relative to mainstreaming handicapped students into vocational programs. State departments of education are addressing certification standards for this group in light of these new mandates. Tindall (1978) feels that in light of the gap between mandates, certification standards and

reality, in-service programs will remain the major means of preparing vocational teachers to instruct the handicapped. Thus, the problem addressed in this study is to determine what competencies were perceived to be important by vocational education teachers relative to mainstreaming students with special needs, and to develop, implement, and evaluate an in-service training program based upon those competencies.

### Definition of Terms

For purposes of this study, the following definitions of terms will apply.

Mainstreaming. A term which refers to the temporal, instructional, and social integration of students with special needs into the least restrictive environment based on an ongoing individual evaluation and programming process which leads to academic and/or social gains (adapted from Kaufman, Gottlieb, Agard, and Kukie, 1975).

Vocational Education. Organized educational programs that are directly related to the preparation of individuals for paid or unpaid employment or for additional preparation for a career requiring other than a baccalaureate or advanced degree. The nine vocational areas identified by the US Office of Education are agriculture, distributive education, health occupations education, occupational home economics, consumer and homemaking education, office occupations, technical education, trade and industrial occupations, and industrial arts (Public Law 94-482, Vocational Amendments of 1976).



Competency Based In-Service Module Program. A professional in-service development activity for currently employed vocational education teachers designed to increase their competency (at the knowledge level, Bloom's Taxonomy of Educational Objectives, 1956) in mainstreaming students with special needs in vocational education. The competency program refers to a number of competencies revealed to the participants, five separate printed modules or units of instruction, with accompanying workbook exercises, guided by a facilitator and primarily self-taught. The five modules are:

- . Mainstreaming students with Special Needs in  
Education: An Introduction
- . An Orientation to Students with Special Needs
- . Mainstreaming Students with Special Needs in  
Vocational Education: A Team Approach
- . Assessing the Student with Special Needs in  
Vocational Education
- . Teaching Strategies for Students with Special  
Needs in Vocational Education

Vocational Education Teachers. Secondary school teachers certified to administer, instruct, or provide support services to students in programs defined under Vocational Education.

Students with Special Needs\*: A term which refers to a child or adult who, because of temporary or more permanent adjustment difficulties or attributes arising from intellectual, sensory, emotional or physical factors, cerebral dysfunctions, perceptual factors, or

other specific learning disabilities, or any combination thereof, is assumed to be unable to progress effectively in a regular education program without supportive special education services (Chapter 766 of the Acts of 1972).

Handicapped\*: A term which refers to those students evaluated as being mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, other health impaired, deaf-blind, multi-handicapped or as having specific learning disabilities, who because of those impairments need special education and related services (Public Law 94-142 Education for all Handicapped Children Act of 1975).

#### Purpose of the Study

The purpose of this study is to identify the competencies perceived to be important by vocational education teachers in mainstreaming students with special needs in vocational education, and to develop, implement, and evaluate a competency based in-service program for teachers of vocational education in mainstreaming special needs students. Programs designed to prepare vocation education personnel in

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\*Special Needs and Handicapped: These two terms will be used interchangeably. Massachusetts identifies students on a broad, non-categorical basis as opposed to the Federal Government (P.L. 94-142) which identifies students according to specific handicaps (e.g., mentally retarded, deaf, emotionally disturbed, etc.).

The definition of special needs as defined by Massachusetts will be used in this study. However, the specific handicaps as defined by P.L. 94-142 will also be listed to supplement the Massachusetts definition since many of the characteristics defined under each handicap category are useful in identifying and assessing the specific needs of students.

mainstreaming students with special needs in vocational education, and to develop, implement, and evaluate a competency based in-service program for teachers of vocational education in mainstreaming special needs students. Programs designed to prepare vocational education personnel in mainstreaming special needs students are extremely scarce. Since new legislation has mandated including the handicapped in vocational programs, teacher educators at the state, university, and local levels must meet the training needs of vocational personnel. As such, in-service programs to assist vocational teachers are urgently needed.

Additionally, in order to assist in the overall evaluation of this project, an attitude survey and knowledge test was administered before and after the inservice program to determine whether vocational teachers improved their attitudes toward and increased their knowledge of mainstreaming special needs students.

Included in this study is the development of a Competency Identification and Needs Assessment Questionnaire, Attitude Survey, five individual Module programs with specified competencies and workbook activities, a Knowledge Test, and a Module Feedback Form.

#### Questions to be Answered

Specifically, the study will address the following questions:

- 1) Which of the nineteen competencies will be rated by selected vocational teachers as important in mainstreaming students with special needs in vocational education?
- 2) Will selected vocational education teachers express a need to

learn about the tasks involved with mainstreaming students with special needs in vocational education?

- 3) How will selected vocational education teachers rate five modules pertaining to mainstreaming students with special needs in vocational education in terms of Module Objectives, Subject Matter Content, Workbook Exercises, and Total Summary Module Evaluation?
- 4) What is the relationship between the selected vocational education teachers' ratings of the individual module components and the total summary Module Evaluations?

#### Predictions in the Study

In order to evaluate the effects of the competency based in-service module program in mainstreaming students with special needs, the following predictions were made:

- 1) Selected vocational education teachers will improve their attitudes towards mainstreaming students with special needs in vocational education from before to after the competency based in-service module program.
- 2) Selected vocational education teachers will increase their competency (at the knowledge level, Bloom's Taxonomy of Educational Objectives, 1956) in identifying the definition of, rationale for, and major legislative acts involved in mainstreaming students with special needs in vocational education from before to after the competency based in-service module program. Selected vocational education teachers will increase their competency (at the

knowledge level, Bloom's Taxonomy of Education Objectives, 1956) in identifying the characteristics and needs of students with special needs mainstreamed in vocational education from before to after the competency based in-service module program.

- 4) Selected vocational education teachers will increase their competency (at the knowledge level, Bloom's Taxonomy of Educational Objectives, 1956) in identifying the members of, and rationale for, a team approach to evaluating programming, and teaching students with special needs in vocational education from before to after the competency based in-service module program.
- 5) Selected vocational education teachers will increase their competency (at the knowledge level, Bloom's Taxonomy of Educational Objectives, 1956) in identifying assessment and reporting techniques used in mainstreaming students with special needs in vocational education from before to after the competency based in-service module program.
- 6) Selected vocational education teachers will increase their competency (at the knowledge level, Bloom's Taxonomy of Educational Objectives, 1956) in identifying the learning styles, teaching strategies, and components of the Individualized Education Plan (IEP) used in mainstreaming students with special needs in vocational education from before to after the competency based in-service module program.



### Significance of the Study

Beginning in September, 1980, every handicapped child between the ages of 3-21 is entitled to a free, appropriate education in the least restrictive environment possible. Regulations have been adopted, and procedures put in place to insure that state and local education agencies adhere to the spirit and letter of the law. However, many educators in general, and vocational educators in particular, are ill-prepared to meet the demands of P.L. 94-142 and related federal and state legislation. Many questions arise when one ponders the impact of these new federal laws. Vocational educators are naturally asking: Who are the handicapped? Why mainstream special needs students? How do they differ from regular students? Will they present a safety hazard in my shop? What is my role in assessing the needs of handicapped students? What is an IEP, and what is expected of me at an evaluation team meeting? What teaching strategies are appropriate for handicapped students?

Data has indicated that few vocational education teachers have received training in mainstreaming special needs students. One primary reason for this lack of training to vocational education teachers is the paucity of teacher training materials and in-service programs which have been developed to assist this group of educators.

This study will focus on the development, implementation, and evaluation of a competency based in-service module program for teachers of vocational education in mainstreaming students with special needs in vocational education. The completion of a study of this

nature would result in information that would be valuable to several distinct groups.

This study will be to provide teacher educators at the state, university, and local education agency level with an immediate vehicle to deliver urgently needed in-service programs for vocational teachers in mainstreaming special needs students.

Data generated in this study could be used as a baseline in which to compare competencies identified by others in mainstreaming special needs students. This is significant in that state department of education officials are currently setting certification standards for vocational personnel serving handicapped students in vocational environments.

This study is significant in that it would provide teacher educators with valuable content information on which to base new courses or programs at the pre or in-service level in mainstreaming special needs students in vocational education.

Finally, this study will provide an opportunity for the participants to acquire competencies in mainstreaming special needs students. Additionally, school officials in the LEA where the study occurs will have a base upon which to plan future in-service programs and workshops.

#### Limitations of the Study

This investigative and descriptive study, with the absence of experimental controls, reflects the interest of this writer in

designing, implementing, and evaluating a competency based in-service module program as one means of facilitating critically needed in-service instructional programs for vocational educational teachers in mainstreaming special needs students. Since the major part of this study is directed at developing, implementing, and evaluating a series of competency based instructional modules, no attempt will be made to measure the extent vocational teachers utilize the competencies learned in the in-service program or whether the program ultimately leads to a more successful mainstreamed experience for students with special needs.

### Overview of the Dissertation

The framework and format of the subsequent five chapters are as follows:

Chapter I. Introduction. An orientation to the problem, discussion of the problem to be studied, definition of terms, purpose, questions to be answered by the study, significance, and limitations of the study will be presented.

Chapter II. Review of Related Literature. The review of related literature will be presented in three areas. The first area consists of an overview of the handicapped student in vocational education in light of past and present federal/state legislation. The second area involves a review of the problems involved in preparing vocational personnel to work with the handicapped, and also contains a description of the



competency studies and programs aimed at preparing vocational/special education personnel. The third area will concentrate on a review of selected models on developing and implementing in-service instructional programs.

Chapter III. Methodology. A description of the research methodology including the development of the competency based in-service module program, and related instruments, subject selection, data collected, treatment, and analysis will be presented.

Chapter IV. Findings of the Research. Among the findings to be presented are the results of the Competency Identification and Needs Assessment Questionnaire, Module evaluation ratings, relationship between vocational teachers' ratings of individual Module components and the total summary Module evaluations, and the changes in vocational teachers' responses on the attitude survey and knowledge test from before to after the in-service program.

Chapter V. Discussion, Conclusions, and Recommendations. A discussion of the Competency Identification and Needs Assessment ratings, Module evaluations, results of the changes in the pre-post test scores on the attitude survey and knowledge test, and the relationship between vocational teachers' ratings of individual module components and the total summary module evaluations will be presented. In addition, recommendations for future research, for improving the methodology in this study, and suggested uses of the modules are included.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

The review of related literature will focus on the problems associated with in-service training for vocational education teachers in mainstreaming students with special needs. As a framework for presenting this information, the review is divided into three areas.

The first area provides the reader with an overview of the special needs student in vocational education in light of past and present federal/state legislation. This includes a brief highlight of the major provisions contained in federal and state legislative acts with regard to the inclusion of handicapped students in vocational education programs, and the subsequent implications for in-service training for vocational education teachers.

The second area contains a review of selected research related to preparing teachers to work with handicapped students. Included is a review of competency based teacher education, research studies on competency identification and models for training vocational/special education teachers, and the identification of in-service programs aimed at helping teachers mainstream handicapped students.

The third area focuses on the methodologies and models involved in developing, implementing, and evaluating instructional programs and materials for teachers of handicapped students. Included is a review of existing in-service instructional packages geared

towards mainstreaming special needs students.

### Handicapped Students in Vocational Educational

Federal legislation: impetus for change. Society has traditionally discouraged the handicapped from participating in the mainstream. To be exceptional is to be rare or unusual. The unusual, the bizarre, and the unexpected have always attracted attention. Telford and Sawrey (1972) provide an excellent review of the problems which the "deviant" have encountered since the beginning of recorded history. Trephining, a practice of cutting a hole in the skull to allow evil spirits to escape from the body was performed on pre-historic men who were thought to be possessed. Horror stories regarding the manner in which the deviant individual has been treated are documented elsewhere (Telford and Sawrey, 1972; Rothstein, 1961; Jordan, 1966).

With minor exceptions, mankind's attitudes toward its handicapped population can be characterized by overwhelming prejudice. The handicapped are systematically isolated from the mainstream of society. From ancient to modern times, the physically, mentally, or emotionally disabled have been alternatively viewed by the majority as dangers to be destroyed, as nuisances to be driven out, or as burdens to be confined. Treatment resulting from a tradition of isolation has been invariably unequal and has operated to prejudice the interests of the handicapped as a minority group" (Lori Case v. State of California, 1973, p. 2a).

Historically, education in general and vocational education in particular has neglected the occupational training needs of the handicapped. Special educators have made some advances for the handicapped in terms of sheltered workshops for the retarded (DiMichael,

1960; Nelson, 1971; Gold, 1968) and school programs sponsored by both public and private agencies (Cegelka, 1970; Kokaska, 1968; Mathews, 1919; Clark, 1967; Brolin and Thomas, 1971; Younie, 1966). However, these programs have been, for the most part, separate, and sparse. Training programs have been restrictive in terms of the menial, stereotype job tasks which the handicapped have been forced to do. Research has shown that given the proper environment and teaching technologies, the handicapped can succeed at a number of sophisticated job tasks (Gold, 1968; Gold, 1972).

Telford and Sawrey (1972) point out the rationale that has been used in terms of the limited involvement of the handicapped in the educational and vocational programs that have been available.

The promise of universal educational opportunities has usually meant, in practice, one educational program which was available to all those able and willing to profit by it. The inability of deviant individuals, and groups of individuals, to take advantage of the programs provided because of sensory, motor, emotional, or intellectual limitations was explained in terms of demoniacal possession, retribution for parental sins, inborn perversity, punishment for individual delinquencies, inherent moral weaknesses, defective genes, or the inevitable accidents of normal life, according to the prevailing beliefs of the times. The inability of deviant individuals to profit by the educational and vocational opportunities provided to the bulk of the citizenry was seen as the result of the deficiencies, defects, or weaknesses within the individuals and not of society's failure to provide programs and opportunities appropriate to the special needs of these people. In the apportioning of blame for the social failures of deviant citizens, the responsibility was predominantly that of the deviant himself. In a less moralistic framework, the question was, "Why isn't this person able to take advantage of the opportunities which his society provides?" rather than, "Why doesn't society provide educational, rehabilitative, and vocational facilities and programs appropriate to this individual's needs?" (p. 28).

Vocational education's contribution for providing vocational training to handicapped adolescents has been extremely limited. In a recent publication of the American Vocational Journal (1975), a professional journal of vocational educators, it was admitted that "Prior to 1963 the thought of placing a handicapped student in a vocational shop was unheard of. As a matter of fact, there were laws prohibiting school districts from placing such students in approved programs" (p. 78).

While it is not the intention of this to review the history of vocational education in the United States, it is important to note a few basic facts concerning the origins and developments of this type of education.

Vocational education grew out of the manual training movement of the 1870's and the appearance of trade schools during the early 1900's. Home economics programs introduced into the curriculum of the public schools during 1901, combined with developments in agricultural education, led to increased attention over the purpose of schooling. This resulted in the formation of the famous Douglas Commission in Massachusetts and the National Society for the Promotion of Industrial Education in New York. These two forces had significant impact on laying the groundwork for Congress to pass the first vocational education bill commonly known as the Smith-Hughes Act of 1917. This Act according to Barlow (1976),

represented a scheme of cooperation between the federal government and the individual states. . . . The cooperative arrangement was based upon four fundamental ideas: First, that vocational education being essential to the national



welfare, it is a function of the National Government to stimulate the states to undertake this new and needed form of service; second, the Federal funds are necessary in order to equalize the burden of carrying on the work among the states; third, that since the Federal Government is vitally interested in the success of vocational education, it should, so to speak, purchase a degree of participation in this work; and fourth, that only by creating such a relationship between the central and local governments can proper standards of educational efficiency be set up (p. 58).

The Federal Board for Vocational Education issued its first policy bulletin in 1917. The purpose of this bulletin was to guide and assist the individual states in conducting their programs of vocational education. This first policy bulletin restated several key sections of the Smith-Hughes Act. One very important section that was included concerned the group of persons for whom vocational education was originally intended.

The Federal Board desires to emphasize the fact that: vocational schools and classes are not fostered under the Smith-Hughes Act for the purpose of giving instruction to the backward, deficient, incorrigible, or otherwise subnormal individuals; but that such schools and classes are to be established and maintained for the clearly avowed purpose of giving thorough vocational instruction to healthy, normal individuals to the end that they may be prepared for profitable employment. Such education should command the best efforts of normal boys and girls.(p.5)

This attitude that only normal, healthy individuals who could profit from the instruction that was offered became entrenched in vocational education and was one of the primary reasons for excluding the handicapped for over half a century. It took a series of major legislative acts to redefine who would be eligible for vocational education services.

Vocational Education Act of 1963. Almost half a century had passed, since the passage of the Smith-Hughes Act, that Congress enacted the Vocational Education Act of 1963 (P.L. 82-210). Up until this time, the handicapped were excluded from vocational education. However, this Act changed the focus of vocational education, and for the first time, provisions to include the handicapped were mentioned. Specifically, the Act provided for vocational education "for persons who have academic, socio-economic, or other handicaps that prevent them from succeeding in the regular programs of vocational education." (Vocational Education Act of 1963). Since there was little mention of any categorical support for programs to serve the handicapped, only a few states responded in terms of developing pilot programs (Bureau of Education for the Handicapped, 1974).

Vocational Education Amendments of 1968. In 1968, a substantial federal commitment to the vocational preparation of handicapped students began. In order to stress the importance of providing vocational education to handicapped individuals, the Vocational Education Act of 1968, for the first time, earmarked funds for special needs populations. Specifically:

. . . due consideration will be given to the relative vocational education needs of all population groups in all geographic areas and communities in the state, particularly persons with academic, socioeconomic, mental, or physical handicaps that prevent them from succeeding in regular vocational education programs (Vocational Education Amendments of 1968).

Programs for the handicapped were identified as one of the categories for which states had to set aside a certain percent of federal monies. The Act specified that each state spend 25% of its

basic federal grant for vocational education exclusively to finance ". . . special education programs and services designed to enable disadvantaged and handicapped persons to achieve vocational educational objectives that would otherwise be beyond their reach as a result of their handicapping conditions" (Vocational Education Amendments of 1968). Of the basic grant, 10% was to be spent on programs for the handicapped while 15% was to be spent on the disadvantaged.

By establishing a separate category for special needs students and earmarking funds to promote the development of programs, the Vocational Education Amendments of 1968 clearly represented a departure from the dictums of the earlier Smith-Hughes Act and in essence, redefined the population of students who could receive vocational education services.

Rehabilitation Act of 1973. Sections 503 and 504 of the Rehabilitation Act of 1973 whose regulations were not released until 1977, emphasize the basic human rights of handicapped individuals. This Act is different from other federal special education legislation in that it is a civil rights act. There are no age limits for handicapped persons, nor are there funds for their implementation. In many ways, the Act is analagous to the Civil Rights Act of 1964 (Tindall, 1978).

Section 503 requires that any employers doing business with the federal government (more than \$2,500) must develop affirmative action plans to promote the hiring of qualified handicapped indivi-



duals. In addition to hiring practices, the plan must address practices related to job assignments, promotions, training, transfers, accessibility, working conditions, and termination.

It should be noted that not all handicapped persons are covered. The potential employee must be "otherwise qualified" and capable of performing a job with reasonable accommodation provided by the employer.

Section 504 is intended to prohibit discrimination on the basis of handicaps in any program or activity receiving federal assistance. This section:

. . . represents the first Federal civil rights law protecting the rights of handicapped persons and reflects a national commitment to end discrimination on the basis of handicap (P.L. 93-112, p. 97).

Subpart D sets forth requirements for non-discrimination in pre-school, elementary, secondary, and adult education programs and activities, including secondary vocational education programs.

Education for All Handicapped Children Act of 1975. The enactment of the Education for All Handicapped Children Act (P.L. 94-142) at the federal level marks the culmination of actions by federal and state legislatures, state and federal courts, and groups concerned with the handicapped (Tomlinson and Allbright, 1977). The purpose of this Act is to provide a free, appropriate public education to all handicapped students ages 3-21. Among the major provisions included in the law are: due process procedures; development of individual educational plan (IEP's) for students by a team of professionals; placement, whenever appropriate, in the least restrictive environment,

use of non-discriminatory testing and evaluation procedures; comprehensive system of personnel development; assurance of confidentiality of information.

The regulations for P.L. 94-142 contain several specific provisions for vocational education for the handicapped. First, state education agencies must submit in their annual program plan that funds received under the Vocational Education Amendments of 1976 are used in a manner consistent with providing the handicapped with a free appropriate public education. Second, vocational education is specifically emphasized for handicapped students in section 121a.305 by stating:

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

Third, the individual education plans developed for handicapped students must include statements about the students' present level of educational performance, including academic achievement and pre-vocational and vocational skills. If a decision is made that a student is deficient in these areas and in need of special education, annual goals, short term objectives, a statement of the specific services including vocational education, and an evaluation process to see if the objectives are being achieved must be included in the IEP. Accordingly, handicapped students within the 14-21 age bracket will require some sort of career/vocational programs.

Vocational Education Amendments of 1976. Pressure to provide vocational services to the handicapped in proportion to the incident rate generally found within the total school age population, prompted the inclusion of categorical funding and other provisions within P.L. 94-482 - Vocational Education Amendments of 1976. Title II of this Act represents a new piece of legislation for vocational education programs. As in the prior 68 amendments, 10 percent of federal vocational funds going to the states were required to be spent on vocational education programs and services for the handicapped. This new section continues the 10 percent set aside monies, but now requires 50 percent matching of state and local funds. These monies must be used to place handicapped youths, to the maximum extent possible, in regular vocational education programs. For many states and local school systems, this means a substantial financial increase since most states were not equally matching these funds in the past (Phelps, 1977).

Additionally, the Amendments required that the five year annual program plan submitted by a state education agency must be consistent with the state plans for the education for the handicapped. Specifically, it requires a statement describing:

. . . how the program provided each handicapped child will be planned and coordinated in conformity with and as a part of the child's individualized educational program as required by the Education of the Handicapped Act (Section 104.182(f)).

Therefore, all the requirements of P.L. 94-146 - due process, least restrictive environments, individualized education plan - will pertain to handicapped students served under the vocational education legislation.

Summary assessment and future directions. A number of major federal legislative acts have been passed over the last two decades to address the problem of providing free, appropriate, non-discriminating vocational education for handicapped students within the least restrictive normalized environment possible. What has been the effect of these laws?

Shortly after the enactment of the Vocational Amendments of 1963, Grover (1966) in a study entitled "A National Survey of Vocational Education Programs for Students with Special Needs" concluded that:

Vocational leaders and teachers have struggled to prevent their programs from becoming the "dumping ground" for those students who could not conform to the general pattern of education. In doing so, a rather stringent set of qualifications were developed frequently which prevented less able students from entering existing vocational programs. In turn, few attempts were made to adapt vocational or occupational training to fit the needs and abilities to those excluded or to develop specific vocational programs for them (p. 4).

Pellegrino (1975) adds that the federal government specified to each state through the Vocational Education Amendments of 1968 what portion of its total vocational budget should be used for the handicapped. However, even though the amounts of money allocated to the state bureaus of vocation education were very handsome, large portions of those funds were returned after fiscal year 1968 because monies went "begging for programs while administrators went begging for implementors" (p. 78).

The General Accounting Office (1974) reported that states have provided only minimal matching funding for vocational education for

the handicapped. In 1973, 14 states did not spend the 10 percent of their Federal vocational education funds for education of the handicapped as required by the Vocational Amendments of 1968.

In 1976, a report from the same office reported that "the vocational network served over 13 million individuals in fiscal year 1974, but less than 2 percent of them were handicapped" (p. 29). At least 10 percent of the school population is estimated to have handicapping conditions (Training Educators for the Handicapped, 1976).

In fiscal year 1975, handicapped persons represented only 1.7 percent of the total vocational education enrollments (Lee, 1975).

Halloran (1975) reports that:

In another recent period, two thirds of the vocational education provided to handicapped students was non-skills training, that is training not intended to prepare students to compete in the open labor market in a given skill, craft, or trade. Many students were enrolled in pre-vocational courses, diagnostic centers, mobility training, or sheltered workshops. Of the handicapped students enrolled in vocational education, 70 percent were placed in special classes (p. 30-31).

It is quite clear from the statistics presented that in spite of previous legislation, the handicapped have had little access to vocational education programs and services. Recent federal legislation (P.L. 94-142, P.L. 94-482) is just beginning to open up new options for the handicapped student, and it remains to be seen whether these laws will increase the enrollment of the handicapped in vocational education. However, excluding the prior uncertainty of the levels of federal and state financial support to programs for the handicapped, it appears that a number of factors still inhibit the development of appropriate programs for special needs students. First,



there has been a lack of cooperative planning between the vocational and special education disciplines. Second, attitudinal barriers and discriminatory practices still exist in regard to admissions, and mainstreaming special needs students in vocational education. Third, vocational personnel have not been trained to work with the handicapped, and consequently are hesitant to accept these students in their programs (General Accounting Office, 1975; Rothstein, 1961; Pellegrino, 1975; Olympus Research Corporation, 1975; Clark and Oliverson, 1973; Phelps, 1977; Tindall, 1978). In-service education programs designed to orient vocational educators with the process of mainstreaming handicapped students into vocational education are urgently needed.

State legislation: impetus for change. The previous section focused on the major federal legislative acts which have stimulated the inclusion of handicapped students in vocational education. Since this study has defined its geographical limitations within the Commonwealth of Massachusetts, a review of the status and problems of special needs students in vocational education is necessary. Therefore, this section will review the two major legislative acts in the state of Massachusetts which have a significant role in providing vocational education services to special needs students.

Chapter 71B of the Acts of 1972 (Chapter 766). The Massachusetts legislature passed one of the most comprehensive special education laws in the country in 1972. Commonly referred to as Chapter 766, the law was implemented in September, 1974. The major



purpose of this law is to provide a free, appropriate public education to students between the ages of 3-21 who have been found to have special educational needs. Some of the main provisions include:

- 1) non-categorical labelling - students are no longer categorized as being mentally retarded, deaf, etc. One broad category, "students with special needs" is to describe students who receive services under Chapter 766.
- 2) least restrictive environment - an emphasis is placed whereby to the maximum extent appropriate, students are educated with other students who are not in need of special education. Students' programs and services are developed in conjunction with the amount of time required outside of the regular education program to meet their special need(s).
- 3) age limit - students are eligible to receive services under Chapter 766 between the ages of 3-21.
- 4) individualized education plan (IEP) - all students who have been found in need of special education by a school's core evaluation Team receive an IEP. This plan outlines the special services, general goals and specific objectives which the students will work on.
- 5) due process - the school together with the students' parents participate in evaluating the student and in developing the IEP. Specific due process rights and procedures are outlined for both the parents and school in their evaluation and programming process (Chapter 766 of the Acts of 1972).

Vocational education is specifically mentioned in the Chapter 766 regulations. Chapter 3 states that vocational-technical schools are responsible for implementing the procedures mandated under Chapter 766. This means establishing a Core Evaluation Team (CET) to evaluate students who are referred and developing special education programs to meet the needs of students enrolled in vocational education programs. Additionally, each regional vocational-technical school district is charged with the responsibility of providing assistance to "school committees within its region with long range program planning for children in need of special education who it is believed will require vocational educational services later in their school career" (p. 43).

In summary, Chapter 766 is a comprehensive special education law which advocates evaluation of students by an interdisciplinary team, development of an individual evaluation plan which addresses the students' special need(s) and placement in the least restrictive environment as appropriate. Vocational schools are responsible for implementing Chapter 766. Since many secondary special need students require some sort of vocational/occupational training, there is an urgent need to assess the facilities and resources of vocational education and to jointly plan programs for the handicapped.

Chapter 74: Vocational Education. The State law governing occupational and vocational education in Massachusetts is commonly referred to as Chapter 74. Revised by the Massachusetts Board of Education in June, 1977, Chapter 74 regulations supersede "Bulletin 326." Massachusetts has traditionally defined vocational education in

a more restrictive fashion as contrasted with the federal definition. Under Chapter 74, vocational education includes distributive, industrial, agricultural, household arts training, and practical nurse training. According to the Annual and Five Year State Plan for Vocational Education (1978-1982):

. . . Massachusetts has a more restrictive definition of vocational education which does not include the traditional business and office occupation programs or the occupational programs which do not require intensive skills training such as programs in industrial arts.

The reason for the distinction between a rigid and broad definition of vocational education in Massachusetts lies in the method of reimbursement with state funds. Chapter 74 of Massachusetts General Laws provides for a fifty percent reimbursement for specified programs. All other occupational programs, demanding less "shop time," are reimbursed at a lower percentage rate under Chapter 70, general school reimbursement (p. 5).

The current delivery system for vocational/occupational education in Massachusetts consists of regional vocational/technical high schools, city vocational/technical schools, and vocational programs located in comprehensive high schools. Additionally, there are collaboratives, public skill centers, trade union programs and sheltered workshops both public and privately supported.

Historically, the participation of handicapped students in these vocational programs has been extremely limited. It wasn't until the 1970's that educators in Massachusetts seriously addressed the problems of providing vocational education to special need students. The Massachusetts Advisory Council on Vocational-Technical Education (1975) reported that handicapped enrollments in regional vocational schools constituted only 1.4% of the student population in 1972-73.

According to the Massachusetts State Plan for Vocational Education (1977) vocational education served only 2,772 special needs students in 1976, representing only 1.3% of the total enrollments in vocational education.

While some excellent programs have originated in selected schools in the Commonwealth to serve handicapped students in vocational education, a number of problems still exist. The Massachusetts State Board of Education (1976) in a policy statement on Occupational Education concluded that access to occupational programs was severely limited for certain categories of students, including the handicapped. The Massachusetts Committee on Children and Youth (1975) reported many inappropriate state and school policies relative to the handicapped. The report found that many of the schools' admission policies discriminated against the handicapped, while certain state policy directives were confusing and often counterproductive in improving the participation of special needs students in vocational education.

The Massachusetts Advisory Council (1976) identified some of the major problems which still inhibit the inclusion of special needs students in vocational education:

Concomitant with a need for new priorities and changes in policies, however, there appears to be lack of understanding among many vocational educators concerning the needs of children and adults with handicaps. Some teachers and administrators appear to hold distorted impressions and prejudicial assumptions about the potential of people with handicaps to succeed in vocational education courses. They assume students who are handicapped will not find jobs after graduation, cannot handle the equipment with safety nor ease, and will disrupt the pace of learning of regular students. Vocational educators in general continue to resist serving those who are handicapped and have reservations concerning placement of stu-

dents who are handicapped in a classroom with regular students (p. 20-21).

The Five Year State Plan (1978-1982) for Vocational Education has established as one of its major priorities to increase the enrollments of special needs students in vocational education. The plan specifies that enrollments for special needs students are expected to increase from 2,772 students in 1976 to 6,000 students in 1978 to a projected 12,000 special need students in 1982. A total of \$1,160,000 was set aside from federal funds to develop vocational education programs for the handicapped in 1978.

Concurrent with the ambitious mandates to increase enrollments of special need students is the need to properly prepare vocational educators with the knowledge and skills of mainstreaming the students through in-service education programs.

Summary assessment and future directions. Vocational education for students with special needs in the Commonwealth of Massachusetts is receiving unprecedented attention. Amidst reports of discriminatory practices and policies, regarding the participation of handicapped students in vocational education, steps are now being taken to seriously address the vocational needs of these students. The State Board of Education has established a goal of increasing handicapped students in vocational educational programs, both through the development of the two State Plans for Vocational Education and Special Education. In order for the goal to be realized, vocational teachers, the individuals who will ultimately bear the responsibility for working with the special needs student, must be trained in the



process established by federal and state regulations in mainstreaming these students into regular vocational classrooms.

Implications for in-service training. An analysis of the major federal and state laws previously reviewed has serious implications for all teachers in general, and vocational teachers in particular. Handicapped youngsters have the right to an education, and whenever possible, within the confines of our public schools and classrooms. While these laws are indeed noble, much concern and anxiety has been expressed regarding the problems classroom teachers will face in order to implement these laws.

Hyer (1977) presents the concerns that teachers hold regarding the new legislation in behalf of the handicapped:

This is the milieu; and the teacher sees him/herself as the center of the storm, tossed about by mandates of legislators and bureaucrats, the expectations of parents and children, the pressures of school boards and school administrators, and the uncertainty of new relationships with those in the special education field. And yet the teacher is well aware of positive values that could be gained if mainstreaming and other features of P.L. 94-142 can be implemented successfully. They are probably more aware than most of the damage done by the unwise use of tests, of damage done by labeling, of the importance of self-concept, of the relationship of expectations to achievement, and of the importance of schooling in the socialization process. What the teacher needs, therefore, is not to be sold on the concept of mainstreaming, but rather assurance about an involvement in decision making concerning how the concept is to be put into practice" (p. 3).

In a random sample of the 1.8 million members of the NEA in the spring of 1976, Hyer (1977) reported that 62% of the respondents indicated that handicapped children were being moved from segregated special education classes to regular classes in their school systems



for some or all of their instruction. Lack of preparation of regular classroom teachers to handle a wide variety of handicapped children was cited as one of the biggest problems.

In a statement issued by the NEA observers to the White House Conference on Handicapped Conference on Handicapped Individuals (NEA, 1977), the National Education Association supports a free appropriate education in the least restrictive environment only if the following conditions are met:

- a. A favorable learning experience must be created both for handicapped and non-handicapped students.
- b. Regular and special education teachers and administrators must share equally in planning and implementation for the disabled.
- c. All staff should be adequately prepared for their roles through inservice training and retraining.
- d. All students should be adequately prepared for the program.
- e. The appropriateness of educational methods, materials, and supportive services must be determined in cooperation with classroom teachers.
- f. The classroom teacher(s) should have an appeal procedure regarding the implementation of the program, especially in terms of student placement.
- g. Modifications should be made in class size, scheduling and curriculum design to accommodate the demands of the program.
- h. There must be a systematic evaluation and reporting of program developments using a plan which recognizes individual differences.
- i. Adequate funding must be provided and then used exclusively for this program.
- j. The classroom teacher(s) must have a major role in determining individual educational programs and should become members of school assessment teams.

- k. Adequate released time must be made available for teachers so that they can carry out the increased demands upon them.
- l. Staff reduction will not result from implementation of the program.
- m. Additional benefits negotiated for handicapped students through local collective bargaining agreements must be honored (p. 1).

The AFT also adopted a position that is similar in many ways to the NEA (Rauth, 1976). This resolution:

- 1. Supports mainstreaming of handicapped children both moderate and severe, to the degree recommended by psychologist, special educator, administrator and classroom teacher;
- 2. Encourages locals to promote federal funding of special education programs to provide mainstream settings, to train additional special education personnel, and to provide necessary support services for mainstreaming programs;
- 3. Urges that collective bargaining agreements have adequate provisions for viable class size and protection against diminution of special certificate or licenses for both special education and regular teachers in the implementation of mainstreaming (Hyer, 1977, p. 5).

Herman Saetler of the Bureau of the Education for the Handicapped stated in 1974:

One of the Bureau's goals is the development of a nationwide commitment to insure that every handicapped child . . . is receiving an appropriately designed education. . . There are a great many elements necessary to the realization of that goal, but none more important than the development and improvement of professional personnel in sufficient numbers and with appropriate competencies to fulfill that goal (p. 8).

In an attempt to meet this goal, P.L. 94-142 regulations require that state education agencies develop a comprehensive state plan for personnel development based upon an annual needs assessment. Section 613 requires that each state plan:

. . . set forth, consistent with the purpose of this Act, a description of programs and procedures for (A) the development and implementation of a comprehensive system of personnel development which shall include the inservice training of general and special educational instructional and support personnel, detailed procedures to assure that all personnel necessary to carry out the purposes of this Act are appropriately and adequately prepared and trained, and effective procedures for acquiring and disseminating to teachers and administrators of programs for handicapped children significant information derived from educational research, demonstration, and similar projects, and (B) adopting, where appropriate, promising educational practices and materials development through such projects (89 STAT 782).

It is clear in analyzing the above section that a major emphasis involves in-service education as opposed to pre-service education and that the thrust of this in-service education should be aimed at meeting the needs of all teachers, not just special education personnel.

The importance of providing in-service training to the regular classroom teachers is highlighted by a U.S. General Accounting Office (GAO) report in September 1976. Their report charged that the U .S. Office of Education was misusing training money by producing more special educators, when there is an urgent need to retrain the regular class teacher:

The majority of handicapped school children spend all or most of their school day in regular classrooms under the supervision of regular classroom teachers. The successful advancement of handicapped children depends heavily upon the regular classroom teacher's ability to (1) recognize their learning deficiencies, (2) determine appropriate methods for instructing them, and (3) find the time and resources to put the planned methods into practice" (p. 5).

While there are many varied opinions on how these federal laws will ultimately benefit special needs students, Meyer (1977) feels

that successful implementation is highly dependent on in-service efforts of local and state education agencies.

In-Service Training for Vocational  
Education Teachers

Overview of the problem. The issues involved in preparing vocational teachers to mainstream handicapped youngsters are numerous and diverse. While legislation dating back to 1963 has promoted the inclusion of the handicapped in vocational education, programs to prepare vocational teachers have lagged far behind (Clark and Evans, 1976). A number of reasons can be cited from the literature to account for this lack of responsiveness on the part of vocational and special teacher educators.

- (1) Special education teacher training programs have traditionally been based on an elementary level model, and as a result, few preparation programs have been designed to prepare teachers to work and those requiring vocational instruction in particular (Clark and Oliverson, 1973; Brolin, 1973).

A revealing survey by Heller (1978) of 474 special education teacher educators representing 14 states and 105 university or college special education teacher training programs indicated that 92.2% expressed a desire for additional training themselves. Reasons given were due to the rapid expansion in the field of special education and a desire to gain knowledge in new areas to which they had been assigned. Interestingly, 18% of the 474 respondents had no direct experience with the handicapped prior to being appointed at the college, and 40% had 2 years or less experience teaching the handicapped.



- (2) Teacher training in vocational education lacks courses and experiences with the handicapped (Young, 1970; Bobbitt, 1971; Clark and Evans, 1976).

Vocational education teachers are unique, for the most part, in education. The trade and industry teachers (carpentry, machine, automotive) and others in the service occupations (culinary arts, cosmetology) are recruited directed from industry or from private businesses. In most cases, these individuals do not have any background in teaching. In Massachusetts, temporary approval for teaching is issued by the state upon successful completion of a performance and written examination. Full approval is held until the vocational instructor completes a condensed teacher preparation program (usually about 15-21 undergraduate credits). The point is that these instructors are not prepared by training to be teachers. In essence, they learn "on the job" while taking courses at night or in the summer months. Initially, the average learner poses many questions for the beginning vocational teacher. Include a number of special need students in the class, and in many cases, the vocational teacher cannot be expected to meet their needs.

- (3) Special and vocational teacher educators and departments have remained pretty much isolated from one another at the college and university level. A more cooperative team approach is needed to meet the vocational needs of handicapped students (Kruppa, 1973; Gallagher, 1969; Reynolds, et al., 1973; Phelps, 1977; Weisenstein, 1977; Clark and Evans, 1973).

Although originally advocated by Eskridge in Texas (Eskridge and Partridge, 1963), this collaboration between the two departments in designing appropriate teacher training and vocation programs to meet the needs of the handicapped is now only beginning to occur. A

noteworthy example is the series of National Workshops on Special Needs Vocational Teacher Education developed by Rupert Evans at the University of Illinois (Clark and Evans, 1976). The first workshop, held in 1976, received applications from over seventy institutions throughout the country - a strong indication of interest in this area. Clark and Evans (1976) sum up the dilemma facing teacher educators by stating:

Largely because of state and federal legislation, schools are now accepting their responsibility in educating these children with special needs. However, not all of the teachers who are being asked to teach special needs students are adequately prepared for this role. This is especially true at the secondary level where students are in need of vocational as well as academic programming. Vocational education teachers are not generally prepared by education or experience to successfully teach special needs students, and special education teachers generally do not have the vocational education experience or preparation necessary to fully prepare students for the world of work (p. iii).

Evans (1975) feels that part of the problem is with the teacher training approaches in both fields:

Most universities which train vocational teachers also have special education departments which have expert knowledge of how to teach the handicapped. Unfortunately, the vocational education departments are concerned almost entirely with adolescents and adults, while the special education departments are mostly concerned with younger children. Both would benefit from joint programs to train vocational education teachers and counselors who know how to work with handicapped persons (p. 7).

Weisenstein (1977) feels that the task of habilitating the handicapped is far beyond the capabilities of a single discipline, and suggests that roles be clarified for vocational and special educators since each tend to view the student from different perspectives. Vocational educators tend to view the student as an adult, while spe-



cial educators consider the student as a child placing emphasis on the child's development. Weistenstein views the role emerging for vocational educators as that of providing actual skill training with special educators acting as consultants in terms of providing individualizing lessons, and helping the student with reading assignments, test taking, etc.

Therefore, there is a critical need to develop appropriate vehicles for bridging the gaps between special and vocational teachers. Special education is in a unique position to assist tremendously in this task. They have had the opportunity in prior years, to work almost exclusively with special needs students. Federal legislation has essentially mandated that these educators now work together to meet the needs of these students. How effective special educators are in assisting their colleagues to learn about the needs and processes involved in mainstreaming will determine to a large extent how the handicapped are accepted and education in the mainstream of our public schools. The task on hand is to identify the competencies initially involved in mainstreaming handicapped students and to develop in-service education programs for vocational education teachers to acquire these competencies.

Competency based teacher education. Over the past few years, results of national achievement tests, college entrance examinations, and the like, have pointed out that students are failing to learn many basic skills required to function in today's society. Parents and the public at large are asking potentially embarrassing questions which

eventually have lead to the topic of accountability in the classroom.

Gorman and Hamilton (1975) report:

Rather widespread dissatisfaction with teacher education programs has been expressed on the part of many concerned groups, teachers, administrators, teacher educators, and others. This dissatisfaction has provided the cause to examine closely relationships between ability and interest in completing college course requirements for teaching, and the ability and desire to perform effectively in the teaching role.

Performance/competency - based teacher education (P/CBTE) with its emphasis on the identification of specified teacher skills, and the assessment of the skills appear to hold much promise for alleviating many of the inadequacies of traditional education programs (p. 21).

Berdine, Moyer, and Suppa (1978) feel that the most significant trend in special education teacher training during the past five years has been competency-based teacher education.

The American Association of Colleges for Teacher Education (1971) published five ingredients which they considered generic to any program that is defined as being performed-based:

1. competencies (knowledge, skills, behaviors) to be demonstrated by the student are:
  - a. derived from explicit conceptions of teacher roles,
  - b. stated so as to make possible assessment of a student's behavior in relation to specific competencies, and
  - c. made public in advance;
2. criteria to be employed in assessing competencies are:
  - a. based upon and in harmony with specified competencies
  - b. explicit in stating expected levels of mastery under specified conditions, and
  - c. made public in advance;
3. assessment of the student's competency:
  - a. uses his/her performance as the primary source of evidence,

- b. takes into account evidence of the student's knowledge relevant to planning for, analyzing, interpreting, or evaluating situations or behavior, and
  - c. strives for objectivity;
4. the student's rate of progress through the program is determined by demonstrated competency rather than by time or course completion;
  5. the instructional program is intended to facilitate the development and evaluation of the student's achievement of competencies specified (p. 23-24).

Interest in competency based teacher education has been considerable. A survey conducted by the Educational Testing Service in cooperation with the American Association of Colleges for Teacher Education indicated that 70 percent of all teacher training institutions were involved in planning, operating, or considering implementing P/CBTE programs (Kelley, 1974).

A prerequisite to developing competency based training programs is the identification of the competencies which will be taught to the trainees. Phelps (1976) suggests that there are basically three schools of thought which exist on the process of competency identification and validation. One group, of which Rosenshine, Heath, Neilson, and Furst are the strongest advocates, contends that validation of competencies should be based ultimately on student achievement. Training programs, therefore, should be developed on the basis of empirical data which verifies that the competencies result in student achievement within the classroom. A second group have conducted a rather large number of descriptive studies to identify competencies. In these studies, a "panel of experts" develop surveys, and questionnaires which list behaviors presumed to be needed

by teachers of a particular population. Skill statements which result from professional consensus (responses ranging from 50 - 2,000) are ranked by teachers and administrators in terms of frequency of performance and perceived importance. The third approach, as described by Phelps, involves an analysis of theoretical models whereby professional roles are examined, "Sections and subsections of the model are then carefully analyzed to identify the implicit and explicit teacher competencies required to implement the model in an education setting" (p. 40).

However, problems associated with competency - based teacher education and competency identification for special and vocational educators concerned with delivering services to the handicapped, in particular, have been recognized. Gold (1972), for example, feels that almost without exception training has been regarded as exposure rather than a systematic controlled manipulation of the environment which educational effects can be measured and recorded. As such, it is extremely difficult to extract valid competencies for training purposes.

Rosenshine (1974) finds that few attempts have been made to summarize the state of our knowledge on teaching competencies. He feels that one of the major problems with the available studies is that they are mostly correlational studies and subsequently, they are incapable of demonstrating specific cause and effect relationships.

Heath and Neilson (1974) suggest that stronger research designs are needed to validate teaching competencies. Rosenshine and

Furst (1971) proposed that "The first step is to determine whether teachers trained for specific performance criteria behave differently in their classrooms from similar teachers who do not receive the training (p. 65).

Teacher training in the fields of special/vocational education has been characterized as being in an embryonic stage (Clark and Evans, 1975). Experimental validation studies are not available at this time to facilitate the identification of competencies to enhance the programs of special needs students mainstreamed in vocational education. Therefore, descriptive studies, theoretical models, and legislative implications for in-service training will be reviewed to provide direction relative for developing inservice programs for vocational teachers in mainstreaming special needs students in vocational education.

Competencies for vocational/special education teachers. A review of mostly descriptive competence studies which have serious implications for developing a competency based in-service program for vocational education teachers in mainstreaming special needs students will be presented.

Schwartz (1971) devised a clinical teacher model for teachers of exceptional children with learning and behavioral problems. He believes that the teacher should possess the following competencies: (1) diagnose a wide variety of exceptional children in terms of maturation, social, academic, and pre-vocational behaviors, (2) design and employ individualized instructional strategies, including educa-



tional analysis, planning, curricula development and media utilization. Schwartz feels that the goals of teacher education are stated by defining competency areas as major tasks, a set of sub-objectives or enablers, and multiple set of instructional options that lead a teacher toward the satisfactory performance of a behavioral objective.

Nelson and Kokaska (1972) report the results of a special study institute which included ninety educators from major teacher training institutions in California. The purpose of the institute was to propose an alternative approach to manpower guidelines for special education and teacher training programs, through the development of measureable competencies for special class teachers. The participants developed a list of competencies and then rated each competency as to whether it was essential, desired, or not required for teaching exceptional children. Approximately 263 competencies were specified in the following categories: demonstrating teacher acquaintance with federal material about exceptional children, counselling students, managing the classroom and program administration, communicating with parents and other professionals, developing and planning instructional programs, evaluating the instructional process, describing and assessing student behavior, implementing instructional programs, and defining instructional goals and objectives. Each competency was also classified as to whether it was generic (rated as important to teaching in four or more areas of exceptionality) or specific (rated as important to teaching in three or less areas) or essential (two-thirds of the raters) or rejected (by 20% of the raters).



Brolin (1973) designed a model for training teachers of secondary level educable mentally retarded youngsters based on the needs of the handicapped youngsters, and the competencies teachers were required to have to meet those needs. Brolin initially surveyed all 251 EMR teachers and randomly selected supervisors in the state of Wisconsin. A questionnaire was used to seek information as to the degree of emphasis allocated to various aspects of secondary special education curriculum and related teacher competencies. A total of 205 secondary special education teachers and administrators specified four curriculum areas as the most important: occupational information and preparation, activities of daily living, psychosocial, and academic. Two hundred competency statements received were combined, recorded and clarified by Brolin and his Project staff to a total of 31 teacher competencies which were perceived to meet the needs of the handicapped in the high school curriculum.

Cotrell, et al. (1970) developed 390 competencies for vocational education teachers and coordinators using a representative national sample of seven hundred and fifty vocational teachers. The competencies were then grouped into the following ten areas: (1) program planning, development, and evaluation; (2) planning of instruction; (3) execution of instruction; (4) evaluation of instruction; (5) management; (6) guidance; (7) school-community relations; (8) vocational student organizations; (9) professional role and development; and (10) coordination.

Feck (1972) in a study on research and programs pertaining to

teaching the disadvantaged and handicapped found that thirty of the thirty-five vocational teachers felt that the most necessary competency was the ability to diagnose learning problems and needs. Twenty-one felt that a knowledge of the characteristics of both groups was second in importance. The biggest problem that these same teachers felt, on a day to day basis, was that of motivating the disadvantaged and/or handicapped.

Ferns (1971) delineated nine training needs of special education workers in vocational programs by interviewing administrators, consultants, teacher educators. Training needs that were identified are:

1. Developing awareness of the specific needs of the handicapped and disadvantaged.
2. Knowing who the handicapped and disadvantaged are, how to plan programs for them, and how to accommodate them in regular programs.
3. Compassion for and understanding of individuals.
4. Knowing differences in teaching methods and materials for special needs students as compared to normal students.
5. Evaluating programs.
6. Adapting curricula to the open entry - open exit concept and the immediate feedback or reward concept.
7. Developing skills in human relations.
8. Handling potentially explosive urban situations.
9. Understanding of the drug problem, student dissent, and racial issues (pp. 193-194).

Shepard (1975) documents a descriptive study of 107 vocational/technical teachers (primarily), administrators, and coun-

selors. The purpose of the survey questionnaire was to elicit information relative to (1) problems encountered in teaching disadvantaged and/or handicapped students, (2) competencies needed by vocational education personnel and (3) teaching strategies, resources and curriculum materials which were perceived as being most effective in working with special needs students in vocational education.

A sample of the problems reported by the teachers includes: (1) students' lack of motivation, (2) students' poor attendance, (3) students' personal problems, (4) lack of instructional materials and packages, (5) teacher's inability to provide quality instruction to all students and (6) inability of regular textbook materials to reach each student. Teaching competencies rated as very important included: knowledge of students' physical, education, and behavioral characteristics; awareness of appropriate teaching techniques, guidance resources, and instructional materials.

Kruppa, et al. (1973) compiled a list of 330 competencies from three national studies. A panel approach consisting of university members from the departments of industrial and special education sorted the competencies into eight categories: (1) program development; (2) instruction; (3) knowledge of the learner; (4) community resources; (5) professional role and development; (6) management; (7) personality development; and (8) guidance.

Younie and Clark (1969) studied the personnel training needs for secondary special education personnel involved in work study programs through a review of the tasks and responsibilities found in

job descriptions of the personnel involved. Some of these included:

- (1) screening, evaluating, and approving all referrals to the program,
- (2) planning and implementing secondary curriculum, (3) teaching and coordinating all instructional activities; (4) evaluating occupational readiness, (5) correlating classroom experience with work experience, (6) planning, securing, and supervising on-the-job training situations, (7) counselling pupils and parents on social, personal, and vocational problems, (8) securing or assisting in securing job placements, (9) serving as a liason person between the school and the state vocational rehabilitation agency, (10) maintaining school and work evaluation records, (11) interpreting the work study program to school personnel and the community.

Phelps (1976) conducted a detailed formative evaluation of seven competency-based inservice modules designed for use by vocational and special educators. The modules, based on thirty-two competencies which were validated by an expert review team, focused on instructional development and on coordination of services and programming for special needs students in secondary vocational programs. The modules included: (1) Learner identification and analysis, (2) cooperative instructional arrangements, (3) instructional resources, (4) cluster and content analysis, (5) instructional planning, (6) instructional implementation, (7) evaluation of learner progress. Twenty-nine vocational and special education teachers and teacher coordinators assisted in evaluating the modules. Vocational instructors considered those competencies within the instructional

planning modules as the most important in working with the handicapped.

Schoonmaker and Girard (1975) working with Clark, conclude that it is extremely difficult to plan ahead for future manpower needs. They feel that "second-guessing" trends based on existing programs, services, and types of personnel could result in making manpower needs. As an alternative, Schoonmaker and Girard suggest another approach in identifying competencies for habilitation personnel. Along with Clark, they have developed a procedure for systematically analyzing the performance elements in a habilitation delivery model. Utilizing a two way lattice, four major functions which most habilitation personnel have in common, were identified: ((1) identify consumer and define consumer needs, (2) specify plan, (3) implement plan, (4) evaluate effects). The lattice structure was further analyzed to identify personnel training modules. These were broken down into competency areas and finally, competencies were derived. Each of the four major functions or competency areas contained some 30-50 individual competencies, organized into sequence.

As Phelps (1976) points out, this theoretical model of analyzing professional roles is similar to the major curriculum projects of the 1950's and 1960's which were used for teacher competency identification.

In analyzing the studies presented, there are apparently weaknesses. For example, in the study by Younie and Clark (1969) just because performance statements are included in job descriptions



doesn't mean these tasks are always performed. Also, some tasks quite possibly performed daily might not be included in one's job description. Research free systems, as proposed by Schoonmaker and Girard (1975), which apparently analyze the process of habilitation rules have been criticized (Travers, 1975) due to the lack of building upon what is known about a particular problem.

In summary, as pointed by some researchers, there is no clear cut evidence to suggest conclusively that identification of specific competencies produces more effective teachers, which in turn impacts on student achievement in the classroom. However, it appears that the general conclusion to be drawn from the research studies presented is that the identification and careful analysis of abilities needed by personnel is crucial to the process of developing personnel training programs. Information gleaned from such studies may ultimately provide valuable information relative to student achievement (Phelps, 1976).

Legislative implications: competencies for mainstreaming.

Legislation aimed at bringing the handicapped into the mainstream of our schools has created new roles for educators. Along with these new roles is the need for additional skills and competencies on the part of special education teachers, regular class teachers, administrators, counselors, psychologists, and other school personnel. As identified in the previous section, many studies have been conducted to determine the competencies needed to work with the handicapped. However, one important fact must not be overlooked. Most of these studies were conducted prior to the implementation of federal and state legislation



which now advocates the least restrictive environment concept, cooperative team evaluation, program planning, and cooperative instructional arrangements for educating special needs students. Competency studies and in-service programs derived from the requirements of these new mandates are virtually non-existent in the fields of vocational/special education.

One common element that can be found in analyzing the various provisions of federal and state special education legislation is the emphasis in placing the special needs student in the least restrictive environment possible. In other words, this means educating the handicapped students to the maximum extent appropriate, together with their non-handicapped peers.

The educational term used to describe this practice is called mainstreaming. Kaufman, Gottlieb, Agard, and Kukie (1975) provide a definition of mainstreaming.

Mainstreaming refers to the temporal, instructional, and social integration of eligible exceptional children with normal peers, based on an ongoing, individually determined, educational planning and programming process and requires clarification of responsibility among regular and special education administrative, instructional, and supportive personnel (p. 4).

Specific procedural regulations both at the federal and state level define the process for determining how much of the mainstream (regular education) is appropriate for handicapped students. Through a system of evaluation and program planning meetings, teachers, parents, administrators, and specialists decide what special services are needed to meet the unique needs of handicapped students.

The mainstreaming process is indeed a complex problem and one which involves more than just administrative placements for handicapped students. According to Paul, Turnbull, and Cruickshank (1977):

Mainstreaming involves changing the policies, structures, administrative behaviors, teaching practices, language and classification systems, and referral and placement procedures of the entire school system (p. viii).

In order for this concept to work, Pappanikou and Paul (1977) feel that it is necessary to mainstream the system before it is possible to mainstream the children. In other words, educators must understand the mainstream concept and the process used to implement it.

Evans, Clark, and Phelps (1975) also comment on the importance of having educators understand their new roles, and of the processes to be used in order to mainstream special needs students:

Even though cooperative projects have been funded and cooperative agreements written, the benefits of these activities have not been widely recognized, accepted, and put into practice. Teachers, counselors, consultants, coordinators, and other prospective members of the habilitation team need to overcome the personal, professional, and organizational barriers and biases which prevent and inhibit the implementation of coordinated, articulated educational experiences. Teacher education and other personnel preparation programs must focus on preparing professionals to recognize and operationalize their "team" role. Leadership is provided by the teacher educators in this area is essential to promote acceptance and practice of the team concept for delivery of programs and services (p. 6).

Thus, a review of the major provisions contained in these new federal and state legislative mandates provide a base from which to identify new competency areas and in-service programs for vocational teachers.

Right to an education. The handicapped have an equal right to vocational education services as do their non-handicapped peers. The beginning point for vocational education teachers should be an introduction to the concept of mainstreaming. Vocational teachers should be knowledgeable about the background and major provisions of federal and state laws which promote mainstreaming. Philosophical, moral, educational, and financial factors involved in these laws and mainstreaming should be addressed. According to Paul, Turnbull, Cruickshank (1977), the importance of having knowledge about mainstreaming cannot be stressed enough. They state, "Through whatever means is most beneficial, laying a strong foundation for mainstreaming means having knowledge" (p. 50).

Least restrictive environment. This provision has unlocked the doors for the handicapped who have previously been denied entrance into vocational education facilities. Identified handicapped youngsters were often discriminated against in terms of entrance into vocational programs. Those fortunate to gain access to vocational programs usually were placed in separate, below par facilities.

The least restrictive environment provision, however, has forced vocational schools to re-examine student selection processes. For many years, vocational educators, supported by the administration, rested on the dictums of the Smith - Hughes Act and only selected students who predictably could profit from vocational training. Qualified handicapped students can no longer be discriminated against solely on the basis of their handicap. Since enrollments in voca-

tional schools and programs are usually limited to a set number of students in a given program, (according to state law) fair representation of students who require special education (in proportion to incident rates for the handicapped found in general school populations, 10% - 12%) within these programs will have to be made.

Therefore, vocational education teachers should be knowledgeable about the different types of handicapping conditions and learning styles exhibited by these students. Knowledge and understanding of an individual's handicap often breaks down the myths and stereotyping that occurs in our society. The team approach to program evaluation and planning for the handicapped is a relatively new concept for many educators. As such, vocational teachers should be familiar with the process established by state regulations in regards to the process of identifying, evaluating, and planning for special needs students. As part of a Core Team, the teacher should be aware of the different types of assessments conducted by their colleagues, and even more important, how to evaluate the vocational needs of handicapped students and report the results at a team conference.

Individualized Education Plan (IEP). All students identified as being handicapped must have an individualized educational plan. This document outlines the area of need(s) and describes the special services which will be provided to the student. Since this is a key document and one which serves as a communication vehicle for all teachers working with the students, vocational teachers should be familiar with the components of the IEP. They should be familiar with

the different teaching strategies which can be utilized with specific handicapped individuals. Since teaching the handicapped becomes a shared responsibility amongst educators under the mainstreaming concept, vocational teachers will need to know how to go about establishing and implementing cooperative instructional arrangements with a variety of other school personnel.

In summary, vocational education teachers need to become knowledgeable about the process of mainstreaming handicapped students into vocational education in order to make appropriate decisions regarding placements and services for these students. Paul, Turnbull, and Cruickshank (1977) sum up the importance of providing this information to teachers who will be working with these students:

Knowledge leads to the formation of attitudes that determine behavior. Knowledge of the needs of handicapped students and of mainstreaming can lead to positive attitudes towards handicapped students--attitudes that reflect the philosophy that handicapped persons are entitled to the same opportunities for growth and development as non-handicapped persons (p. 50).

Summary. In-service training for vocational teachers in mainstreaming special needs students is urgently needed. Many teacher training programs at the university level in special and vocational education have developed separately and are now beginning to collaborate. Competency based teacher education is a current trend in preparing teachers particularly in the field of special education. Studies have been conducted in the fields of special/vocational education to identify those competencies which are perceived to be necessary in order to work with handicapped students. While these studies provide some direction for the development of in-service programs for vocational



teachers, a more fundamental need to orient these teachers to the rationale for, concept of, and procedures used in mainstreaming special needs students in vocational education has been identified.

Development of In-Service Instructional  
Materials and Programs

Much has been said about the critical need for vocational educators and other personnel to have additional competencies to meet the demands of new legislation. P.L. 94-142 requires State Education Agencies (SEA's) to develop a comprehensive system of personnel development to assure that all new, as well as currently employed, educators are properly trained. Included in this comprehensive plan for personnel development is a section on in-service training, defined as "any training other than that received by an individual in a full-time program which leads to a degree" (121a 382). While the rules and regulations further specify the specific groups this training should address (e.g., classroom teachers, parents, etc.), it leaves the details of content and strategies to the individual states.

However, Meyen (1977) issues the following cautions:

It is naive to approach the implementation of P.L. 94-142 on the assumption that the force of the law alone will make in-service training an effective vehicle for change. The history of in-service training with all of its inadequacies remains yesterday's in-service training. It is unrealistic to expect teachers who are accustomed to attending poorly delivered or inappropriate in-service training sessions to be responsive to a new thrust in in-service training merely because Congress deemed it necessary and the logic behind the presumed benefits is sound. Those responsible for delivering in-service training must demonstrate a sensitivity to real needs and a convincing capability in delivering effective and efficient in-service training (p. 2).

Hyer (1977) echoes similar concerns:

As with most attempted massive innovations in institutions such as the educational one, it is easier to mandate, and even to finance, than it is to implement successfully a desired change. Changes tend to take place in one, or at most only a few, of the links in the system chain, whereas innovations usually require system-wide changes, many of which should take place simultaneously.

In order to heed the cautions and concerns mentioned, it is necessary to ask a series of cogent questions. What constitutes a "good" or "successful" in-service program on mainstreaming? What previous attempts at planning and implementing in-service training programs have worked, and why? What is the process of developing in-service instructional materials?

In-service materials developed specifically to assist vocational teachers in mainstreaming special needs students in vocational education are sparse to say the least. In order to design appropriate programs for vocational teachers, selected models on developing in-service instructional materials will be reviewed. Additionally, existing commercial materials which emphasize mainstreaming along with a review of strategies for planning, implementing and evaluating in-service programs will be presented.

Overview of selected models. A number of models have been employed over the years to guide the development and evaluation of instructional teacher training materials. Twecher, Urback, and Buck (1972) cite the most common models which include the process of analysis, design, and evaluation. Sanders and Cunningham (1972) proposed a formative evaluation model for developing and evaluating educational

products. They have drawn together the generally known information sources, techniques, and procedures in "A Structure for Formative Evaluation in Product Development" (Phelps, 1976). Sanders and Cummingham cite four distinct steps in their model: pre-developmental evaluation, evaluation of objectives, interim or developmental evaluation, and product evaluation.

Popham and Baker (1971) list a number of important guidelines to follow in their model during the process of product development, tryout, and revision.

#### Product Development

1. Supply the learner with appropriate practice during an instructional sequence.
2. Provide the learner with the opportunity to obtain knowledge of results.
3. Insure that the instructional product contains provisions for promoting the learner's interest in the product.
4. Avoid the development of an inflexible strategy in approaching product development tasks.
5. If teachers are involved in the instructional process make their participation as replicable as possible.
6. If the product is to be used in the classroom, develop it so that teacher attitudes toward the product will be positive.
7. Select an instructional medium in light of the desired instructional objectives, intended target population, cost, and other relevant considerations.

#### Product Tryout

1. Avoid an extremely small or extremely large number of learners when field testing the product.

2. Verify that the procedures associated with the use of the product result in a replicable treatment.
3. Summarize data from field trials for use by those who will revise the product.
4. Use those involved in field testing the product to collect data; they should not, themselves, engage in drawing inferences from the data.

#### Product Revision

1. Base product revisions on legitimate inferences from the field test data.
2. Make primary inferences regarding product revision from criterion data.
3. Consider learner response data during the program as a valuable source of cues for product development.
4. Do not allow loss of face for the initial developer to be associated with revisions of an instructional product.
5. Perform operations analysis (an evaluation of the development and evaluation process used) at the conclusion of all systematic development of instructional products (pp. 167-168).

A comprehensive system approach to developing instructional materials has been proposed by Thiagarajan, Semmel, and Semmel (1974) in their book, Instructional development for training teachers of exceptional children, A sourcebook. Maynard Reynolds, Director of the Leadership Training Institute in Special Education, states:

The purpose of this Sourcebook is to help the teacher educator use his hard won expertise to produce instructional modules which can be shared with colleagues for the improvement of the field. The Sourcebook may well be the first resource of its kind in any area of education (p. vi).

Thiagarajan, Semmel, and Semmel (1974) have labeled their system approach the Four D Model because it divides the instructional development process into four stages. These stages are comprised of:

Define, Design, Develop, and Disseminate.

Define - consists of analyzing the problem facing the instructional developer through a series of steps: learner analysis, task analysis, concept analysis, and then specifying the instructional objectives into behavioral terms.

Design - consists of developing criterion referenced tests based on the behavioral objectives previously developed and then selecting the media, and format, and designing the material.

Develop - consists of conducting formative evaluation, trying out the materials by using expert appraisals or developmental testing with trainees. Revisions based upon the trainees' responses and reactions occur at this stage.

Disseminate - includes final revisions, packaging, diffusion, and adoption of the materials by the intended audience.

In a comprehensive review (Phelps, 1976) found that much of the literature on the development and assessment of instructional packages focused on the large scale curriculum projects initiated during the late 1950's and 1960's such as the Biological Sciences Curriculum Study (BSCS) and the Industrial Arts Curriculum Project. While the major thrusts of these projects were not intended for teacher training, Phelps feels that results of the project's formative evaluation have significant implications for the development of educational curriculum and instructional products of all types. Steele (1974) outlined six major sources of evaluation data in conducting a formative evaluation to guide the revision of a BSCS unit. He found



that the most useful data for revision came from teachers who were selected for participation in the study.

Meyer and Alltman (1973) have listed a sequential developmental model to design a competency based teacher training program. The sequence is: (1) Competency identification; (2) Competency organization; (3) Specifications process to reduce competencies into training components; (4) Module development activities; (5) Module management options alternative to traditional lecture model; (6) Evaluating trainee competence through performance assessment; (7) Providing feedback on performance to trainees.

Review of in-service materials. A review of a number of recently developed in-service instructional training programs in vocational and special education reveals several common characteristics. While most of the programs on the concept of mainstreaming, were designated for use by regular classroom teachers at the elementary level, a review of the organization, utilization, format and content was conducted for the purpose of adapting a program for vocational teachers.

In-Service Package	Developer/Publisher
1. Instructional Resource Guide for Special Needs Learners	Phelps/University of Illinois
2. Mainstreaming the Handicapped in Vocational Education	Weisgerber (ed.)/ American Institutes for Research
3. AMIDS In-Service Teacher Training Workshop	Link Educational Laboratories
4. Teacher Training in Mainstreaming	Selected Projects/ Epie Institute

The selection of these in-service programs was based on a literature review and potential adaptability for use by vocational teachers.

The packages have a number of common characteristics:

- 1) specification of behavioral or performance objectives to be mastered by the trainees
- 2) content is broken down into units or modules for instruction
- 3) learning activities are included in the modules
- 4) assessment of participant skills via multiple choice, matching, or fill-in-the-blank items was included
- 5) modules were field tested prior to adoption
- 6) content of materials included overview of mainstreaming, legislative mandates, and areas of assessment and planning for handicapped students.

An area lacking both in the reserach and in the information included in these in-service packages was the establishment of guidelines and criteria for making decisions regarding content evaluation of the program during its formative stages. Few rating forms or criteria for revising the material by the participants were found.

Strategies for in-service education. Published reports of declining student competence in basic skills, coupled with the growing concern of the lack of community support for increased educational expenditures which produce questionable results has provided the impetus for re-thinking the potential value of staff development programs.

Additionally, a general surplus of teachers along with a series of mandated programs and teaching innovations have prompted university teacher training programs, state and local education agencies to focus on developing the knowledge and skills of teachers already employed in the field (Cochran, 1975; Hyer, 1977; Meyen, 1977).

The need for in-service education has been demonstrated due to (1) lack of substantially new teachers being employed; (2) knowledge explosion in the twentieth century and (3) new movements and approaches in education (Toffler, 1971; Edelfelt, 1974; Heath, 1974; McCormack, 1976). However, criticisms of traditional approaches to designing and implementing in-service programs have been documented (Rubin, 1971; Yeatts, 1976; Gorman and Hamilton, 1975; Meyen, 1977; Goodlad, 1969). The attack is centered on the lack of involvement of teachers in the planning and implementation of these programs as well as the traditional manner in which in-service education has been delivered (college course which might not have been germane to teachers' needs).

Teachers and the professional organizations to which many of them belong are vitally concerned over the present state of in-service education. In a study published by the National Education Association (NEA) in 1975, in-service education was clearly cited as the most neglected of professional development activities. The report charged that " . . . in-service education does not often deal directly with helping teachers improve their skills in instruction or become more adept at planning and organizing curriculum" (p. 14).

The above sentiments explain what in-service education does not do. What exactly do teachers want in the form of in-service education? Basically, as set forth by the opinions of teachers, the NEA has adopted a few general principles as cited by Meyer (1977).

1. Base the instructional and professional development on the needs of teachers as teachers see them.
2. Give teachers a preeminent voice in determining the content of their own in-service education program, and in helping to find the ways and means for their learning that are most meaningful to them in acquiring new skills, in gaining new insights, and in acquiring relevant knowledge.
3. Relate the in-service education to the day-to-day job needs.
4. Make the in-service education a part of the teacher's job assignment.
5. Finance from public funds the acquiring of institutionally required new skills. These are the responsibility of the public and should not be paid for from teachers' own earnings.
6. Conduct in-service education during school time as part of the teacher's day (p. 9).

Support for school-based, individualized, teacher directed in-service programs has received increased attention. Applegate (1974) in a state-wide survey of 110 Illinois occupational teachers and administrators, found that the most typical in-service activity was the on-campus graduate course at a teacher training institution. However, the recipients ranked the on-campus courses eighth among nine alternative in-service delivery models. The first was off-campus course offerings.

Gorman and Hamilton (1975) report a list of desirable characteristics for in-service programs from pilot testing a series of 118

performance-based vocational teacher education modules at Oregon State University, University of Missouri, and Temple University. These include: (1) instruction which is individualized and personalized; (2) feedback to guide the individual's learning experience; (3) a systematic approach to instruction; (4) emphasis on exist, not entry, requirements; (5) modularized instruction; and (6) student is held accountable for performance.

Lawrence, et al (1974) in a study analyzed and compared the findings of 97 in-service programs for special and vocational education teachers. The following represents the major findings of the study.

In-service programs in schools and on college campuses are equally capable of affecting teacher behavior, but the school settings tend to be capable of influencing more complex behavior changes in teachers (p. 8).

Teacher attitudes are more likely to be influenced in school-based than in college-based in-service programs (p. 9).

School-based programs in which teachers participate as helpers to each other and planners of in-service activities tend to have greater success in accomplishing their objectives than do programs which are conducted by outside personnel without the assistance of teachers (p. 11).

School-based in-service programs that emphasize self-instruction by teachers have a strong record of effectiveness (p. 12).

The success rate of in-service education programs is substantially higher when change in teaching behavior is the criterion rather than when subsequent change in pupil behavior is the criterion (p. 13).

In-service education programs that have differentiated training experiences for different teachers (that is are "individualized") are more likely to accomplish their objectives than are that have common activities for all participants (p. 14).

In-service education programs in which teachers share and provide mutual assistance to each other are more likely to accomplish their objectives than are programs in which each teacher does separate work (p. 15).



Teachers are more likely to benefit from in-service education activities that are linked to a general effort of a school than they are from "single shot" programs that are not part of a general staff development (p. 15)

Teachers are more likely to benefit from in-service programs in which they can choose goals and activities for themselves, as contrasted with programs in which the goals and activities are preplanned (p. 15).

Self-initiated and self-directed training activities are seldom used in in-service education programs, but this pattern is associated with successful accomplishment of program goals (p. 15).

#### Summary of the Review of Related Literature

The review of related literature has established the need to provide vocational teachers with in-service programs on mainstreaming special needs students in vocational education. Included was an overview of federal and state legislation pertaining to the handicapped, research studies on programs to prepare teachers for the handicapped, and a review of the development of in-service instructional materials and programs. This has provided a knowledge base and a frame of reference in which to develop a competency-based in-service program for vocational education teachers in mainstreaming special needs students in vocational education.

## C H A P T E R   I I I

### METHODOLOGY

This chapter will include a description of the development, implementation, and evaluation of a competency-based in-service module program. Also included is a description of the selected instruments developed for this study, as well as a description of the selection and background data of the in-service participants, chronology of the in-service program, and method of data collection and data analysis.

A brief summary of the five modules is included. The complete set is on file at the Center for Occupational Education, University of Massachusetts, Amherst, Massachusetts.

#### Development of the Competency-Based In-Service Module Program

Five individual modules were developed for this study according to a design proposed by Thiagarajan, Semmel, and Semmel (1974). Their model for developing instructional programs and materials to prepare teachers of exceptional children was adapted in the following sequence.

- (1) Define - consisted of analyzing the problem facing the instructional developer through a learner analysis, task analysis and then specifying instructional objectives into behavioral terms.

The first step involved conducting a learner analysis to identify the unique problems faced by vocational teachers in working with handicapped students. A number of methods were used to identify the problems. First, an ERIC search was conducted to determine the state of the art in preparing vocational teachers to work with the handicapped. The search revealed that minimal efforts had been made, and that this was an emerging field for teacher educators. Second, written contacts were made and replies received from a number of educators who were initiating programs in their field. Third, six commercially prepared field-based packaged materials relating to this topic were identified through the ERIC search and previewed. Fourth, the experiences of this writer provided direct line experiences in helping to identify the problems faced by vocational teachers in working with handicapped students. These reviews led to the conclusion that a program based on introducing the rationale for, concepts of, and procedures used in mainstreaming special needs students in Massachusetts was urgently needed.

The next step involved identifying the broad topics or units involved in understanding the mainstreaming concept and the procedures for its implementation. This was accomplished through a review of the various federal and state special education laws and identifying the pertinent aspects related to mainstreaming. Then, a review of the procedures as outlined in the Massachusetts Special Education Act, Chapter 766, was conducted. These two reviews led to the identification of five main topics or modules.

The next step involved delineating the major concepts under each module and breaking them down further into sub-concepts or sub-skills.

Finally, a set of instructional objectives or competencies was specified under each of the modules.

- (2) Design - consisted of developing a test based on the behavioral objectives previously identified and then selecting the media and format to be used, and then developing the material.

The purpose of this stage was to develop the module material. A knowledge test was constructed based upon the competency objectives. Printed material was selected as the medium for the modules due to its versatility. Printed material was easy to develop, duplicate, and disseminate with minimal cost. More importantly, it met the criteria of self-pacing, a major feature of the in-service program. Finally, print material can be disseminated quite easily and adopted in whole or modified by other teacher educators to suit their own particular needs.

Choosing a format and writing the material was the next step. The format consisted of basically a self-instructional, self-paced model with competencies stated at the beginning of each model, related content material, and workbook exercises to reinforce concepts introduced in the text. The actual writing of the modules was done with the following items in mind: subject matter competence of the vocational teachers, attitudes, level of language, relationship between stated competencies and content, definition of terms available, direc-

tions clear and easily understandable, content sequenced properly, workbook exercises reinforced content material, and supplementary information provided.

Since the concept of special education, mainstreaming, and the related terms and procedures for integrating handicapped students are new to most vocational teachers, an effort was made to include only essential information. Supplementary information was included at the end of each module for further references. Also, vocational teachers have expressed negative attitudes in the past about including the handicapped in their programs. Therefore, a conscious effort was made throughout the modules to stress the positive qualities of the handicapped, their right to vocational education (less able doesn't mean less worthy) and the notion handicapped students can succeed provided cooperative planning is done from a number of school personnel. In other words, vocational teachers alone are not expected to mainstream special needs students. It is a team effort.

- (3) Develop - consisted of conducting a formative evaluation of the modules by trying out the materials with trainees.

The purpose of this stage was for vocation teachers to formatively evaluate the modules in a field-based setting. A module evaluation form was developed to assist the teachers in this process and to standardize the information collected. Additionally, a knowledge test and attitude questionnaire were developed and administered to the teachers before and after the in-service program to determine whether their attitudes would improve and knowledge would increase towards mainstreaming special needs students in vocational education.



### Instrumentation

A number of instruments and forms were developed and used to collect narrative statements and numerical data from the participants in order to answer the questions and predictions generated for this study.

Modules. Five modules were developed and used in the in-service program. Each module included a title page with approximately three to five competency objectives which participants were expected to acquire upon completion of the module. Case studies pertinent to each module were included to provide realistic and meaningful examples of mainstreaming situations.

Instructions were given at various points in each module to complete workbook exercises (averaged three per module). The exercises were designed to reinforce concepts presented. An answer key was provided for each exercise which enabled participants to obtain immediate feedback on their responses.

Supplementary information was included at the end of each module such as definition of terms, description of other resources on the topic, or examples of completed forms which were presented in the body of the modules. A description of the individual modules will now be presented.

Module 1. Mainstreaming students with special needs in vocational education: An introduction. At the conclusion of this module, each participant should be able to:

1. Select a comprehensive definition of mainstreaming.
2. Identify the factors which have helped and hindered the practice of mainstreaming.
3. Identify the preferred term used in Massachusetts to describe students formerly labeled as retarded, emotionally disturbed, etc.
4. Delineate the major provisions of the following four legislative acts: P.L. 94-142 (Education for All Handicapped Childrens Act); P.L. 94-482 (Vocational Educational Amendments); Section 503, 504 (Rehabilitation Act); Chapter 766 (Massachusetts Special Education Law).
5. Recognize the definition of students with special needs as defined by Chapter 766.

The purpose of this module is to provide an orientation to the concept of mainstreaming. The reasons behind the mainstreaming movement, implications for vocational teachers, and a comprehensive definition is presented and explained.

The major provisions of federal and state laws which have promoted this concept are reviewed. Definitions of the different handicapping conditions identified by P.L. 94-142 are discussed and contrasted with the definition of "students with special needs" utilized under the Massachusetts Special Education Law, Chapter 766. Self correcting workbook exercises on attitudes, definitions of handicapped, pros and cons of mainstreaming are presented. Supplemental information on the specific handicapped categories under P.L. 94-142 and a mainstreaming model are available.

Module 2. An orientation to students with special needs. At the conclusion of this module, each participant should be able to:

1. Match the general behavioral and learning characteristics common to specific handicapped groups.

2. Identify the basis which students with special needs are identified.
3. Identify several ways to prepare yourself to receive a student with special needs into your vocational program.

The purpose of this module is to provide an orientation to the general behavioral and learning characteristics of handicapped students. The eight categories identified under P.L. 94-142 are presented and discussed. Incidence rates, causes of handicapping conditions, and examples of learning problems often associated with individual handicapped categories are reviewed. Additionally, examples of some commonly held myths are refuted by a fact section which enables the vocational teacher to establish a knowledge base regarding students who are handicapped.

Workbook exercises are provided in a number of areas including matching behavioral and learning characteristics to specific handicapped categories, and working through a case study which includes placing a handicapped student into a vocational program.

Finally, a section on how to prepare oneself to meet the needs of a handicapped student in a vocational program is provided together with a learning exercise. This includes how to conduct a shop survey to eliminate potential barriers, and how to prepare the students to accept the handicapped learner.

Module 3. Mainstreaming the student with special needs in vocational education: A team approach. At the conclusion of this module each participant should be able to:

1. Identify the members of the Core Evaluation Team with whom you, as the vocational teacher, may be working.

2. List the ingredients for developing and maintaining cooperative relationships with other school personnel.
3. Identify the rationale for developing cooperative relationships with other school personnel in evaluating, programming and teaching students with special needs.
4. Identify the types of cooperative instructional arrangements which can be developed for improving and coordinating instruction for students with special needs.
5. Identify the special needs indicators which can be used to assist team members in developing learning profiles.

The general purpose of this module is to introduce vocational teachers to the team concept of evaluating, planning, and teaching students with special needs. The team members, usually members of the school support staff, are identified and their individual roles thoroughly reviewed. Methods of establishing and maintaining cooperative relationships to support vocational teachers who work with handicapped students are explored. Examples of cooperative instructional arrangements which vocational teachers can initiate with these team members to assist them in teaching the handicapped are presented. For instance, vocational teachers can provide special education teachers with shop material to help handicapped students understand the concepts presented in the shop environment. An exercise which provides vocational teachers an opportunity to identify these cooperative teaching arrangements is presented to reinforce the concept. Finally, a specific set of special needs indicators are identified which vocational teachers can utilize to better assess the program needs of handicapped students. These include a review of the following skills: cognitive, verbal, psychomotor, language, quantitative, and perceptual.

Module 4. Assessing the student with special needs in vocational education. At the conclusion of this module each participant should be able to:

1. List the general guidelines emphasized by federal and state laws used to assist school personnel in the identification of students with special needs.
2. Identify the specific type of assessments conducted by individual members of the Core Evaluation Team.
3. Identify three methods of obtaining information about a student's vocational skills or aptitudes.
4. State the difference between a process and product assessment.
5. List three ways of recording student performance during a vocational evaluation.

The purpose of this module is to provide an orientation to the specific evaluation procedures which can be utilized to determine specific vocational needs of handicapped students. General guidelines emphasized by federal and state laws to assist school personnel in identifying special needs students are reviewed. Also, the specific areas of assessment conducted by the various school personnel are presented to give vocational teachers a working knowledge of the types of information they uncover in this evaluation. Most important, information about how to conduct a specific vocational assessment is presented for vocational teachers along with some sample forms which can be used to record the results of the assessment. For example, vocational teachers are shown how to review a student's folder, obtain diagnostic information from other teachers through interviewing techniques, and how to observe a student's strengths and weaknesses during a performance assessment.



A case study which involves a vocational evaluation of a student is reviewed. A series of questions is presented under the following areas to determine if there should be a modification in the assessment in light of a student's handicap: physical demands, visual skills, auditory/language skills, intellectual skills.

Module 5. Teaching strategies for students with special needs in vocational education. At the conclusion of this module each participant should be able to:

1. State the prerequisites for teaching students with special needs.
2. Identify the different learning modalities exhibited by students.
3. State the factors which should be considered prior to selecting a teaching strategy.
4. Identify the different teaching strategies that can be used with handicapped students.
5. Identify the elements contained in an Individual Educational Plan.

The purpose of this module is to present basic information regarding the specific learning styles exhibited by handicapped students, and to identify the various teaching strategies or curriculum modifications which can be employed. Various frustration exercises are provided to simulate to a small degree the frustration that handicapped students feel when the task is not geared to their particular learning style. A variety of teaching strategies are mentioned which range from teacher directed oral presentations to peer tutoring. These are presented with the idea of having the vocational teacher match the teaching strategy with the student's particular learning

style. A general learning style and matching teaching approach is presented in the workbook for reference purposes. For example, students with limited intellectual ability require instruction which is presented in a concrete, multi-sensory fashion. The material must be divided into small segments, sequenced properly, and a lot of time devoted to practice and drill. Finally, a case history is used to illustrate the proper selection of a teaching strategy based on a student's identified handicap and learning style.

Competency identification and needs assessment questionnaire. These two items were included on one form. The Competency Questionnaire (Appendix A) consisted of nineteen competencies identified during the process of developing the modules. The vocational teachers were asked to rate each competency on a scale ranging from unimportant to extremely critical. The central question addressed was: "How important is this task in mainstreaming special needs students in vocational education?" An additional question next to the rating scale for each competency served as a Needs Assessment for determining whether the respondents felt they needed more information about the task. The participants responded to the question, "Do you feel you need to know more about the task?" and rated each task "Yes, much more," "Yes, a bit more," or "No."

Knowledge test. A test (Appendix B) was developed and used as the primary instrument to assess the knowledge level of the participants before and after the in-service program. The test consisted of one

hundred and five possible responses, and covered all of the competency areas specified in each module. The questions consisted of multiple choice, matching, and fill-in-the-blank items.

Attitude survey. An Attitude Survey (Appendix C) was developed and used as the primary instrument to assess the attitude change of the participants before and after the in-service program. The survey consisted of eighteen questions aimed at detecting the participants' feelings with respect to: the right of the handicapped to vocational education, willingness of the participants to adopt programs to meet the needs of the handicapped, and issues of safety and peer acceptance of the handicapped.

Module feedback form. The Module Evaluation Form (Appendix D) was developed and used as the primary instrument to evaluate the modules. The participants utilized this instrument upon completion of a module to provide evaluative feedback on specific aspects of the module. The form was broken down into five areas: module objectives, subject matter content, workbook exercises, section for narrative comments, and total summary evaluation section. The scale ranged from Strongly Agree to Strongly Disagree, with a comment section for each item which was rated by the participants.

Participant information form. This form (Appendix E) was developed to provide information regarding the level of educational training, previous work experience, and extent of involvement with mainstreaming

handicapped students either through school experiences or professional coursework or in-service training.

### Selection and Description of the In-Service Participants

The population for this study was identified as currently employed vocational teachers in the Commonwealth of Massachusetts. Since one of the major purposes of the study was to conduct a formative evaluation of a competency-based in-service module program, a number of factors became readily apparent in selecting the vocational teachers for this study. First and most important, in order to attribute, to a certain extent, any knowledge gains to the treatment, vocational teachers in the study had to have little, if any, previous experience or preparation in mainstreaming. Second, since no monetary compensation was available, vocational teachers had to volunteer to participate in the study. Third, only a limited number of teachers could participate due to the cost involved in developing and duplicating the materials.

Smith Vocational-Agricultural High School located in Northampton, Massachusetts was selected after a review of the area vocational schools in Western Massachusetts. Smith School offered sixteen vocational programs to six hundred and fifty one students during the 1978-1979 school year with two students being reported as handicapped (Massachusetts State Department of Education, 1979). Discussions with the Superintendent Director of Smith indicated that no students had individual educational plans under Chapter 766. The

Director further indicated that his staff had minimal, if any, experience with mainstreaming special needs students.

A meeting was held with the Superintendent-Director of Smith and the Administrator of Special Education for the Northampton School System on December 7, 1978. As a result, this writer spoke at a scheduled curriculum day to the school staff (Appendix F) on January 11, 1979. To solicit volunteers for the program, a discussion was held describing the focus of the in-service program and the approximate time commitment required of each participant. Out of a school staff of sixty-three teachers, thirty-seven (over 50%) indicated their intent to participate in the in-service program through a sign-up sheet (Appendix G). However, since the program was limited to only vocational instructors, seven academic teachers had to be dropped. Five more vocational teachers due to other commitments could not participate, leaving a total of twenty-five vocational teachers. Since no monetary compensation was available for the vocational teachers, arrangements were made with the Northampton School Administration and the State Department of Education to allow the participants to satisfy their professional development responsibilities under Chapter 74 upon completion of the in-service program on mainstreaming (Appendix H).

Background data on the vocational teachers who participated in the study is presented in Table 1. The complete list of teachers and their subject specialization who participated in the study is presented in Appendix I.



TABLE 1  
PARTICIPANT INFORMATION

1. Age	N	%
20-26	2	8%
27-33	4	16%
34-40	5	20%
41-over	14	56%
2. Years of Teaching Experience	N	%
1-2	2	8%
3-4	8	32%
5-7	4	16%
10-14	5	20%
15 or more	5	20%
3. Regular Education Training	N	%
Below Bachelors	11	44%
Bachelors	9	36%
Bachelors + 15 credits	2	8%
Masters	3	12%
4. Vocational Areas	N	N
Agriculture	1	4%
Automotive	1	4%
Carpentry	4	16%
Cosmetology	2	8%
Culinary Arts	1	4%
Data Processing	2	8%
Drafting	1	4%
Electrical	1	4%
Electronics	2	8%
Home Economics/ Child Study	4	16%
Industrial Arts	2	8%
Practical Nursing (LPN)	1	
Machine	1	4%
Metal Fabrication	1	4%
Guidance	1	4%

TABLE 1 (cont'd)

5. Involvement with Special Needs Students	#		#	
	Yes	%	No	%
a) is a parent of a special needs student	3	12%	22	88%
b) previous teaching ex- perience with special needs students	13	52%	12	48%
0-2 years	7	54%		
3-5 years	3	23%		
6-8 years	2	15%		
9-11 years	1	8%		
c) participation in core evaluation meetings	Yes	%	No	%
under Chapter 766	6	24%	19	76%
1-2 meetings	3	50%		
3-5 meetings	2	33%		
6-8 meetings				
9-11 meetings				
12-15 meetings	1	17%		
6. Educational Training Relative to Working with Special Needs Students		N		%
a) no training whatsoever		21		84%
b) college course(s)		3		12%
1) undergraduate		1		4%
0-3 credit hours		1		
2) graduate		2		8%
0-3 credit hours				
4-9 credit hours		1		
10-15 credit hours		1		
c) in-service workshops conducted by the school system		1		4%
d) conferences, workshops attended outside the school system		0		0%

The significant findings from the Participant Information Survey are summarized below:

- \* Eighty-four percent (84%) of the vocational teachers had no previous educational training relative to working with special needs students.
- \* Fifty-two percent (52%) of the vocational teachers had previous teaching experience with the handicapped.
- \* Seventy-six percent (76%) of the vocational teachers never participated in a core evaluation under Chapter 766. Of the seven who reported participating, three teachers attended between 1-2 meetings, two teachers attended between 3-15 meetings, while one teacher reported attending 12-15 meetings.
- \* Fifty-six percent (56%) of the vocational teachers were over forty-one years of age.
- \* Fifty-six percent (56%) of the vocational teachers had less than eight years of teaching experience.
- \* Forty-four percent (44%) of the vocational teachers did not have a bachelors degree.
- \* Twelve percent (12%) of the vocational teachers were parents of a special needs student.

Chronology and Description of the  
In-Service Module Program

This section will provide a chronology of the in-service program conducted at the Smith Vocational High School over a period of four months during the 1978-1979 school year, and outline the organization and format of the competency-based in-service program. Table 2 provides a chronology of the development and implementation of the program.

The in-service program consisted of seven sessions lasting approximately two and one half hours per session (17 1/2 hours in total). The workshops were held at Smith Vocational High School between March 12, 1979 and April 23, 1979 from 2:45 P.M. until 5:15 P.M.

This investigator served as the facilitator for the workshops. The vocational teachers were broken into five teams, with five teachers to each team. A chairperson for each team was assigned from a list provided by the facilitator at the first meeting (Appendix J). Teachers rotated being chairperson of their team in the order their name appeared on the list. Each teacher was able to be a chairperson since there were five modules.

The workshops were organized in the following manner. The facilitator introduced the module, read the competency statements to the group, and then passed out a copy of the module with the accompanying workbook exercises to each teacher.

A statement reviewing the purpose of the workshop was read

TABLE 2

CHRONOLOGY OF THE COMPETENCY-BASED IN-SERVICE  
MODULE PROGRAM

Date	Activity
December 7, 1978	Investigator met with the Superintendent-Director of Smith Vocational School and the Administrator of Special Education from the Northampton Public School System to discuss implementing the proposed in-service program at Smith.
December 12-15, 1978	Investigator conducted a survey with Smith faculty to determine the appropriateness of the teachers for the study.
January 11, 1979	Investigator met with the Smith faculty during a curriculum day to discuss the proposed in-service program. He obtained thirty-seven volunteers to participate in the program.
January 31, 1979	Investigator met with the twenty-five vocational teachers who selected and/or volunteered for the program. The investigator administered the Competency Identification and Needs Assessment Questionnaire to the participants.
December, 1978- February, 1979	Investigator developed and refined the competency-based in-service module program according to the design proposed by Thiagarajan, Semmel and Semmel (1974).
March 5, 1979	Investigator administered Attitude Survey and Knowledge pre-test to the vocational teachers and provided the participants with an overview of the program.
March 12, 1979	Participants completed Module 1, "Mainstreaming Students with Special Needs in Vocational Education: An Introduction" and utilized the Module Feedback Form to evaluate the module.



TABLE 2 (cont'd)

Date	Activity
March 19, 1979	Participants completed Module 2, "An Orientation to Students with Special Needs" and utilized the Module Feedback Form to evaluate the module.
March 26, 1979	Participants completed Module 3, "Mainstreaming the Student with Special Needs in Vocational Education: A Team Approach" and utilized the Module Feedback Form to evaluate the module.
April 2, 1979	Participants completed Module 4, "Assessing the Student with Special Needs in Vocational Education" and utilized the Module Feedback Form to evaluate the module.
April 9, 1979	Participants completed Module 5, "Teaching Strategies for Students with Special Needs in Vocational Education" and utilized the Module Feedback Form to evaluate the module.
April 23, 1979	Investigator administered Attitude Survey and Knowledge post-test to the vocational teachers. The results of the Knowledge pre-test were shared with participants to provide feedback on their growth during the in-service program.
May 15, 1979	Investigator met with the administration from Smith Vocational School to provide an overview of the in-service program and of the issues that surfaced during the program. The investigator provided some general suggestions regarding areas of future in-service programs for the staff at Smith.

aloud at each meeting (Appendix K) to remind the vocational teachers of their role to critically evaluate the modules according to the criteria established in the Module Feedback Form. This form was reviewed in detail at the first and subsequent meetings. Organized in their teams, the vocational teachers reviewed the module, completed the workbook exercises, and rated the module. Instructions allowed them to use the module individually, or in small groups. The facilitator answered questions and generally provided assistance upon request to clarify directions in the module. The chairperson's duties included initiating discussion among members of his or her team upon completion of the module, and for orally summarizing the comments from his or her team to the whole group about the positive and negative aspects of the module. If completed, the Module Feedback Forms were returned to the facilitator at the end of the meeting. To allow for individual differences, some vocational teachers kept the Module Feedback Form and returned at the next meeting. This format was kept consistent throughout the in-service program.

At the last meeting, the investigator administered the Attitude Survey and Knowledge post-test to the vocational teachers. After handing in both instruments, vocational teachers were given an opportunity to review the results of their Knowledge pre-test in order to provide them with some feedback on the growth they might have made during the in-service program.

### Data Collection

The organization of the workshops and a rigid record keeping procedure resulted in a 100% return of all instruments and forms used in the study. Each of the twenty-five vocational teachers completed and turned in the following material:

- 1 Participant Information Questionnaire
- 1 Competency Identification and Needs Assessment Questionnaire
- 1 Attitude Survey (pre)
- 1 Knowledge Test (pre)
- 5 Module Feedback Forms
- 1 Attitude Survey (post)
- 1 Knowledge Test (post)

### Data Analysis

In order to handle the large amount of information generated from this study, responses from all of the instruments and forms were transferred directly to computer coding sheets. Computer cards were keypunched and the data was processed and analyzed by using the Statistical Package for the Social Sciences (SPSS) by Nie, Hull, Jenkins, Steinbrenner, and Bent (1975). The data was analyzed in various ways via the SPSS program to answer the questions and predictions raised in this study.

Descriptive statistics were utilized in summarizing data from the Competency Identification and Needs Assessment Questionnaire,

Knowledge Test, Attitude Survey, and the Module Feedback Form.

Frequency totals, means, standard deviations, and percentages were the primary statistics used.

Non parametric statistics were employed to address the predictions made in the study for primarily two reasons: (1) the small number of subjects in the study, and (2) the lack of previous information to suggest that the data would be distributed in a normal fashion. The Wilcoxon Matched-Pairs Signed Rank Test was employed to determine the changes in responses on the Knowledge Test and Attitude Survey from before to after the in-service program. Additionally, the Spearman Rank Correlation Coefficient test was utilized to see if there was a correlation between vocational teachers' ratings of individual module components and the total summary module evaluation for each of the five modules.

## C H A P T E R   I V

### FINDINGS OF THE RESEARCH

The findings of the research resulting from statistical analysis of the raw data obtained in the study are presented in Chapter IV. A series of questions and predictions identified in Chapter I served as the major framework for the study in terms of developing, implementing, and evaluating a competency-based in-service module program for teachers of vocational education in mainstreaming students with special needs. This chapter is organized to present the findings in relation to the specific questions and predictions made in the study. Included are: results of the mainstreaming competencies and needs rated by vocational teachers, five module evaluations, relationship between individual module components and the total summary module evaluations, and the pre-test, post-test results of the changes in vocational teachers' attitudes towards and knowledge of mainstreaming. The raw data on the Competency Identification and Needs Assessment Questionnaire, Module Evaluations 1-5, Attitude Survey and Knowledge Test are located in the Appendix (L-0).

#### Competency Identification and Needs Assessment Questionnaire

A total of nineteen competencies were identified as a result of the literature review and during the process of developing the in-service program according to the model outlined by Thiajargan, Semmel,



and Semmel (1974). Vocational teachers, through a questionnaire, were asked to identify those competencies which they felt were important in mainstreaming. In response to the question, "How important is this competency or task in mainstreaming special needs students in vocational education?," vocational teachers utilized a five point scale ranging from unimportant to extremely critical. In addition, the vocational teachers were asked to state next to their rating of the individual competencies whether they felt they needed to know more about the task. The categories included, "Yes, much more," "Yes a bit more," and "No." This served as a needs assessment instrument in terms of determining the extent vocational teachers wanted more information on mainstreaming.

The results of the Competency Identification and Needs Assessment Questionnaire are presented in Table 3.

The data from the competencies ratings were summarized, and means and percentages were computed. As indicated in Table 3, categories 1 and 2 were combined (unimportant), category 3 (important) was left intact, and categories 4 and 5 were combined (extremely critical) to produce percentage ratings of the three major areas which vocational teachers responded to. Categories 4 and 5 were combined to rank order the competencies. On the Needs Assessment part, the category "Yes Much More" was used to rank order the needs of vocational teachers.

TABLE 3  
RANK ORDER, MEANS AND PERCENTAGE RATINGS  
OF COMPETENCIES AND NEEDS  
N = 25

Competencies or Tasks for Vocational Teachers with Special Needs Students	Mean	Rank Order 1	How important is this competency or task in mainstreaming special needs students in vocational education?					Rank Order 2	Do you feel you need to know more about this task?	
			Unimportant 1	Important 2	Important 3	Extremely Critical 4	Extremely Critical 5		Yes, Much More	No
1. Identify the behavioral and learning characteristics of special needs students.	4.60	1	0		12		88	4	64	36
2. Understand state and federal legislation on the education of Special Needs Students (P.L. 94-142, Chapter 766, P.L. 94-482, 504) and understand how it affects your role as a vocational teacher.	3.24	11	28		32		40	2	72	24
3. Identify the definition of mainstreaming as it pertains to the inclusion of special needs students in vocational education.	3.48	10	8		48		44	10	44	48
4. Identify the rationale and factors which have helped and hindered the practice of mainstreaming.	3.40	6	20		40		40	10	44	52

TABLE 3, cont'd.

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Rank Order <sup>1</sup>	Mean	Rank Order <sup>2</sup>	Do you feel you need to know more about this task?		
	Unimportant 1	Important 2	Important 3	Extremely Critical 4	Extremely Critical 5				Yes, Much More	a Bit More	No
5. Recognize the definition of students with special needs as defined by Chapter 766.		16	28	56		7	3.56	12	40	48	12
6. Identify several ways to prepare yourself to receive a student with special needs into your vocational program.		4	20	76		4	4.16	7	56	44	0
7. State the criteria in which students with special needs are identified.		16	32	52		9	3.36	10	44	52	4
8. Collaborate with other educators, specialists, and parents in evaluating the students' educational needs.		4	13	83		2	4.25	6	58	25	17
9. Identify the special needs indicators which can be used to assist team members in delineating students' needs		25	20	55		8	3.29	13	36	50	12

TABLE 3, cont'd.

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Rank Order <sup>1</sup>	Mean	Rank Order <sup>2</sup>	Do you feel you need to know more about this task?	
	Unimportant 1	Important 2	Important 3	Extremely Critical 4	Extremely Critical 5				Yes, Much More	Yes, a Bit More
10. Identify the types of cooperative instructional arrangements which can be developed with other school personnel for improving and coordinating instruction for students with special needs.		20	20	60		6	3.56	9	48	44
11. Identify the specific type of assessments conducted by individual members of the Core Evaluation Team.		28	32	40		11	2.92	11	42	42
12. Delineate the vocational teacher's role in evaluating the vocational needs of special needs students.		16	32	52		9	3.64	11	42	42
13. Identify the different learning styles exhibited by special needs students.		4	16	80		3	4.36	1	76	20
14. Determine the methods of obtaining information regarding the work potential, specific skills, and abilities of special needs students.		0	17	83		2	4.37	3	71	29

TABLE 3, cont'd.

Competencies or Tasks for Vocational Teachers With Special Needs Students	Mean	Rank Order <sup>1</sup>	How important is this competency or task in mainstreaming special needs students in vocational education?					Rank Order <sup>2</sup>	Do you feel you need to know more about this task?		
			Unimportant 1	2	Important 3	Extremely Critical 4	5		Yes, Much More	Yes, a Bit More	
15. List the various methods of recording student performance during a vocational evaluation.	3.52	7	16		28	56		9	48	36	16
16. Identify the elements contained in an Individualized Educational Plan.	3.24	10	24		32	44		10	44	48	8
17. Determine the factors which should be considered prior to selecting a teaching strategy for special needs students.	4.00	5	8		21	71		8	54	42	4
18. Develop learning prescriptions based upon student performance objectives for special needs students.	3.80	6	8		32	60		5	60	36	4
19. Identify various teaching strategies (activities or methods) which can be used with special needs students.	4.28	3	4		16	80		1	76	16	8
1Rank Order - Competency Categories 4, 5 combined. 2Rank Order - Needs Assessment, Category VFS, MUCH MORE only.											

<sup>1</sup>Rank Order - Competency Categories 4, 5 combined.<sup>2</sup>Rank Order - Needs Assessment, Category YES, MUCH MORE only.



The summarized data presented in Table 3 served as the primary source for addressing the following key questions concerned with the competencies and needs of the vocational teachers.

1. Which competencies will be rated by selected vocational education teachers as important in mainstreaming students with special needs in vocational education?

The results from Table 3 indicate that the 19 individual competencies received overall mean ratings between 2.92-4.60. A 1-5 point scale was employed which defined the midpoint (3) as "important" and the upper end (5) as "extremely critical." The data shows that eighteen out of the nineteen competencies were rated by the vocational teachers as important or above (mean score of 3.0 or better) in mainstreaming students with special needs. Only one competency item (number 11, mean 2.92) "Identify the specific type of assessments conducted by individual members of the Core Evaluation Team" did not receive an important rating. Thus, eighteen out of a possible nineteen competency items were identified by vocational teachers as important or above in mainstreaming special needs students in vocational education.

2. How much will selected vocational education teachers express a need to learn about the tasks involved with mainstreaming students with special needs in vocational education?

On the whole, vocational teachers expressed a need to know more about all nineteen competencies. Eighty-three percent of the vocational teachers responded at least, "Yes a bit more" on all nineteen

competency items. Just under half of the vocational teachers expressed a need to learn much more about 11 out of the nineteen competency items. Therefore, the responses indicate that the vocational teachers were very interested in knowing more about the majority of competency items.

### Module Evaluations

Vocational teachers rated five individual modules pertaining to mainstreaming special needs students in vocational education. A Module Feedback Form consisting of three components (Module Objectives, Subject Matter Content, Workbook Exercises) and a Total Summary Module Evaluation section was the primary instrument used by the participants to evaluate the modules. A Likert type scale was employed ranging from "strongly agree" to "strongly disagree."

Categories 1 and 2 were combined (strongly disagree and disagree), category 3 (undecided) was left intact, and categories 4 and 5 were combined (agree and strongly agree) to produce percentage ratings of the three major categories which vocational teachers responded to in all five modules. A 75% or better rating of the participants' responses in any one of these combined categories was used as a guideline for determining whether or not to retain, seek additional information, or make revisions in the appropriate components of the module. The Total Summary Module Evaluation was divided into a five point scale and summarized into the following categories for the five modules: "Acceptable, Retain in Present Form

(categories 4 and 5)," "Acceptable, Some Modifications Needed (category 3)" and "Not Acceptable, Major Modification is Needed (categories 1 and 2). Again, a 75% or better rating was utilized to determine general consensus within these categories.

These summarized data served as the primary source for addressing the following question regarding the contents of the five individual modules: How will selected vocational education teachers rate five modules pertaining to mainstreaming students with special needs in vocational education in terms of Module Objectives, Subject Matter Content, Workbook Exercises, and Total Summary Module Evaluation?

The results of each module evaluation are presented in Tables 4-8.

The data from the Module Feedback Form for all five modules was summarized under the three major categories (Strongly Agree and Agree, Undecided, Disagree and Strongly Disagree). Means and percentages were computed for each item under Module Objectives, Subject Matter Content, and Workbook Exercises.

The results from Table 4 revealed that the teachers reached a 75% or better consensus in the Strongly Agree and Agree category on only six of the fourteen individual items. The vocational teachers did not reach a consensus on the Total Summary Module Evaluation with only 16% responding that the module was Acceptable, Retain in Present Form, 64% responding Acceptable, Some Modifications Needed, and 20% responding Not Acceptable, Major Modification Needed. The mean rating

TABLE 4

PERCENTAGE RATINGS OF INDIVIDUAL MODULE COMPONENTS AND TOTAL  
SUMMARY EVALUATION OF MODULE 1: "MAINSTREAMING  
STUDENTS WITH SPECIAL NEEDS IN VOCATIONAL  
EDUCATION. AN INTRODUCTION."

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
I. Module Objectives					
The objectives are clearly stated and readily apparent.	3.60	.224	64	16	20
The objectives relate to the Module topic	3.88	.145	76	20	4
The objectives are attainable given the content of the module.	3.44	.201	52	32	16
The objectives are relevant in understanding the process of mainstreaming students with special needs.	3.54	.217	58.4	25	16.7
II. Subject Matter Content					
The material is well organized.	3.00	.208	36	32	32

TABLE 4, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Content is clear and concise (readability).	3.32	.214	64	4	32
Use of sub-headings is effective.	3.80	.153	80	16	4
Length of module is appropriate.	3.75	.150	75	16.7	8.3
Content is relevant to module objectives.	4.00	.147	91.7		8.3
Definition of terms provided as necessary.	3.88	.133	88	4	8
*Case studies are realistic and helpful.					
III. Workbook Exercises					
Directions easily understood	3.12	.218	48	20	32



TABLE 4, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Correlates with subject material.	3.52	.217	60.8	21.9	17.3
Sequenced properly.	2.68	.229	28	24	48
Assists in the mastery of the objectives.	3.24	.226	44	32	24
Supplementary information helpful.	3.88	.133	80	16	4
Summary Evaluation of Module 1	2.88	.156	64	20	

Note: N=25

Columns 5 &amp; 4 (Strongly Agree &amp; Agree) were combined.

Columns 2 &amp; 1 (Disagree &amp; Strongly Disagree) were combined.

\*Not applicable. No case studies included.

Acceptable, Retain in Present Form 5 & 4	Acceptable, Some Modifications Needed 3	Not Acceptable, Major Modifications Needed 2 & 1
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Note: N=25

Categories 5 &amp; 4 were combined.

Categories 2 &amp; 1 were combined.

TABLE 5

PERCENTAGE RATINGS OF INDIVIDUAL MODULE COMPONENTS AND TOTAL  
SUMMARY EVALUATION OF MODULE 2: "AN ORIENTATION  
TO STUDENTS WITH SPECIAL NEEDS."

	Mean	Standard Error	Strongly Agree and Agree 5	4	Undecided 3	Disagree and Strongly Disagree 2	1
I. Module Objectives							
The objectives are clearly stated and readily apparent.	4.40	.101	100				
The objectives relate to the Module topic.	4.40	.101	100				
The objectives are attainable given the content of the module.	4.36	.128	92		8		
The objectives are relevant in understanding the process of mainstreaming students with special needs.	4.28	.108	96		4		
II. Subject Matter Content							
The material is well organized.	4.32	.111	96		4		

TABLE 5, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5	Undecided 3	Disagree and Strongly Disagree 2	1
Content is clear and concise (readability).	4.32	.138	96			4
Use of sub-headings is effective.	4.08	.140	80	20		
Length of module is appropriate.	4.29	.112	95.8	4.2		
Content is relevant to module objectives.	4.28	.092	100			
Definition of terms provided as necessary.	4.24	.105	96	4		
Case Studies are realistic and helpful.	4.12	.167	72	28		
III. Workbook Exercises						
Directions easily understood.	4.40	.100	100			

TABLE 5, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Correlates with subject material.	4.32	.111	96	4	
Sequenced properly.	4.12	.133	84	16	
Assists in the mastery of the objectives.	4.16	.125	88	12	
Supplementary information helpful.	4.28	.136	88	12	
Summary Evaluation of Module 2	Mean 4.12	Standard Error (S.D.) .133	Acceptable, Retain in Present Form (564)	Acceptable, Some Modifications Needed (3)	Not Acceptable, Major Modifi- cation Needed (261)
			84	16	

Note: N = 25

Columns 5 & 4 (Strongly Agree & Agree) were combined.  
Columns 2 & 1 (Disagree, Strongly Disagree) were combined.

Note: N = 25

Columns 5 & 4 were combined = Acceptable, Retain in Present Form.  
Columns 2 & 1 were combined = Not Acceptable, Major Modification is Needed.

TABLE 6

PERCENTAGE RATINGS OF INDIVIDUAL MODULE COMPONENTS AND TOTAL  
SUMMARY EVALUATION: of MODULE 3: "MAINSTREAMING  
THE STUDENT WITH SPECIAL NEEDS IN VOCATIONAL EDUCATION:  
A TEAM APPROACH."

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree Strongly Disagree 2 1
I. Module Objectives					
The objectives are clearly stated and readily apparent.	4.20	.100	96	4	
The objectives relate to the Module topic.	4.24	.105	96	4	
The objectives are attainable given the content of the module.	3.72	.158	68	24	8
The objectives are relevant in understanding the process of mainstreaming students with special needs.	4.24	.119	92	8	
II. Subject Matter Content					
The material is well organized.	4.20	.115	92	8	



TABLE 6, cont'd.

	Mean	Standard Error	Strongly Agree and Agree		Undecided	Disagree and Strongly Disagree	
			5	4	3	2	1
Content is clear and concise (readability).	4.28	.108	96		4		
Use of sub-headings is effective.	4.00	.120	83.3		16.7		
Length of module is appropriate.	4.00	.141	84		12		4
Content is relevant to module objectives.	4.12	.120	88		12		
Definition of terms provided as necessary.	4.40	.115	96		4		
Case Studies are realistic and helpful.	4.20	.153	88		8		4
III. Workbook Exercises							
Directions easily understood.	3.76	.156	72		20		8

TABLE 6, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5	Undecided 3	Disagree and Strongly Disagree 2	1
Correlates with subject material.	4.20	.156	92	20	8	
Sequenced properly.	3.88	.203	80	8		
Assists in the mastery of the objectives.	4.08	.103	91.7	8.3		
Supplementary information helpful.	4.20	.115	92	8		
Summary Evaluation of Module 3	Mean	Standard Error	Acceptable, Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable, Major Modification Needed 2	1
	3.80	.153	68	28	4	

Note: N = 25

Columns 5 &amp; 4 (Strongly Agree &amp; Agree) were combined.

Columns 2 &amp; 1 (Disagree &amp; Strongly Disagree) were combined.

Note: N = 25

Columns 5 &amp; 4 were combined = Acceptable, Retain in Present Form.

Columns 2 &amp; 1 were combined = Not Acceptable, Major Modification is Needed.

TABLE 7  
PERCENTAGE RATINGS OF INDIVIDUAL MODULE COMPONENTS AND TOTAL  
SUMMARY EVALUATION OF MODULE 4: "ASSESSING THE  
STUDENT WITH SPECIAL NEEDS IN  
VOCATIONAL EDUCATION."

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
1. Module Objectives					
The objectives are clearly stated and readily apparent.	4.20	.115	92	8	
The objectives relate to the Module topic.	4.28	.092	100		
The objectives are attainable given the content of the module.	4.00	.129	8.8	8	4
The objectives are relevant in understanding the process of mainstreaming students with special needs.	4.24	.087	100		
II. Subject Matter Content					
The material is well organized.	4.04	.070	96	4	

TABLE 7, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Correlates with subject material.	4.28	.092	100		
Sequenced properly.	4.00	.115	92	4	4
Assists in the mastery of the objectives.	3.96	.168	76	12	8
Supplementary information helpful.	4.36	.114	96	4	
<p>Note: N = 25 Columns 5 &amp; 4 (Strongly Agree and Agree) were combined. Columns 2 &amp; 1 (Disagree and Strongly Disagree) were combined.</p>					
Summary Evaluation of Module 4	Mean	Standard Error (S.D.)	5 in Present Form	4	Acceptable, Some Modifications Needed (3) 2 cation Needed 1
	4.16	.125	88	12	
<p>Note: N = 25 Columns 5 &amp; 4 were combined = Acceptable, Retain in Present Form. Columns 2 &amp; 1 were combined = Not Acceptable, Major Modification is Needed.</p>					

TABLE 7, cont'd.

	Mean	Standard Error	Strongly Agree and Agree		Undecided	Disagree and Strongly Disagree	
			5	4	3	2	1
Content is clear and concise (readability).	4.20	.115	92		8		
Use of sub-headings is effective.	4.24	.119	92		8		
Length of module is appropriate.	4.12	.156	92				8
Content is relevant to module objectives.	4.16	.095	96		4		
Definition of terms provided as necessary.	4.32	.111	96		4		
Case studies are realistic and helpful.	4.32	.160	4.8		8		4
III. Workbook Exercises							
Directions easily under- stood	3.92	.152	7.6		20		4



TABLE 8

PERCENTAGE RATINGS OF INDIVIDUAL MODULE COMPONENTS AND TOTAL  
SUMMARY EVALUATION OF MODULE 5: "TEACHING STRATEGIES  
FOR STUDENTS WITH SPECIAL NEEDS IN  
VOCATIONAL EDUCATION."

	Mean	Standard Error	Strongly Agree and Agree 5	Undecided 3	Disagree and Strongly Disagree 2	1
I. Module Objectives						
The objectives are clearly stated and readily apparent.	4.32	.095	100			
The objectives relate to the Module topic.	4.28	.092	100			
The objectives are attainable given the content of the module.	4.08	.128	92	4		4
The objectives are relevant in understanding the process of mainstreaming students with special needs.	4.24	.119	92	8		
II. Subject Matter Content						
The material is well organized.	4.00	.129	88	8		4

TABLE 8, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Content is clear and concise (readability).	3.92	.172	84	4	12
Use of sub-headings is effective.	4.12	.125	87.5	12.5	
Length of module is appropriate.	3.84	.189	76	16	8
Content is relevant to module objectives	4.16	.138	92	4	4
Definition of terms provided as necessary.	4.20	.163	88	4	8
Case studies are realistic and helpful.	4.12	.167	88	4	8
III. Workbook Exercises					
Directions easily under- stood.	4.0	.141	84	12	4

TABLE 8, cont'd.

	Mean	Standard Error	Strongly Agree and Agree 5 4	Undecided 3	Disagree and Strongly Disagree 2 1
Correlates with subject material.	4.12	.156	84	12	4
Sequenced properly.	3.76	.166	76	12	4
Assists in the mastery of the objectives.	3.96	.187	80	8	12
Supplementary information helpful.	4.12	.167	88	4	8

Note: N = 25 Column 5 & 4 (Strongly Agree and Agree) were combined. Column 2 & 1 (Disagree and Strongly Disagree) were combined.					
Summary Evaluation of Module 5	Mean	Standard Error	Acceptable, Retain in Present Form 5 & 4	Acceptable, Some Modifications Needed 3	Not Acceptable, Major Modification Needed 2 6 1
	3.68	.160	76	16	8
Note: N = 25 Columns 5 & 4 were combined = Acceptable, Retain in Present Form. Columns 2 & 1 were combined = Not Acceptable, Major Modification Needed.					

was 2.88, which indicated that the teachers felt this module was generally not acceptable, and some significant revisions or changes were necessary.

The results from Table 5 revealed that the participants reached a 75% or better consensus in the Strongly Agree and Agree category on fifteen out of the sixteen individual items. The vocational teachers did reach a consensus on the Total Summary Module Evaluation with 84% responding that the module was Acceptable, Some Modifications Needed. The mean rating was 4.12 which indicated that the teachers felt this module was acceptable and should be retained in its present form on the whole.

The results in Table 6 revealed that the participants reached a 75% or better consensus in the Strongly Agree and Agree category on fourteen out of the sixteen individual items. The vocational teachers did not reach a consensus on the Total Summary Module Evaluation with only 68% responding that the module was Acceptable, Retain in Present Form, 28% responding Acceptable, Some Modifications Needed, and 4% responding Not Acceptable, Major Modification Needed. The mean rating was 3.80, which indicated that the teachers felt this module was generally acceptable yet some revisions were necessary.

The results from Table 7 revealed that the participants reached a 75% or better consensus on the Strongly Agree and Agree category on fifteen out of the sixteen individual items. The vocational teachers did reach a consensus on the Total Summary Module Evaluation with 88% responding that the module was Acceptable, Retain

in Present Form, and 12% responding Acceptable, Some Modifications Needed. The mean rating was 4.16 which indicated that the teachers felt this module was acceptable, and should be retained in its present form on the whole.

The results from Table 8 revealed that the participants reached a 75% or better consensus in the Strongly Agree and Agree category on sixteen out of the sixteen individual items. The vocational teachers did reach a consensus on the Total Summary Module Evaluation with 76% responding that the module was Acceptable, Retain in Present Form, 16% responding Acceptable, Some Modifications Needed, and 8% responding Not Acceptable, Major Modification Needed. The mean rating was 3.68 which indicated that the teachers felt this module was generally acceptable yet some revisions were necessary.

Relationship between Individual Module  
Components and the Total Summary  
Module Evaluations

The Spearman Rank Correlation Coefficient test was utilized to determine the relationship between the vocational teachers' ratings of the individual module components and the Total Summary Module Evaluation for all five modules. The purpose of this test was to determine whether vocational teachers were consistent in their evaluations of the modules or whether they haphazardly rated individual module components high and then gave the Total Summary Module Evaluation a low rating, or vice versa.

The results of the Spearman Correlation between the individual



module components and the Total Summary Module Evaluations are presented in Table 9.

Component (a) represented the Module Objectives (4 items), component (b) represented Subject Matter Content (7 items) and component (c) represented Workbook Exercises (5 items). Table 9 revealed that a positive correlation existed between the individual module components and the Total Summary Module Evaluation in all five of the modules. A further analysis indicates that a positive correlation existed (at least at the .05 level) for 10 out of the 15 individual module components and the Total Summary Module Evaluation. Only Module 4 and component (c) in Module 3 and component (c) in Module 5 did not show a significant relationship.

#### Results of Attitude Survey (Pre/Post)

Vocational teachers responded to an eighteen item questionnaire designed to assess their attitudes towards mainstreaming special needs students in vocational education, and to determine the extent their attitudes would improve as a result of the in-service program. A Likert type scale was employed ranging from "strongly agree" to "strongly disagree." The questionnaire was administered before the in-service module program, and again after the program. Responses in the Strongly Agree or Agree categories represent favorable attitudes toward the handicapped. Items 2, 3, 6, 7, 9, 10, 13, 14, 15, and 16 were worded in such a way that responses in the Disagree or Strongly Disagree categories actually represent a favorable attitude.

TABLE 9  
RELATIONSHIP BETWEEN INDIVIDUAL MODULE  
COMPONENTS AND TOTAL SUMMARY  
MODULE EVALUATIONS

Module #	Component	Correlation
1	a	.4792**
	b	.5612**
	c	.4336*
2	a	.4177*
	b	.4928**
	c	.4915**
3	a	.5475**
	b	.4432*
	c	.3347
4	a	.2771
	b	.2519
	c	.0162
5	a	.3240
	b	.6392***
	c	.5652*

Note: N = 25

\* p < .05

\*\* p < .01

\*\*\* p < .001

Component a = Module Objectives

Component b = Module Subject Matter Content

Component c = Module Workbook Exercises

Spearman Rank Correlation Coefficient  
Used

The data from the Attitude Survey in Table 10 was summarized under three major categories (Strongly Agree and Agree, Undecided, Disagree and Strongly Disagree). A review of Table 10 reveals that on the whole, vocational teachers improved their attitudes towards mainstreaming special needs students from before to after the in-service program on thirteen out of the eighteen items by increasing their responses in or toward a more favorable category. Those items where an increase was noted include item numbers 1, 2, 3, 5, 6, 7, 10, 11, 12, 13, 14, 15, and 17. Item 9 remained the same. On the three items (4, 8, 16) which vocational teachers responded with a less favorable attitude from before to after the in-service program, the difference in percentage points was minimal.

The means and standard deviations of the Attitude Pre-test and Post-test Scores (Table 11) show that vocational teachers lowered their total score by 4.640 percentage points. Since responses in the Agree and Strongly Agree categories (2 and 1) represented favorable attitudes, a decrease in the overall post-test scores indicated that the teachers improved their attitudes. According to the Wilcoxon Matched-Pairs Signed Rank Test illustrated in Table 12, this difference yielded a Z score of -2.5427 which was significant at less than the .05 level of confidence.

In summary, the data from Tables 9-11 support the prediction made that vocational teachers would improve their attitudes towards mainstreaming students with special needs in vocational education from before to after the competency based in-service module program.

Table 10  
PERCENTAGE CHANGE ON PRE/POST ATTITUDE SURVEY

	Pre Post	SA 1	A 2	U 3	D 4	SD 5
1. Students with special needs should have equal access to vocational programs as do "average" students.	Pre Post	68 92		4		28
*2. Students with special needs will be ridiculed by the other students in a regular classroom.	Pre Post	28 24		16 32		56 48
*3. Most special needs students pose a significant safety problem within the shop environment.	Pre Post	72 32		8 20		20 48
4. I feel all students should be given the opportunity to participate in vocational programs, not just the best students.	Pre Post	96 92		4		4 4
5. Vocational teachers should take part in assessing the needs of students with special needs.	Pre Post	96 100				4

TABLE 10, cont'd.

	Pre Post	SA J	A 2	U 3	D 4	SD 5
*6. Special needs students require a different curriculum which will force teachers to throw out a lot of material they like to teach.	Pre Post		36 34.7	24 13.2		40 52.1
*7. I believe that including students with special needs into vocational programs will deprive average students from participating.	Pre Post		40 24	8 24		52 52
8. The integration of special needs students into vocational programs represents an opportunity for teachers to grow both personally and professionally.	Pre Post		76 64	12 12		12 24
*9. I believe that vocational education for students with special needs is useless since these students are not going to get a job anyway.	Pre Post		4 4	4 4		92 92
*10. Students with special needs should not be "mainstreamed" into vocational programs. In other words, separate vocational programs should be developed to meet their needs.	Pre Post		44 16	12 16		44 68

TABLE 10, cont'd.

	Pre Post	SA 1	A 2	U 3	D 4	SD 5
11. Students with special needs have the same emotional needs and feelings as the average student.	Pre 68 Post 76			12 4		20 20
12. If I were a parent of a student with special needs, I would want him/her to be in a regular vocational program for most of the school day.	Pre 64 Post 72			12 24		24 4
*13. Special needs students would not be enrolling in vocational programs if laws were not passed requiring it.	Pre 48 Post 36			16 20		36 44
*14. Students with special needs should be counselled and prepared for jobs which involve repetitive, menial type of activities.	Pre 22 Post 20			16 4		52 76
*15. I feel that placing a special needs student in a typical classroom will damage the student's self-image	Pre 36 Post 12			4 24		60 64



TABLE 10, cont'd.

	Pre	SA	A	U	D	SD
	Post	1	2	3	4	5
*16. Students with special needs should be allowed to choose the vocational program they want, regardless of their skills, or abilities, and potential in the particular field.						
	Pre	8		8		84
	Post	16		8		76
17. Certain special needs students should be allowed to concentrate on only portions of a vocational curriculum if this will enable them to become proficient on a task and secure a job.						
	Pre	60		4		36
	Post	88		4		8
18. Individual teacher attitudes toward special needs students is an extremely important criterion in determining the success or failure of special needs students in vocational education programs.						
	Pre	100		4		
	Post	96				

Note: N = 25

1 SA = Strongly Agree, 2 A = Agree, 3 U = Undecided, 4 D = Disagree,

5 SD = Strongly Disagree.

\*Responses in the SA and A category represent favorable attitudes towards mainstreaming. Items marked \* were worded in such a fashion that responses in the U and SD category actually represent a favorable attitude towards mainstreaming.

TABLE 11  
MEANS AND STANDARD DEVIATIONS OF ATTITUDE  
PRE-TEST AND POST-TEST SCORES

Test	N	Mean	S.D.	Difference
Pre-test	25	43.440	9.147	4.640
Post-test	25	38.800	9.764	

TABLE 12  
 MEAN RANKS AND Z SCORE ON PRE-TEST  
 AND POST-TEST ATTITUDE SURVEY

Test	N	Negative Ranks	Mean Rank	# Positive Ranks	Mean Rank	Z Score
Attitude Survey	25	16	16.1	9	7.6	-2.5427*

\*p < .05 by the Wilcoxon Matched-Pairs Signed Rank Test

### Results of Knowledge Test (Pre/Post)

Vocational teachers responded to a one hundred and five item test designed to assess their knowledge of mainstreaming students with special needs in vocational education, and to determine what extent their knowledge would increase from before to after the in-service module program. Answers were marked either right (1 point) or wrong (0 points). The test was administered before the in-service program and again after the program. The test was developed in conjunction with the competency statements and content presented in the in-service program. The primary purpose of the test was to assist in the overall evaluation of the five in-service modules in terms of determining whether or not the participants increased their knowledge from before to after the program, and whether any increase was statistically significant.

The results of the Knowledge Test (pre/post) are presented in Tables 13 and 14.

Since the test items were identified and developed for the five individual modules, the results are reported both by each module and by the total test. This allowed an examination of how much the participants increased their scores on an individual module basis, and on the overall test.

The results presented in Table 13 reveals that vocational teachers increased their mean scores on all five of the individual modules. On the total test, consisting of 105 items, the vocational teachers obtained a mean score of 39.560 on the pre-test, and a 61.760

TABLE 13

MEANS AND STANDARD DEVIATIONS OF KNOWLEDGE PRE-TEST  
AND POST-TEST SCORES

Module #	# of Test Items	Pre-test		Post-test		Mean Difference
		Mean	S.D.	Mean	S.D.	
1	14	7.160	1.818	8.840	2.444	+1.680
2	11	6.400	2.236	9.240	2.047	+2.840
3	22	10.760	4.352	15.600	4.967	+4.840
4	20	4.240	3.961	10.160	4.819	+5.920
5	105	39.560	16.148	61.760	19.959	+22.200

Note: N = 25

TABLE 14

MEAN RANKS AND Z SCORES ON PRE-TEST AND  
POST-TEST KNOWLEDGE TEST

Module #	# of Test Items	# of Negative Ranks	Mean Rank	# of Positive Ranks	Mean Rank	Z Score
1	14	6	7.2	17	13.7	-2.8894*
2	11	0	0	22	11.5	-4.1069**
3	22	3	2.8	21	13.9	-4.0429**
4	20	2	6.8	22	13.0	-3.9000**
5	38	4	3.8	20	14.3	-3.8571**
TOTAL	105	0	0	25	13	-4.3724**

Note: N = 25

\*p &lt; .01, Wilcoxon Matched-Pairs Signed Rank Test

\*\*p &lt; .001, Wilcoxon Matched-Pairs Signed Rank Test



score on the post-test. This represented a mean increase of 22.200 points. Also, 100% of the vocational teachers (N=25) realized an increase in their score from before to after the in-service program (Appendix P).

According to the Wilcoxon Matched-Pairs Signed Rank Test illustrated in Table 14, the difference in the pre-test/post-test scores was significant at less than the .01 level of confidence for Module 1, and less than .001 level of confidence for Modules 2-5. The difference on the total pre-test/post-test scores on the Knowledge Test was significant at less than the .001 level of confidence.

In summary, the data from Tables 12 and 13 support the predictions made that vocational teachers would increase their knowledge of mainstreaming students with special needs in vocational education on all five modules from before to after the competency based in-service module program.

## C H A P T E R   V

### DISCUSSION AND CONCLUSIONS, RECOMMENDATIONS

#### Discussion and Conclusions

Included in this section are discussions of the competencies and needs identified by the vocational teachers, individual module evaluations and the relationship between the individual module components and total summary module evaluations, and finally the results of the pre-post Attitude Survey and Knowledge Test.

Competency identification and needs assessment results. Vocational teachers identified eighteen out of the nineteen competencies as being important or extremely critical in mainstreaming students with special needs. This suggests that almost all of the competencies identified for this study were perceived to be at least important by the vocational teachers. The high ratings which the competencies received provided a sound rationale for developing an in-service program based on the competencies. Also, since the majority of the competencies focused on the process of mainstreaming (e.g., the Core Evaluation process under Chapter 766) it is safe to conclude that vocational teachers, by their high ratings, felt this is an important process for students with special needs who will enter vocational programs.

A review of Table 3 (page 89) reveals that item number 1, "Identify the behavioral and learning characteristics of special

needs" received the highest rating with 88% of the vocational teachers identifying this competency as being in the extremely critical category. Other competencies identified in the extremely critical category by more than seventy five percent of the vocational teachers were item numbers 8, 14, 19, 13. These competencies deal with collaborating with other educators in the evaluation process, determining the methods of evaluating the students, and identifying the learning styles and teaching strategies which can be employed with special needs learners. Again, the competencies associated with assessment and identifying the needs of the handicapped were rated as being the most important in mainstreaming.

The results of the needs assessments indicated that the majority of the vocational teachers (83%) wished to know more about each competency. The competencies which received the highest ratings were generally the items which vocational teachers expressed a need to know more about. However item number 2, pertaining to state and federal legislation, received one of the lowest ratings, yet vocational teachers wished to know more about this competency and item number 13 more than any other. This is probably due to the fact that the vocational teachers involved in the study do not have any programs to serve the handicapped in their school. Discussions on developing programs for special needs learners were just beginning to take place at Smith at the time of this study and vocational teachers became interested in how these new laws would affect their programs.

In summary, vocational teachers overwhelmingly identified all

but one of the competencies as being important and above in mainstreaming special needs students, and expressed a need to know more about most of the competencies.

Module evaluations. Five individual modules on mainstreaming special needs students in vocational education were evaluated by twenty-five vocational teachers from the Smith Vocational High School in Northampton, Massachusetts. A Module Feedback Form was the primary instrument used to evaluate the modules in three main areas: Module Objectives, Subject Matter Content, and Workbook Exercises. As indicated in Chapter IV, a 75% or better rating was used to determine general consensus in the following categories which were combined for the purpose of analysis: Strongly Agree and Agree, Undecided, Disagree and Strongly Disagree.

A discussion of the individual ratings for each module will now be presented.

Module 1. The title of this module was "Mainstreaming Students with Special Needs in Vocational Education. An Introduction." From the information presented in Table 4 (page 97) vocational teachers did not generally give this module a favorable rating. Less than half of the individual components rated by the teachers (6 out of 14) reached the 75% consensus level. Those six items which can be considered strengths were: objectives related to Module topic (76%); Use of sub-headings effective (80%), length of module appropriate (75%), content relevant to module objectives (91.7%), definition of terms provided (88%); and supplementary infor-

mation helpful (80%).

Only 28% agreed or strongly agreed that the module was sequenced properly. Other weaknesses included: material was well organized (36%), workbook exercises assisted in mastery of the objectives (44%) and the directions for the workbook exercises were easy to follow (48%).

On the Total Summary Module Evaluation Form, 64% felt that the module was Acceptable, yet some modifications were needed while 20% felt the module was not acceptable and that major modification was needed.

There are a few possible reasons to explain the low rating which this module received.

1. Module 1 presented information about the concept and rationale for mainstreaming and reviewed the existing federal and state laws which promote the inclusion of the handicapped in vocational education. The module was organized in such a way that the workbook exercises asked the participants to respond to questions prior to the information being presented in the body of the module. This was done for two reasons. First, to have the participants assess their own knowledge of the laws, and second, to stimulate the reader and to develop a purpose for reading the module. However, the vocational teachers did not like this approach since they had taken a pre-test previously which covered basically the same information. As some of them stated, "It only reinforced a second time how little we know."

2. The module contained printed instructions which directed



the participants to complete workbook exercises at various points in the text. Although these "programmed instructions" were reviewed with the entire group before beginning Module 1, it was evident through their ratings and from observation that some confusion existed in terms of this approach.

3. Three out of the four possible items under the Module Objective Area did not reach the 75% consensus rating. It was clear that the vocational teachers did not feel these module objectives were either clearly stated, attainable, or important in mainstreaming.

Thus in summary, while some areas of Module 1 were rated highly by the participants, a number of revisions in primarily the Module Objective and Workbook Exercises were recommended.

Module 2. The title of this module was "An Orientation to Students with Special Needs." A review of Table 5 (page 100) indicates that the participants rated this module very high. The teachers rated fifteen out of the sixteen individual items at the 75% level or better. The following items received extremely high ratings and can be considered strengths: objectives clearly stated (100%), and relate to module topic (100%), objectives attainable (92%) and are relevant in mainstreaming (96%); content material well organized (96%), and relevant to module objectives (100%); workbook exercises were easy to understand (100%) and correlated with subject matter (96%). Only 72% of the teachers agreed or strongly agreed that the case studies were realistic and helpful. This was the only item which did not have a consensus, and thus an area for revision.



The Total Summary Module Evaluation revealed that 84% of the participants felt the module was acceptable and should be retained in present form, while 16% felt it was acceptable and some modifications were needed.

It is obvious from the information presented that the teachers reacted very favorably to this module. Since the module was very informative about the causes and effects of various handicapping conditions this is understandable since this is probably the first time the majority of the teachers had been exposed to this information as supported by their responses on the Participants Questionnaire. Also, the teachers rated competencies in this module very high and consequently felt that the information presented was very adequate.

Module 3. The title of this module was "Mainstreaming the Student with Special Needs in Vocational Education. A Team Approach." Table 6 (page 107) indicates that the vocational teachers rated the individual module components very high. Fourteen out of the sixteen individual items were rated at the 75% consensus level or better by the participants.

Items receiving a high rating and which can be considered strengths include: objectives clearly stated (96%), and relate to module topic (96%), objectives relevant to mainstreaming (92%); subject matter organized (92%), clear (96%), content relevant to objectives (88%) and length appropriate (84%), definition of terms provided (96%) and case studies realistic and helpful (99%); workbook exercises correlated with subject material (92%), assisted in the mastery of

objectives (91.7%) and supplementary information helpful (92%).

Only 68% agreed or strongly agreed that the objectives were attainable given the content of the module. The other item which can be considered a weakness was the directions for the workbook exercises. Only 72% agreed or strongly agreed on this item.

While the individual module components were rated highly, only 68% of the teachers responded that Module 3 was acceptable and should be retained in present form. Only 28% responded that the module was acceptable, some modifications needed and 4% responded not acceptable, major modification needed. The concepts presented in this module are new to many educators and vocational teachers in particular. Special education which advocates teaching the handicapped in the least restrictive environment has forced many teachers to re-examine and change their roles. Special education teachers now find themselves working in resource rooms and acting as a consultant to regular classroom teachers to assist in programming for mainstreamed handicapped students. Regular classroom teachers have had their classroom environments and teaching styles examined to determine the suitability of placing handicapped students in their classes. The competencies involved in planning and working cooperatively with a host of specialists are indeed complex and perhaps difficult to explain and understand in a printed module. For example, it might have been difficult for teachers to understand the concepts involved in cooperatively planning (e.g., being open, friendly, and receptive to new ideas) if teachers have traditionally worked behind closed

doors. Thus, the concepts might have been too difficult to explain and understand as indicated by the teachers that even though the objectives were relevant (92%) and related to the module topic (96%) they were not attainable given the content of the module (68%). This may have been a factor on the lack of consensus on the Total Summary Module Evaluation as well.

In summary, the vocational teachers generally felt that the module was acceptable but were unclear on what revisions were necessary.

Module 4. The title of this module was "Assessing the Student with Special Needs in Vocational Education." Table 7 (page 106) reveals that vocational teachers rated this module very high. Fifteen out of the sixteen individual items were rated at the 75% level or better. The following items received very high ratings and can be considered strengths: module objectives clear (92%), relate to module topics (100%), and are relevant to mainstreaming (100%); subject matter content well organized (96%), clear (92%), and relevant to module objectives (90%); workbook exercises correlated with subject material (100%), were sequenced properly (92%) and the supplementary information was helpful (96%).

Only one item, case studies, can be considered a weakness since only 48% agreed or strongly agreed that the case studies were realistic and helpful.

The Total Summary Module Evaluation revealed that 88% of the teachers felt that the module was acceptable, retain in present form,

while only 16% felt it was acceptable, and some modifications were needed.

In summary, this module received a very high rating both on the individual components and on the Total Summary Evaluation. In fact, Module 4 received the highest mean score on the Total Summary Evaluation than any other module (mean = 4.16). This module was very informative about the assessment procedures and techniques which can be employed with handicapped students. The teachers rated the competencies associated with assessing the needs of the handicapped very high and consequently felt that the information contained in Module 4 was very adequate.

Module 5. The title of this module was "Teaching Strategies for Students with Special Needs in Vocational Education." The results in Table 8 (page 113) indicate that the participants rated this module very high. Sixteen out of the sixteen individual items were rated at the 75% level or better. Since all of the items can be considered strengths, only a few with the highest ratings will be reviewed: module objectives clear (100%), related to module topic (100%) and important in mainstreaming (92%); subject matter material well organized (88%), and relevant to module objectives (92%); workbook exercises were easy to understand (88%) and supplementary information was helpful (88%).

The Total Summary Module Evaluation revealed that 76% of the teachers felt that the module was acceptable, retain in present form, 16% felt it was acceptable, and some modifications were needed, while

8% felt it was not acceptable and major modifications were needed.

In summary, the individual items were rated very high by the vocational teachers, yet the responses on the Total Summary Evaluation were not as high on a comparative basis. There are no reasons to explain this difference in their evaluations. Even though a comment section was provided on the Module Feedback form, the vocational teachers did not use it consistently to draw and sound conclusions to support their evaluations on any particular individual component or on the Total Summary Evaluation.

Relationship between the individual module components and the total summary module evaluation. In order to determine if the vocational teacher ratings were consistent on the individual module components and with the Total Summary Module Evaluations, the Spearman Rank Correlation Coefficient test was utilized. A review of Table 9 indicates that a positive correlation existed on fifteen out of the fifteen individual module components and with their respective Summary Module Evaluations.

These relationships were significant at varying degrees of confidence ranging from  $<.05$  to  $<.001$  except for five components. Most noticeable was Module 4. Although a positive correlation existed with the three components, it was not significant. A review of the ratings by the vocational teachers in Module 4 indicates the problem. The individual components were rated at a fairly high level with fifteen out of the sixteen items at the 75% consensus level or better. However, the ratings on the Total Summary Module Evaluation were the



highest of any module (mean = 4.16). In other words, the high ratings of the individual module components were not consistent (high enough) with the extremely high rating the Module received overall.

The purpose of conducting this test was to see how consistently the vocational teachers rated individual module components with the Total Summary Module Evaluations. In reviewing the results, it is clear that positive correlations were significant on ten out of the fifteen individual components. This data supports the notion that the ratings by the vocational teachers were consistent throughout the module evaluations and the results obtained can be viewed with a degree of confidence.

Total Module Evaluation Summary. In light of the evaluations of the five in-service modules previously presented, it can be concluded that the vocational teachers felt that all modules were generally quite acceptable. Though some components of the modules suggested revisions or changes by not having a 75% or better consensus rating, the Total Summary Module Evaluations, when viewed as a whole, were acceptable. For example, in combining the two categories, Acceptable, Retain in Present Form, and Acceptable, Some Modifications Needed, we find that the majority of teachers felt the following modules were acceptable: Module 1 (80%), Module 2 (100%), Module 3 (96%), Module 4 (100%), and Module 5 (92%). This supports the conclusion that the competency-based in-service module program on mainstreaming special needs students in vocational education was very appropriate and quite accep-



table as evaluated by twenty five currently employed vocational education teachers.

Attitude survey results (pre/post). The literature has indicated that teacher attitudes are important when mainstreaming handicapped students. A number of studies have been conducted to systematically change teacher attitudes (Lazar, 1972; Gay, 1976; Yates, 1973). Although the primary purpose of this study was to develop and evaluate a competency-based in-service module program on mainstreaming, attitude assessment and the change in teachers' attitudes from before to after the in-service program was investigated.

A review of Table 10 (page 117) indicates that vocational teachers held some positive attitudes prior to the in-service program. For example, 96% of the teachers felt that all students should be given the opportunity to participate in vocational programs, not just the best students (item 4). This is a direct contradiction from the old Smith-Hughes Act which promoted the notion that vocational education was only for healthy, "normal" individuals. Although one teacher felt undecided about this concept after the in-service program, 92% still agreed or strongly agreed with this concept. Also, 96% of the teachers initially felt that they should take part in the evaluation process to determine the needs of the handicapped (item 5).

To support the idea that attitudes are important in mainstreaming, 100% of the participants felt that individual teacher attitudes towards special needs students was an extremely important criterion in determining the success or failure of these students in

vocational education programs Item 18).

Responses on the post Attitude Survey indicate that vocational teachers improved their attitudes on thirteen out of the sixteen items. A noticeable change occurred on item 1 which was concerned with the issue of access to vocational programs by handicapped students. A total of 68% of the teachers agreed or strongly agreed prior to the in-service program that students with special needs should have equal access to vocational programs as do the "average students." A total of 92% of the teachers (representing an increase of 26%) agreed or strongly agreed on item 1 after the in-service program.

Another item which changed from the pre-post survey was item 3. A total of 40% of the vocational teachers improved their attitudes with respect to their feelings that most special needs students pose a significant safety problem within the shop environment. (72% agreed or strongly agreed on the pre-survey as compared with only 32% on the post survey).

According to the Wilcoxon Matched-Pairs Signed Rank Test, the changes in vocational teachers' responses from before to after the in-service program were significant at less than the .05 level of confidence.

The findings that vocational teachers changed their responses in or towards a more favorable category on the post attitude survey suggests that the in-service program had a positive effect on improving teacher attitudes towards mainstreaming. A variety of factors may have influenced these positive attitude changes as reflected

by the participants' responses.

1. The in-service program concentrated on the process of mainstreaming special needs students in vocational education. One entire module presented a thorough review of the concept, origins, laws, and procedures for mainstreaming. This area is frequently ignored in special education in-service programs. The literature reveals an emphasis on instructing teachers in the pedagogy of special education, as opposed to providing opportunities for teachers to learn and understand the concept and process of mainstreaming and their role in it. Teachers are often not exposed to programs that present basic information on mainstreaming prior to their involvement in teaching handicapped students. This type of practice could cause the development of negative teacher attitudes and affect the success of the handicapped student in the mainstreamed program. The emphasis on the concept and procedures used in mainstreaming, together with a constant emphasis on viewing the strengths of the handicapped student throughout the modules may have produced a better understanding of mainstreaming, thus effecting the positive gains on the Attitude Survey.

2. Three out of the five in-service modules were devoted to presenting information concerning the team evaluation process, exploring the different assessments conducted by individual team members, and the types of cooperative planning and teaching methods which can be employed with mainstreamed handicapped students. The participants were exposed to the various models and ways that can be used

to mainstream. Many of the teachers were not aware of these mainstreaming procedures. In fact, through discussions, many thought that mainstreaming (as practiced at Smith) meant terminating the students' educational plan upon entering the school and letting them "sink or swim" in the mainstream.

The lack of exposure and knowledge about the roles of special education personnel and the various degrees of mainstreaming which can be recommended for different types of handicapped students through the team evaluation process could promote the development of negative attitudes on the part of teachers. The emphasis placed on defining the team approach to evaluation, the shared decision making opportunities regarding program placements and degree of mainstreaming, and the support services required for handicapped students stressed in the modules may have resulted in an increased awareness of this process causing improvement in the teachers' attitudes.

3. A number of important concepts were stressed throughout the modules which may have been a contributing factor in the positive attitude changes.

a. The importance of viewing the handicapped as individuals with strengths and weaknesses like everyone else.

b. The inherent right of handicapped students to programs which will assist them to develop their potential to the maximum extent possible. In other words less able does not mean less worthy to attend programs which are available to non-handicapped students.

c. Presenting behavioral and academic characteristics of spe-

cial needs students as opposed to relying solely on labels.

d. Common stereotypes associated with handicapped students were rebuffed as being inappropriate and often incorrect (e.g., deaf and dumb being incorrect since many deaf youngsters have average and above average intelligence).

e. The team approach to evaluating, planning, and teaching handicapped students. In other words, vocational teachers are not solely responsible for the handicapped student.

4. The attitude and credibility of the in-service facilitator was not a variable in this study. However, it is important to consider this factor on the in-service participants. Houland and Weiss (1952) imply that the credibility of the presenter is extremely important in attitude change. The fact that the facilitator worked in a vocational environment most likely added to his credibility. One could assume that the positive attitude changes from before to after the in-service program might have been due in part not only to the attitude and credibility of the facilitator, but to the sincerity, energy, and enthusiasm displayed during the program.

Knowledge test results (pre/post). A knowledge test (pre and post) consisting of one hundred and five items covering all competency areas in the five modules was utilized to assist in the overall evaluation of the in-service program. The knowledge test was developed to correlate with each of the five modules for the purpose of analyzing any increases in scores both on an individual and total module basis. Mean scores were computed and the difference in the pre/post test



scores were tested by the Wilcoxon Matched Pairs Signed Rank Test to determine if the differences were significant.

A review of Tables 13 and 14 (pages 125-126) indicate that vocational teachers increased their mean scores on all five modules, thus on the total test as well. The results were significant at less than the .01 level for Module 1 and less than the .001 level for Modules 2-5.

The findings that the total results were highly significant at less than the .001 level strongly suggests that the in-service program had a positive effect on increasing the teachers' knowledge of mainstreaming students with special needs in vocational education. A number of factors may have also influenced the knowledge gains realized by the participants.

1. Although the results of the knowledge pre-test were not shared with the teachers until after they completed the in-service program and the post-test, previous examination when taking the pre-test may have helped some teachers to key into certain questions or areas, thus sensitizing them to pertinent content areas in the module.

2. The post-test was administered two weeks after the completion of Module 5. No information was collected to determine whether extensive preparation for the post-test existed and whether this was a variable in the increased scores.

3. Since the test was developed in conjunction with the module program by this writer, there was no data available regarding the reliability or validity of the test. Even though the knowledge



test was carefully designed to cover all the competency objectives and content included in the module, no data was available to determine whether the test items were relatively easy or difficult to answer. This factor may have influenced any gains realized by the participants.

On the other hand, there are certain factors which provide support that the knowledge gains were highly dependent upon the teachers' participation in the program and the content contained in the modules.

1. The nature of the subject material was highly specific and new to most of the teachers. Since the teachers did not participate in any other in-service program on mainstreaming during the period which the study took place (Participant Questionnaire) any information on mainstreaming most likely came from their participation in the program. In addition, since there aren't any programs or procedures in place at Smith to mainstream special needs students, no teachers were involved in any core assessment activities and planning meetings under Chapter 766 during the study. Likewise, any information on this subject matter most likely came from their participation in the program.

2. Due to the relatively short duration of the study, maturation was probably not a variable. In other words, vocational teachers' knowledge about mainstreaming would most likely not have increased due to the maturation of the participants.

3. The findings that the increases in vocational teachers'

knowledge on the post-test were highly significant at less than the .001 level suggest that these increases were not at all likely due to chance.

In summary, the knowledge gains realized by the participants in this study provide strong support that the modules do indeed have some degree of validity and that the in-service program did increase vocational teachers' knowledge of mainstreaming special needs students in vocational education.

### Recommendations

Included in this section are recommendations for future research for improving the methodology in this study, and recommendations for use of the competency-based in-service program.

Recommendations for future research. A number of areas for future research dealing with the development, implementation and evaluation of a competency-based in-service program under investigation in this study have been identified.

1. The in-service modules developed and evaluated in this study should be further field tested with a variety of other educators to include other vocational education teachers, teacher trainers responsible for in-service vocational/special education at the university, state, and local levels, and special education personnel working at the secondary level. The results could then be summarized and verified to insure any additions or deletions in the modules resulted from a wide spectrum of educators.

2. A number of issues related to mainstreaming special needs students in vocational education were raised by the participants during the study. These issues were viewed to be important to the teachers by this investigator and consequently need to be addressed in future research, in-service programs, and by state department officials. First, the teachers were very concerned with the changing role of vocational education. The new emphasis on meeting the individual needs and interests of a wide variety of students versus the traditional emphasis of preparing students for the labor market has caused the vocational community to re-examine the goals of their programs. Many teachers are fearful that their program standards and curriculum will be "watered-down" especially when handicapped students are enrolled.

Second, vocational education has made great strides in recent years to dispel the notion that their programs are second rate or are dumping grounds for unwanted students. Since the handicapped are now entitled to vocational education, many teachers are concerned that their schools will become a dumping ground again and be filled with handicapped students.

Third, many of the participants felt that employers will not be receptive to hiring handicapped students. The teachers questioned providing vocational training to these students if in the end they might not be able to secure a job.

These issues are extremely important and if not addressed, they could interfere with the mainstreaming effort.

3. Other studies which utilize the Competency Identification and Needs Assessment Questionnaire or related instruments are recommended in order to verify those competencies which were rated as important in this study or to uncover additional competencies necessary to mainstream special needs students.

4. The two instruments used to assess the vocational teachers' attitudes and knowledge of mainstreaming special needs students in vocational education could be utilized in a replication study to assess their validity and reliability.

5. A replication study of the in-service program using vocational teachers experienced in mainstreaming special needs students in vocational education should be conducted to compare the results obtained against teachers who are not experienced in mainstreaming.

6. The completion of an exploratory study to determine the appropriate methods for incorporating the contents of the modules in ongoing or new pre-service vocational and special needs teacher education programs is recommended.

7. The development and evaluation of a companion trainer's manual to the in-service module program is highly recommended to facilitate the use of the modules in university, state or locally based teacher training programs.

8. The development and evaluation of audio-visual materials (e.g., overhead transparencies, slide tape presentation, etc.) which incorporates the content of the modules is highly recommended.

Recommendations for methodology. Additional recommendations are pre-

sented to serve as a guide for individuals attempting to replicate this study or who plan on conducting similar studies involving the development, implementation, and evaluation of in-service instructional materials.

1. When developing materials which are essentially new to the majority of the participants involved in a study, a definition of some of the more common terms should be provided at the onset. While definitions of terms were provided within each module, either within the text, or at the end, the participants expressed concern relative to the terminology that was used. In some instances, the definition of terms came after the presentation of the material in the text.

2. Many vocational teachers were confused at the start of the program with the format of the modules. The modules were basically self-paced and self-directed. Although an explanation was provided prior to Module 1, more detailed instructions including perhaps a "walk through" of the format and directions contained in the module should be considered.

3. Evaluating the modules required extensive reading and concentration on the part of the participants. Although two and one half hours were allotted for each participant to read, evaluate, and discuss the module, this may not have been enough time. Therefore, consideration should be given to scheduling this type of activity during the normal work day and to allocate more time to ensure that the participants are at their best.

4. Guidelines for deciding the criteria for revising the



instructional material should be established early in the product development phase. Additionally, methods should be incorporated into the evaluation instrument which elicit specific comments supporting the participants' evaluations. Although a comment section was included on the Module Feedback Form, the participants did not utilize this consistently or in sufficient numbers to draw any substantive conclusions as to why a module component was rated either favorably or not-favorably.

5. No funds were available to offset the cost of this study. Typing, duplicating the materials, and other costs involved in pre-viewing the commercially prepared instructional programs added up substantially through the stages of the study. A recommendation would be to offer this or a similar program to a local education agency, state department, or university level teacher training program and offer the in-service experience for a set number of teachers in return for offsetting the costs involved. Another avenue would be to seek federal and state funds to support such a project.

Recommendations for use of the modules. A final series of recommendations are offered on using the modules developed in this study. Generally it is recommended that the modules be made available to all individuals responsible for providing pre-service or in-service education for vocational teachers in mainstreaming students with special needs in vocational education. Specifically, it is recommended that:

1. Educators within regional vocational-technical schools, independent trade schools, comprehensive high schools, collaboratives,



and other schools and programs consider using the modules or sections thereof to provide in-service training based upon the needs of their teachers.

2. Teacher trainers at institutions of higher education should consider incorporating the modules, as appropriate, into their course content and curriculum for vocational teachers preparing to mainstream special needs students.

3. State education agency personnel responsible for planning in-service programs and for developing new certification standards and courses for vocational teachers should review the competencies and module contents for possible adoption.

4. The module based program should be made available to specific organizations concerned with vocational education for the handicapped. Specifically, the Massachusetts Association of Special Needs Personnel, and Project Alpha should have access to the material to assist them in their planning efforts to provide in-service training for vocational teachers.

## BIBLIOGRAPHY

- AMIDS In-Service Teacher Training Workshop for Vocational Educators of Disadvantaged and Handicapped Students. Link Enterprises, Inc. Montgomery, Alabama. "Not dated."
- Applegate, W.K., A report of a study for improving personnel development in occupational education for Illinois. Final report. Springfield: Illinois Division of Vocational and Technical Education, 1976.
- Barlow, M.L., 200 Years of Vocational Education. American Vocational Journal, 1975, 5.
- Barlow, M.L., History of Industrial Education in the United States. Peoria, Illinois: Charles A. Bennet Company, Inc., 1967.
- Berdine, W. H., Moyer, J.R., Suppa, R.J., A Competency Based Student Teaching Supervision System. Teacher Education and Special Education. 1978.
- Bloom, B.S., Taxonomy of Educational Objectives Handbook I: Cognitive Domain. New York: David McKay Co., Inc., 1956.
- Bobbitt, F., Project Remedy: Rural Education in Michigan especially for disadvantaged youth. East Lansing: College of Education, Michigan State University, 1971.
- Brolin, D., Career education needs of secondary educable teachers. Exceptional Children. 1973.
- Brolin, D., Career Development: A National Priority. Education and Training of the Mentally Retarded. 1977.
- Brolin, D., and Thomas B., Preparing teachers of secondary level educable mentally retarded: proposal for a new model. Project Report, No. 1, April, 1977. Department of Rehabilitation and Manpower Services, Stout State University, Menomonie, Wisconsin.
- Cegelka, W. J., A review of the development of work-study programs for the mentally retarded. Training School Bulletin. 1970, 67.
- Chapter 766 Regulations, Massachusetts Department of Education, October 1, 1975. II.

- Clark, G. M., A state-wide work program for the mentally retarded. Mental Retardation. 1967, 5 (6).
- Clark, G. M., and Evans, R.N., Vocational Education for the Special Needs Student: Competencies and Models for Personnel Preparation. Report on the National Workshop on Vocational Education for Special Needs Students. Urbana, Illinois: University of Illinois, 1976.
- Cochran, L.H., Inservice Education: Passive-Complacent-Reality. Theory Into Practice. 1975, 14 (1).
- Cotrell, C.J., et al., Teaching Career Analysis. Prepared for the Fourth Annual National Vocational-Technical Teacher Education Seminar in St. Louis, Missouri, 1970.
- D'Alonzo, B.J., Trends and Issues in Career Education for the Mentally Retarded. Education and Training of the Mentally Retarded, 1977.
- DiMichael, S.G., Vocational diagnosis and counseling of the retarded in sheltered workshops. American Journal of Mental Deficiency. 1960. 64.
- Edelfelt, R.A., In-service education of teachers: Priority for the next decade. Journal of Teacher Education, 1974.
- Elam, S., Performance-based teacher education, what is the state of the act? Washington, D.C.: American Association of Colleges for Teacher Education, 1971.
- Ely, D.P., Short Term In-Service Programs to Implement the Education for All Handicapped Children Act. In Heinick, R. (Ed.). A Collection of Papers by Seventeen Educators on Some Implications of P.L. 94-142. Columbus, Ohio: National Center of Educational Media and Materials for the Handicapped, 1977.
- Eskridge, C.S., and Partridge, D.L., Vocational rehabilitation for exceptional children through special education, Exceptional Children, 1963.
- Evans, R.N., Clark, G.M., and Phelps, L.A., Vocational education for the special needs student. Competencies and models for the preparation of personnel. Cited in Phelps Competency-Based Inservice Education for Secondary School Personnel Serving Special Needs Students in Vocational Education. Illinois, 1976.
- Farber, B., Mental Retardation: Its social concept and social consequences, New York: Houghton, 1968.

- Feck, V.J., A Review and Survey of Literature, Research and Programs Pertaining to Teaching Disadvantaged and Handicapped. Project Report. Frankfort, Kentucky: Bureau of Vocational Education, 1972.
- Ferns, G.W., Michigan's Vocational-technical education personnel development needs: 1971-75. Lansing, Michigan: Department of Education, Vocational Education and Career Development Service, 1971.
- Gallagher, J.J., Vocational education, special education, and vocational rehabilitation: A marriage of professionals needed for handicapped children. An address made at the National Conference on Vocational Education for Handicapped Persons, Pittsburgh, Pennsylvania, 1968.
- General Accounting Office. Training Educators for The Handicapped: A Need to Redirect Federal Programs. Washington, D.C.: Comptroller General of the United States, September, 1976.
- Gold, M.W., Research on the vocational habilitation of the retarded: The present, the future. In Ellis, N.R. (Ed.). International review of research in mental retardation. Volume 6. New York: Academic Press, 1972.
- Gold, M.W., Preworkshop skills for the trainable: a sequential technique. Education and Training of the Mentally Retarded. 1968, 3.
- Goldmeier, H., Special needs students and vocational education. Harvard Graduate School of Education Bulletin. Vol. XXII 1, 1977.
- Goldmeier, H., Improving the Access of Special Needs Students to the Resources and Facilities of Vocational Schools. A Final Report. Massachusetts Committee on Children and Youth. Boston, Massachusetts: 1975.
- Goodland, J.L., The schools vs. education. Saturday Review. 1969.
- Gorman, A.M., and Hamilton, J.B., Performance/competency based in-service teacher education for vocational education. Theory Into Practice. 1975, 14(1).
- Groves, R.M., A National Survey of Vocational Education Programs for Students with Special Needs. Columbus Center for Vocational and Technical Education, The Ohio State University, 1966. ED 011 041.

- Grubb, N.W., and Lazerson, M., Rally Round the Workplace: Continuities and Fallacies in Career Education. Harvard Educational Review, No. 4 1975.
- Halloran, W.D., Handicapped Persons: Who Are They? American Vocational Journal. 1978.
- Heath, R.W., and Nielson, M.A., The research basis for performance-based teacher education. Review of Educational Research, 1974.
- Heller, H.W., Project Retool. A Needs Assessment Summary. Teacher Education and Special Education. 1978.
- Hovland, C.I., and Weiss, W., Influence of source credibility on communication effectiveness. Public Opinion Quarterly, 1952.
- Houston, R.W., et al., Developing instructional modules: A modular system of writing modules. Houston: College of Education, University of Houston, 1971.
- Hyer, A.L., The View of P.L. 94-142 from the Classroom. In Heinick, R. (Ed.). A Collection of Papers by Seventeen Educators on Some Implications of P.L. 94-142. Columbus, Ohio: National Center of Educational Media and Materials for the Handicapped, 1977.
- Jordan, T.E., The Mentally Retarded. Ohio: Charles E. Merrill Publishing Co., 1961.
- Kaufman, M.J., et al., Mainstreaming: Toward an explication of the construct. Focus on Exceptional Children, 1975.
- Kelley, E.A., Three Views of Competency-Based Teacher Education III. The Phi Delta Kappa Educational Foundation. Bloomington, Indiana: University of Indiana, 1974.
- Kirp, D., Kuriloff, P.L., and Buss, W., Legal Mandates and Organizational Change. In N. Hobbs (Ed.). Issues in the Classification of Children (Vol. 2). San Francisco: Jossey-Bass Publishers, 1975.
- Kokaska, C.J., The vocational preparation of the educable mentally retarded. Ypsilanti, Michigan: University Printing, Eastern Michigan University, 1968.
- Kokaska, C. Due Process Procedures for the Future. Paper presented at the Training Institute sponsored by the West Virginia State Department of Education and West Virginia College of Graduate Studies, Montgomery, West Virginia, 14-19 June 1976.



- Kruppa, J.R., et al., Preparing teachers of industrial education for disadvantaged and handicapped children at the secondary level. Project Final Report. Trenton, New Jersey: Division of Vocational Education. State Department of Education, 1973.
- Lawrence, et al., Patterns of Effective Inservice Education: A State of the Art Summary of Research on Materials and Procedures for Changing Teacher Behaviors in Inservice Education. Gainesville, Florida: Florida State Department of Education, 1974.
- Lazar, A., The impact of class instruction in changing student attitudes. ERIC Reproduction Service No. ED 086-702, November 1973.
- Lee, A., Learning a Living Across the Nation Project Baseline. Flagstaff, Arizona: Northern Arizona University, Vol. IV. 1975.
- Lovitt, T.C., Mainstreaming the Mildly Handicapped: Some Research Suggestions. In Heinick, R. (Ed.). A Collection of Papers by Seventeen Educators on Some Implications of P.L. 94-142. Columbus, Ohio: National Center on Educational Media and Materials for the Handicapped, 1977.
- Mainstreaming the Handicapped in Vocational Education: Weisgerber, R. (Ed.), American Institutes for Research, Palo Alto, California, 1977.
- Martin, E., New public priorities: Education of handicapped children. Compact, August, 1971.
- Martin, E., Individualism and Behaviorism as Future Trends in Educating Handicapped Children. In Warfield, G.J. (Ed.). Mainstreaming Currents. Reston, Virginia: The Council for Exceptional Children, 1974.
- Massachusetts Advocacy Center. Equal Opportunity Denied. Vocational Education in Massachusetts. Massachusetts Advocacy Center, 1975.
- Massachusetts Annual and Five-Year Plan for Vocational Education, 1978-82. Boston, Massachusetts: State Department of Education, Division of Occupational Education, 1977.
- Massachusetts State Plan for Vocational Education. Boston, Massachusetts: State Department of Education, 1977.
- Mathews, M.G., One hundred institutionally trained male defectives in the community under supervision. Mental Hygiene. 1919, 6.
- Metz, A.S., Number of pupils with handicaps in local public schools. (Bureau of Education for the Handicapped, Report No. DHEW-OE-73-11107). Washington, D.C.: US Government Printing Office, 1973.



- Meyen, E.L., and Altman, R., Individualizing instruction for pre-service teachers: An applicable competency based training model. Focus on Exceptional Children, 1973.
- Meyen, E.L., Inservice Training: Our Only Alternative in Implementing P.L. 94-142. In Heinick, R. (Ed.). A Collection of Papers by Seventeen Educators on Some Implications of P.L. 94-142. Columbus, Ohio: National Center on Educational Media and Materials for the Handicapped, 1977.
- Meyerson, L., Somatopsychology of physical disability. In Cruickshank, W.M. (Ed.). Psychology of exceptional children and youth. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1971.
- Miller, M.D., A State Model for Vocational Inservice Education. Theory Into Practice, 1975 14(1).
- National Education Association. A Statement from the NEA Observers to the White House Conference on Handicapped Individuals presented at 115th Annual Meeting, Minneapolis, Minnesota, 1977. (Mimeographed)
- Nelson, N., Workshops for the handicapped in the United States. Springfield, Illinois: Thomas, 1971.
- Nelson, C.C., and Kokaska, C., Special Study Institute Report: Competency Based Training Criteria for Special Class Teachers: An Alternative Approach to Manpower Development Guidelines for Special Education and Teacher Training Programs. Sacramento, California State Department of Education. 1972. ED 085 959.
- Nie, N.H., Hull, C.H., Jenkins, J.G., Steinbrenner, K., and Bent, D.H., Statistical package for the social sciences (2nd ed). New York: McGraw-Hill, 1975.
- Olympus Research Corporation. An assessment of vocational education programs for the handicapped under Part B of the 1968 Amendments to the Vocational Education Act: Executive summary. Salt Lake City, Utah: Olympus Research Corporation, 1975.
- Paul, J.L, and Rosenthal, S. Mainstreaming Schools. Unpublished manuscript, School of Education, The University of North Carolina, Chapel Hill, 1976.
- Paul, J.L., Turnball, A.P., Cruickshank, W.M., Mainstreaming: A practical guide. Syracuse, N.Y.: Syracuse University Press, 1977.

- Phelps, A.L., Competency-Based Inservice Education for Secondary School Personnel Serving Special Needs in Vocational Education: A Formative Field Test Evaluation Final Report. Urbana, Illinois: Department of Vocational and Technical Education, Illinois University, 1976.
- Phelps, A.L., The Expanding Federal Commitment to Vocational Education and Employment of Handicapped Individuals. Education and Training of the Mentally Retarded. 1977.
- Pellegrino, J., T & I for the Handicapped: You've Got To Be Kidding. American Vocational Journal. 1975.
- Policy on Occupational Education. Boston, Massachusetts: State Board of Education, 1976, Publication No. 8860.
- Popham, W.J. and Baker, E.L., Rules for the development of instructional products. In Baker, R.L. and Schutz, R.E. (Eds.). Instructional product development. New York: Van Nostrand Reinhold Company, 1971.
- Reynolds, M.L., et al., A project to train vocational education and special education teachers to work cooperatively in occupational preparation of handicapped persons. Mt. Pleasant: Central Michigan University, 1973.
- Robinson, N.M., and Robinson, H.B., The mentally retarded child (2nd ed.). New York: McGraw Hill, 1976.
- Rosenshine, B., Teacher competency research. In Houston, W.R. (Ed.). Competency Assessment, research, and evaluation, New York: National Dissemination Center for Performance-Based Education, 1974.
- Rosenshine, B., and Frust, N., Research on teacher performance criteria. In Smith, B.Q. (Ed.). Research in teacher education. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1971.
- Rothstein, J.H., (Ed.). Mental Retardation Reading and Resources. New York: Holt, Rinehart, and Winston, Inc. 1971.
- Rubin, L. (Ed.). Improving in-service education: Proposals and procedures for change. Boston: Allyn and Bacon, 1971.
- Sanders, J.R. and Cunningham, D.J., A structure for formative evaluation in product development. Bloomington, Indiana: Educational Research and Evaluation Laboratory, Indiana University, 1972.

Saettler, H., BTE and the handicapped: A Washington perspective. In Creamer, J.J., and Gilmore, J.T., (Eds.). Design for competence based education in Special Education. Syracuse, New York: Division of Special Education and Rehabilitation, 1974.

Seventh Annual Report on Occupation Education in Massachusetts. Boston, Massachusetts: Massachusetts Advisory Council on Vocational Technical Education, 1976.

Sixth Annual Report on Occupational Education in Massachusetts. Boston, Massachusetts: Massachusetts Advisory Council on Vocational Technical Education, 1975.

Schoonmaker, W.D., and Girard, J., Competencies for special educators: A systematic approach to the training of habilitation personnel. Final Planning Report. Lawrence: Habilitation Personnel Training Project, University of Kansas, 1975.

Schwartz, L.A., Clinical Teacher Model for Interrelated Areas of Special Education. Exceptional Children. 37(8) 1971.

Shepard, A.N., Identification of Problems and Competencies Needed by Vocational and Technical Education Personnel Teaching Persons with Special Needs in Virginia. Richmond, Virginia: Virginia State Department of Education, Division of Vocational Education, 1975.

Special Education Manpower in Massachusetts Status Report and Recommendations. Boston, Massachusetts: State Department of Education, 1976.

Special Education Training Program Survey Massachusetts Institutions of Higher Education. Boston, Massachusetts: State Department of Education, 1977.

Steele, J.M., Me and my environment: Formative evaluation report 3. Boulder Colorado: Biological Sciences Curriculum Study, September, 1974.

Telford, C.W., and Sawrey, J.M., The Exceptional Individual. New Jersey: Prentice-Hall, Inc., 1972.

Thiagarajan, S., Semmel, D.S., Semmel, M.I., Instructional development for training teachers of exceptional children. A sourcebook. Minneapolis: Leadership Training Institute/Special Education, University of Minnesota, 1974.

Tindall, L.W., Education for All Handicapped Persons: A Mandate for the New Year. American Vocational Journal, 1978.

Toffler, A. Future Shock. New York: Bantam Books, 1971.

Tomlinson, R.M. and Albright, L., P.L. 94-142 is Coming! Are you Ready?  
School Shop. 1977.

Training educators for the handicapped. A need to redirect federal programs. Report to Congress by the Comptroller General of the United States. 1976.

Twelker, P.A., Urbach, F.D., and Buck, J.E., The systematic development of instruction: An overview and basic guide to the literature. ERIC Clearinghouse on Media and Technology. Stanford University, Stanford, California, 1972.

U.S. Government. Education for All Handicapped Children Act of 1975. Public Law 94-142. November 29, 1975. Washington, D.C.: Government Printing Office, 1975.

U.S. Government. Vocational Education Amendments of 1968. Public Law 90-576. Washington, D.C.: Government Printing Office, 1968.

U.S. Government. Vocational Education Amendments of 1976. Public Law 94-482. July 16, 1976. Federal Register. Washington, D.C.: Government Printing Office, 1976.

Weisenstein, G., Vocational Educator's Contribution in the Career Development of Retarded Individuals. Education and Training of the Mentally Retarded. 1977.

Younie, W.J., and Clark, G.M., Personnel training needs for cooperative secondary school programs for mentally retarded youth. Education and Training of the Mentally Retarded, 1969.

APPENDIX A

Competency Identification and Needs  
Assessment Questionnaire



Competency Identification and Needs  
Assessment Questionnaire

Purpose

This questionnaire is intended to determine what you feel are the important skills (competencies) vocational education teachers should have in understanding the process of mainstreaming students with special needs. This questionnaire is not intended to be all inclusive or intended to assess your skills or the skills of teachers you work with. Tasks such as conducting specific job analysis within vocational programs, adapting existing vocational curriculum, materials, facilities for special needs students, identifying basic aptitudes and competencies required for employment in a given career, vocational counselling, job placement and follow-up are all extremely important skills when implementing effective programs for special needs learners.

However, before many of these more sophisticated tasks and activities just mentioned occur, vocational teachers should have a basic understanding of the principles and procedures involved in mainstreaming students with special needs into their vocational programs.

Therefore, the following competency statements are designed to determine what you feel are the critical competencies which vocational education teachers need to have in order to mainstream students with special needs.

Directions

On the following pages, several competency statements are



listed. The degrees of importance (1 through 5) are described below. Read each competency statement and decide how important the competency is in understanding the principles and procedures used to mainstream students with special needs.

Competency Rating Code

- 1 - Unimportant - Neither mastery nor failure to master this competency is critical in mainstreaming students with special needs.
- 3 - Important - Failure to master this competency will result in only minimal success for mainstreamed special needs students.
- 5 - Extremely Critical - Failure to master this competency will result in total failure for mainstreamed special needs students.

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?				Do you feel you need to know more about this task?			
	Unimportant 1	2	Important 3	Extremely Critical 4	5	Yes, a bit More No		
						Yes, Much More	No	
1. Identify the behavioral and learning characteristics of special needs students.	1	2	3	4	5	1	2	3
2. Understand state and federal legislation on the education of Special Needs Students (P.L. 94-142, Chapter 766, P.L. 94-482, 504) and understand how it affects your role as a vocational teacher.	1	2	3	4	5	1	2	3
3. Identify the definition of mainstreaming as it pertains to the inclusion of special needs students in vocational education.	1	2	3	4	5	1	2	3
4. Identify the rationale and factors which have helped and hindered the practice of mainstreaming.	1	2	3	4	5	1	2	3
5. Recognize the definition of students with special needs as defined by Chapter 766.	1	2	3	4	5	1	2	3

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Do you feel you need to know more about this task?		
	Unimportant		Important		Extremely Critical	Yes, Much More		Yes, a bit More
	1	2	3	4		1	2	No 3
6. Identify several ways to prepare yourself to receive a student with special needs into your vocational program.	1	2	3	4	5	1	2	3
7. State the criteria in which students with special needs are identified.	1	2	3	4	5	1	2	3
8. Collaborate with other edu- cators, specialists, and parents in evaluating the students' educational needs.	1	2	3	4	5	1	2	3
9. Identify the special needs indicators which can be used to assist team members in de- lineating students' needs.	1	2	3	4	5	1	2	3
10. Identify the types of coop- erative instructional arrangements which can be developed with other school	1	2	3	4	5	1	2	3

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Do you feel you need to know more about this task?	
	Unimportant 1	2	Important 3	Extremely Critical 4	5	Yes, Much More	Yes, a bit More
10. personnel for improving and coordinating instruction for students with special needs.	1	2	3	4	5	1	2
11. Identify the specific type of assessments conducted by individual members of the Core Evaluation Team.	1	2	3	4	5	1	2
12. Delineate the vocational teacher's role in evaluating the vocational needs of special needs students.	1	2	3	4	5	1	2
13. Identify the different learning styles exhibited by special needs students.	1	2	3	4	5	1	2
14. Determine the methods of obtaining information regarding the work potential, specific skills, and abilities of special needs students.	1	2	3	4	5	1	2

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?				Do you feel you need to know more about this task?			
	Unimportant	Important	Extremely Critical	5	Yes, Much More	Yes, a bit More	No	3
15. List the various methods of recording student performance during a vocational evaluation.	1	2	3	4	5	1	2	3
16. Identify the elements contained in an Individualized Educational Plan.	1	2	3	4	5	1	2	3
17. Determine the factors which should be considered prior to selecting a teaching strategy for special needs students.	1	2	3	4	5	1	2	3
18. Develop learning prescriptions based upon student performance objectives for special needs students.	1	2	3	4	5	1	2	3
19. Identify various teaching strategies (activities or methods) which can be used with special needs students.	1	2	3	4	5	1	2	3

APPENDIX B

Knowledge Test



Name \_\_\_\_\_

Area \_\_\_\_\_

Test Questions

1. What is the preferred term now used in Massachusetts to describe students previously labeled retarded, emotionally disturbed, etc.?
- \_\_\_\_\_

2. Place a check beside the definition which best describes the practice of mainstreaming.

Mainstreaming refers to the:

- ( ) re-integration of students with special needs into regular schools and classrooms based upon federal and state guidelines for the purpose of homogeneous age grouping.
- ( ) placement of students with special needs after careful diagnosis and evaluation back into classroom with non-handicapped peers for the purpose of achieving social equality and adjustment.
- ( ) temporal, instructional and social integration of students with special needs into the least restrictive environment based upon an on-going evaluation and programming process which leads to academic and/or social gains.

Questions 3 - 8

Place an S (Support) beside the factors which have provided support for the concept of mainstreaming.

Place a NS (Non-Support) beside the factors which have not provided support for the concept of mainstreaming.

- 3. ( ) Court decisions in favor of parents mandating equal educational opportunities for the handicapped.
- 4. ( ) Research studies which support the position that handicapped students made significant academic and/or social gains in the regular classroom vs. special class placement.

5. ( ) The position that handicapped students should be educated with their own kind.
6. ( ) Research studies which indicate that handicapped students did not make significant academic and/or social gains in special classes, despite trained special educators, materials and services.
7. ( ) Attainment of due process rights and procedures for parents of handicapped students.
8. ( ) Lack of regular education teachers who were trained and willing to work with handicapped students.
9. Fill in the blank with the appropriate legislative Act which has promoted the rights of handicapped individuals.

\_\_\_\_\_ Federal Law requiring a free appropriate public education for handicapped students ages 3-21. Identifies students on a categorical basis, emphasizes placement in the least restrictive environment, guarantees due process rights and procedures, and requires an IEP for all handicapped students.

\_\_\_\_\_ Requires employers doing business with the federal government to make reasonable accommodations and develop affirmative action policies so that handicapped individuals can compete fairly for jobs and promotions.

\_\_\_\_\_ State law requiring school systems to provide a free, appropriate public education for students with special needs, ages 3-21, in the least restrictive environment. Identifies students on a non-categorical basis. Provides due process rights and procedures and requires an IEP for all students identified as having special needs.

\_\_\_\_\_ Federal law which specifies that 10% of federal funds going to State Education Agencies must be spent on programs for the handicapped. Additionally, states and local monies must also be used to match this 10% set aside funds for the handicapped.

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Civil Rights Act for Handicapped Individuals-  
Prohibits discrimination against handicapped  
persons solely on the basis of the individual's  
handicap and requires that facilities, programs  
and activities be accessible, usable, and open  
to handicapped individuals.

10. Place a check beside the definition of students with special needs as defined by Chapter 766, Massachusetts Special Education Law.

Students with special needs refer to those students:

- ( ) who because of temporary or more permanent adjustment difficulties or attributes arising from intellectual, sensory, emotional or physical factors, cerebral dysfunctions, perceptual factors, or other specific learning impairments, or any combination thereof, are unable to progress effectively in a regular education program and requires special education
- ( ) who are evaluated as being mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, other health impaired, deaf-blind, multi-handicapped, or as having specific learning disabilities, and who because of those impairments need special education and related services
- ( ) who are evaluated by a Core Evaluation Team and found to be retarded, emotionally disturbed, physically handicapped, deaf, blind, multi-handicapped, or learning disabled and therefore require separate special education programs.

## Questions 11-17

Match the appropriate handicap from the following list which best describes the learning and behavioral characteristics of students given below.

Visual impairment, learning disabled, behavioral disorder, mental impairment, speech language impairment, physical/health impairment, hearing impairment

<u>Learning and Behavioral Characteristics</u>	<u>Type of Handicap</u>
11. Student has limited intellectual abilities. Exhibits immature or impulsive behavior which is inconsistent with chronological age. Has short attention span and memory.	_____
12. Student appears inattentive, disinterested. Cannot follow oral directions. Poor language development. Learns best when information is presented visually.	_____
13. Student squints when reading or avoids activity altogether. Is awkward in activities requiring eye-hand coordination (hammering or welding). Learns best when information is presented orally.	_____
14. Student has difficulty following verbal and/or written directions. Poor motor coordination. Short attention span. Extremely "active." Reading and writing well below grade level, although has average intelligence.	_____
15. Student is easily frustrated, unusually tense. Overly sensitive to criticism and has a negative self-image. Imagines teacher and/or peer persecution. Disrupts class repeatedly. Poor attendance, frequent violation of school rules.	_____
16. Student has problem drawing and writing. Has unusual pencil grasp. Rarely uses left hand. Jerky walk, trips and bumps into things.	_____
17. Student is very quiet. Often repeats initial sounds, syllables, or entire words. Speaks unusually slowly or quickly.	_____

18. In previous years, students with any sort of physical or mental impairment were automatically considered "handicapped." Now, a student with special needs must be identified according to: (Place check mark next to right answer).
- ( ) a below average score on an I.Q. test administered by the school psychologist;
  - ( ) an observable or noticeable handicap or special need (eg. student in a wheelchair);
  - ( ) effect the handicap has on the student's ability to succeed.
19. List three ways to prepare yourself for receiving a student with special needs into your vocational program.

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20. List the other school personnel who are members of the evaluation and planning team with whom you will be working.

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21. State the rationale for developing cooperative relationships with other school personnel in evaluating, programming, and teaching students with special needs.

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22. List three ingredients for developing and maintaining a cooperative relationship with other school personnel.

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23. Give three examples of cooperative instructional arrangements which can be developed for improving and coordinating instruction for students with special needs.

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24. Special need indicators can be used to assist team members in developing student profiles.

Match the special needs indicator categories from the following list with the appropriate definition given below.

Social Skills  
Verbal Skills  
Psychomotor/Physical Skills  
Language Skills  
Quantitative/Numerical Skills

Cognitive Skills  
Perceptual Skills  
Occupational Interests



Special Need Indicator CategoriesDefinition

\_\_\_\_\_

Involves the ability to count, record, perform basic arithmetic processes, measure and otherwise use or manipulate numerical information.

\_\_\_\_\_

Involves the ability to communicate in written and spoken forms.

\_\_\_\_\_

Involves the ability to follow instructions, remember, sequence information, plan, organize, and make decisions.

\_\_\_\_\_

Involves the ability to accurately perceive colors, forms, space, sounds, and odors.

\_\_\_\_\_

Involves the ability to listen, understand, and express oneself using written and oral forms of language.

\_\_\_\_\_

Involves the ability to coordinate and perform physical movements.

\_\_\_\_\_

Involves the ability to interact with others and act independently in an acceptable manner.

\_\_\_\_\_

Identifies the learner's major cluster of occupational interest or preference.

25. Under federal and state guidelines, the identification of special needs students must be based on the following conditions:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Questions 26 - 34

Briefly describe the type of assessments conducted by the following evaluation team members.

26. Regular classroom academic teacher

27. Special needs resource teacher

28. School psychologist

29. Guidance counselor

30. Social Worker

31. School health personnel

32. Parent

33. Co-op coordinator

34. Vocational teacher

35. What is the difference between a process and product assessment?

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36. List three methods of obtaining information regarding student's vocational skills or aptitudes.

1. 

---

2. 

---

3. 

---

37. List three ways of recording student performance during a vocational evaluation.

1. 

---

2. 

---

3. 

---

38. List three pre-requisites for planning instruction for students with special needs.

---

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39. Fill in the blanks with the appropriate learning styles listed below:

Auditory  
Visual

Tactile  
Kinesthetic

Olfactory  
Multisensory

- \_\_\_\_\_ Information is learned through body or muscle movements. One "performs" the task.
- \_\_\_\_\_ Information is learned through seeing, either in a written form, picture, or by demonstration.
- \_\_\_\_\_ Information is learned by smelling or tasting.
- \_\_\_\_\_ Information is learned by feeling, touching.
- \_\_\_\_\_ Information is learned by listening, hearing a lecture, tape, or auditory part of a demonstration.
- \_\_\_\_\_ Information is learned by combining two or more approaches.

40. List four factors you should consider prior to selecting a teaching strategy.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

#### Questions 41 - 56

Fill in the blank space on the left with the teaching strategy (or method of instruction) described on the right.

41. \_\_\_\_\_ An activity which involves a planned procedure accomplished by control of conditions, together with observation of results for the purpose of discovering relationships and drawing conclusions.
42. \_\_\_\_\_ An activity in which the teacher uses examples, experiments and/or actual performance to illustrate a principle or show others how to do something.

43. \_\_\_\_\_ A process in which members of the class working cooperatively rather than individually work toward common objectives under the direction of an assigned leader.
44. \_\_\_\_\_ An activity in which students use a workbook or mechanical device to attain a specified level of performance by having students progress in small steps, at their own rate, and which instant feedback is provided to pupils.
45. \_\_\_\_\_ A visit to a place where pupils can study the content of instruction directly in its real setting.
46. \_\_\_\_\_ An activity in which pupils, under teacher and/or pupil direction exchange points of view concerning a topic, question, or problem.
47. \_\_\_\_\_ An orderly, repetitive learning activity needed to help develop a specific skill or aspect of knowledge.
48. \_\_\_\_\_ An activity in which students and/or teachers simulate situations in order to gain better insights or to solve a particular problem.
49. \_\_\_\_\_ An activity in which pupils orally report to a class about information acquired through individual study or group work.
50. \_\_\_\_\_ An activity in which pupils have opportunities to practice those skills and understandings previously learned through other instructional activities.
51. \_\_\_\_\_ An activity that involves bringing in local tradespeople in order to share new ideas, information. Can be highly motivating.
52. \_\_\_\_\_ An activity which involves the pairing of one student with another for the purpose of instruction, tutoring, assistance with notes, etc.
53. \_\_\_\_\_ Gathering information from books, periodicals, encyclopedias and other printed sources.
54. \_\_\_\_\_ This includes utilizing a variety of commercially prepared or teacher prepared materials to supplement lessons. (Includes mechanical devices such as overhead projectors, cassette recorders, etc.)

55. \_\_\_\_\_ This is an activity which involves sharing the instruction with other school personnel, such as related academic teacher, special needs resource teachers, aides, volunteers, etc.
56. \_\_\_\_\_ An activity which involves having the students select specific skills or units of work together with the teacher. The students assume responsibility for planning and learning the material on their own, using the teacher as a resource.

#### Questions 57 - 65

Identify the parts of an Individualized Educational Plan by filling in the blank spaces on the left with the corresponding definition on the right.

57. \_\_\_\_\_ These are the specific performance statements based upon the broad annual goals written for the student.
58. \_\_\_\_\_ These are the broad, performance statements regarding expected student performance written for the student.
59. \_\_\_\_\_ This is the listing of the special direct and indirect services provided to the student. It contains the personnel who provides the service, frequency, and location of the service.
60. \_\_\_\_\_ This is a statement regarding the methods that will be used to monitor the students attainment or non-attainment of the objectives.
61. \_\_\_\_\_ This is a listing of the personnel involved in the development of the IEP.
62. \_\_\_\_\_ This provides an overview of how the student learns best, and under what conditions.
63. \_\_\_\_\_ This provides data regarding students age, address, parent's name, type of program, etc.
64. \_\_\_\_\_ This describes the approach that should be used to instruct the students.
65. \_\_\_\_\_ This includes any special learning devices such as tape recorders, braille materials, etc.



APPENDIX C  
Attitude Survey

## Attitude Survey

This instrument is designed to assess the attitudes of teachers towards mainstreaming special needs students into their classrooms.

### Definitions of Terms

In the following statements, the phrase "students with special needs" refers to a student who "because of temporary or more permanent adjustment difficulties or attributes arising from intellectual, sensory, emotional, or physical factors, cerebral dysfunctions, perceptual factors, or other specific learning impairments, or any combination thereof, is unable to progress effectively in a regular education program and requires special education."

Average students refers to students without special needs.

### Directions

Circle "1" If you STRONGLY AGREE with the statement.

Circle "2" If you AGREE more than you disagree with the statement.

Circle "3" If you have NO OPINION on the statement.

Circle "4" If you DISAGREE more than you agree with the statement.

Circle "5" If you STRONGLY DISAGREE with the statement.

	SA	A	U	D	SD
1. Students with special needs should have equal access to vocational programs as do "average" students.	1	2	3	4	5
2. Students with special needs will be ridiculed by the other students in a regular classroom	1	2	3	4	5
3. Most special needs students pose a significant safety problem within the shop environment.	1	2	3	4	5
4. I feel all students should be given the opportunity to participate in vocational programs, not just the best students.	1	2	3	4	5
5. Vocational teachers should take part in assessing the needs of students with special needs.	1	2	3	4	5
6. Special needs students require a different curriculum which will force teachers to throw out a lot of material they like to teach.	1	2	3	4	5
7. I believe that including students with special needs into vocational program will deprive average students from participating.	1	2	3	4	5
8. The integration of special needs students into vocational programs represents an opportunity for teachers to grow both personally and professionally.	1	2	3	4	5
9. I believe that vocational education for students with special needs is useless since these students are not going to get jobs anyway.	1	2	3	4	5

	SA	A	U	D	SD
10. Students with special needs should not be "mainstreamed" into vocational programs. In other words, separate vocational programs should be developed to meet their needs.	1	2	3	4	5
11. Students with special needs have the same emotional needs and feelings as the average student.	1	2	3	4	5
12. If I were a parent of a student with special needs, I would want him/her to be in a regular vocational program for most of the school day.	1	2	3	4	5
13. Special needs students would not be enrolling in vocational programs if laws were not passed requiring it.	1	2	3	4	5
14. Students with special needs should be counselled and prepared for jobs which involve repetitive, menial type of activities.	1	2	3	4	5
15. I feel that placing a special needs student in a typical classroom will damage the student's self-image.	1	2	3	4	5
16. Students with special needs should be allowed to choose the vocational program they want, regardless of their skills, or abilities, and potential in the particular field.	1	2	3	4	5
17. Certain special needs students should be allowed to concentrate on only portions of a vocational curriculum if this will enable them to become proficient on a task and secure a job.	1	2	3	4	5

	SA	A	U	D	SD
18. Individual teacher attitudes toward special needs students is an extremely important criterion in determining the success or failure of special needs students in vocational education programs.	1	2	3	4	5

APPENDIX D  
Module Feedback Form



Module Feedback Form  
for  
Module: 1 2 3 4 5  
(Circle one)

Name \_\_\_\_\_

Directions: The module you have just read is designed to acquaint vocational education teachers with mainstreaming students with special needs in vocational education.

Your careful and critical analysis of the module is extremely important to any revisions of these materials.

Please read the following statements and indicate your agreement or disagreement by circling one of the choices listed.

Include any comments both positive and negative which you feel would help clarify your answer. Thank you.

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Comments
I. Module Objectives						
The objectives are clearly stated and readily apparent.	5	4	3	2	1	
The objectives relate to the Module topic	5	4	3	2	1	
The objectives are attainable given the content of the module.	5	4	3	2	1	
The objectives are relevant in understanding the process of mainstreaming students with special needs.	5	4	3	2	1	
II. Subject Matter Content						
The material is well organized.	5	4	3	2	1	
Content is clear and concise (readability).	5	4	3	2	1	
Use of sub-headings is effective.	5	4	3	2	1	
Length of module is appropriate.	5	4	3	2	1	
Content is relevant to module objectives.	5	4	3	2	1	

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Comments
Definition of terms provided as necessary.	5	4	3	2	1	
Case studies are realistic and helpful.	5	4	3	2	1	
III. Workbook Exercises						
Directions easily under- stood.	5	4	3	2	1	
Correlates with subject material.	5	4	3	2	1	
Sequenced properly.	5	4	3	2	1	
Assists in the mastery of the objectives.	5	4	3	2	1	
Supplementary information helpful.	5	4	3	2	1	

1. Describe what you like best about this module.
  
  
  
  
  
  
  
  
  
  
2. Describe what you like the least about this module.

Summary Evaluation of the Module

Circle One

5	4	3	2	1
Acceptable, Retain in present form		Acceptable, some modifications needed		Not acceptable. Major modification is needed

APPENDIX E

Participant Information Form

Participant Information Questionnaire

- I. Name \_\_\_\_\_ Age \_\_\_\_\_  
                                     Last                                      First                                      Middle
- II. Employment \_\_\_\_\_ Full-time                      Title \_\_\_\_\_  
                                     \_\_\_\_\_ Part-time
- III. Professional Background
- Years of Teaching Experience:                      Total \_\_\_\_\_ years
- Work Experience:                                      Total \_\_\_\_\_ years
- IV. Previous Teaching Experience
- |    | <u>School</u> | <u>Year to Year</u> | <u>Course</u> |
|----|---------------|---------------------|---------------|
| 1. |               |                     |               |
| 2. |               |                     |               |
| 3. |               |                     |               |
| 4. |               |                     |               |
- V. Previous Work Experience
- |    | <u>Place</u> | <u>Year to Year</u> | <u>Job Title</u> |
|----|--------------|---------------------|------------------|
| 1. |              |                     |                  |
| 2. |              |                     |                  |
| 3. |              |                     |                  |
| 4. |              |                     |                  |
- VI. Educational Background
- |    | <u>College Attended</u> | <u>Dates</u> | <u>Degree</u> | <u>Credit<br/>Toward Degree</u> |
|----|-------------------------|--------------|---------------|---------------------------------|
| 1. |                         |              |               |                                 |
| 2. |                         |              |               |                                 |
| 3. |                         |              |               |                                 |
- VII. Involvement with Handicapped
1. Are you a parent of a handicapped child?    \_\_\_\_ Yes    \_\_\_\_ No



VII. Involvement with Handicapped (continued)

2. Have you ever taught handicapped students? \_\_\_\_ Yes \_\_\_\_ No  
 \_\_\_\_ No. of years
3. Have you ever attended a Core Evaluation Meeting with other teachers, parents under Chapter 766? \_\_\_\_ Yes \_\_\_\_ No  
 \_\_\_\_ No. of meetings

VIII. What educational offerings (besides this course) have you undertaken to prepare yourself to work with special needs students?

Check all that apply.

1. \_\_\_\_ None
2. \_\_\_\_ College course(s)  
 \_\_\_\_ undergraduate degree \_\_\_\_ No. of credits  
 \_\_\_\_ graduate degree \_\_\_\_ No. of credits  
 Content of workshops \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. \_\_\_\_ In-service seminars, workshops conducted by school.  
 \_\_\_\_ No. of hours  
 Content of workshops \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. \_\_\_\_ Conferences, workshops attended outside of school.  
 \_\_\_\_ No. of hours  
 Content of workshops \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

APPENDIX F

Communication to Superintendent-Director  
of Smith School

December 15, 1978

Brad McGrath  
Vocation Director  
Smith Vocational High School  
Northampton, MA 01060

Dear Mr. McGrath:

Thank you for meeting with Paul and me last week. The issues involved in providing vocational education to students with special needs are indeed complexed as evidenced by your perceptive comments and insights. Hopefully, the work that I have been doing in the area of staff development for vocational teachers can assist you in preparing for whatever direction your school may take in providing vocational services to "students with special needs."

I look forward to visiting with you and your staff on January 11, 1979 to explain my program.

Thanks again for your cooperation and interest.

Sincerely,

Gregory W. Little

GWL/lv

cc: Paul Caouette  
Administrator of Special Education

## APPENDIX G

### Workshop Description and Sign-up Form

Title: Special Needs Students in Vocational Education  
A Workshop for Vocational Education Teachers

Purpose:

- 1) To provide an opportunity for vocational education teachers to increase their knowledge in mainstreaming students with special needs.
- 2) To provide an opportunity for vocational education teachers to evaluate a set of in-service materials which will eventually help other vocational education teachers learn about mainstreaming special needs students.

Format of Workshop: The workshop will be divided into approximately seven sessions, each running about 2 1/2 hours in length. The content would be as follows:

Meeting #1	Knowledge Pre-test Attitude Survey Overview of the Workshop
Meeting #2	Completion of Module 1, "Vocational Education for Students with Special Needs: An Introduction"
Meeting #3	Completion of Module 2, "Orientation to Students with Special Needs"
Meeting #4	Completion of Module 3, "Serving the Student with Special Needs in Vocational Education: A Team Approach"
Meeting #5	Completion of Module 4, "Assessing the Student with Special Needs in Vocational Education"
Meeting #6	Completion of Module 5, "Teaching Strategies for Students with Special Needs in Vocational Education"
Meeting #7	Knowledge Post-test Attitude Survey Pre-Post Test Feedback to Participants Summary and Wrap Up

Instructions:

If you are interested in attending the workshop, please sign your name, subject you teach, and provide a list of days and times that you could attend. Thanks.



## APPENDIX H

Communication with State Department of Education



Springfield Regional Education Center

The Commonwealth of Massachusetts  
Department of Education

155 Maple Street, Springfield, MA 01105

December 27, 1978

Paul E. Caouette  
D. A. Sullivan School  
South Street  
Northampton, MA 01060

Dear Paul:

In reference to our conversation the other day in my office, I have reviewed briefly the sample materials of the proposed inservice training material content. Prior to any further directions from this office, I would appreciate having a letter submitted by Mr. Brad McGrath requesting that the subject content in hand be considered to satisfy the professional development requirement as determined in our regulations for Chapter 74.

Once Mr. McGrath's request is submitted to this office, I will then consider the total aspects of the concept as you and I discussed briefly, and that is that this professional development phase would act as an initial phase of a total concept which would encompass the combined financial resources of both Smith Vocational School and the Northampton Public Schools to address the needs of the special needs population.

I am most interested in seeing this concept pursued and I would urge that the suggestion indicated in this letter take place as soon as possible. If you have any questions, please give me a ring.

Sincerely,

JOSEPH M. CANGRO, Ed. D.  
Team Leader  
Division of Occupational Education

JMC:mnw

APPENDIX I

Notification of the Selection of the  
In-Service Participants

To: Staff

From: Brad McGrath, Superintendent-Director  
Gregory W. Little

re: In-Service Workshop: Mainstreaming Students with Special Needs

Date: January 22, 1979

Due to the overwhelming response to the workshop, Greg Little has agreed to expand the course from fifteen to twenty-five teachers. Unfortunately, only vocational teachers will be able to participate. The following is a list of teachers who have been selected to participate.

<u>Name</u>	<u>Area</u>
Steven Root	Agriculture
John Bobala	Auto
Francis Olszewski	Carpentry
Walt Letourneau	Carpentry
Cliff Jenkins	Carpentry
Doug Baker	Carpentry
Matilda Rouillard	Cosmetology
Charlotte LaBonte	Cosmetology
Paul Miller	Culinary Arts
John Cotton	Data Processing
Tom Kress	Industrial Arts
Dave Ringey	Industrial Arts
Robert Bowe	Drafting
Carl O'Brien	Electronics
George Harrell	Electronics
Mary O'Brien	Home Economics
Jean O'Dea	Home Economics
Carrol Lathrop	Child Study
Alice Kane	Home Economics
Veronica Carroll	LPN
Francis Juchnicki	Metal

<u>Name</u>	<u>Area</u>
Tom Tessier	Machine
Jean Haley	Guidance
Ed Vandoloski	Electrical
Sandra Doucett	Data Processing

A short but important organizational meeting will be held after school on Wednesday, January 31, 1979 in the cafeteria. Greg will register teachers, and set up future meeting dates.

Thank you.

APPENDIX J

List of Team Assignments



Team Assignments

## Team 1

Veronica Carroll  
Carl O'Brien  
Francis Juchnicki  
Paul Miller  
Charlotte LaBonte

## Team 2

Cliff Junkins  
Dave Ringey  
Sandra Doucett  
Alice Kane  
John Bobala

## Team 3

Jean Haley  
Tom Kress  
George Harrell  
Walt Letourneau  
Doug Baker

## Team 4

Carroll Lothrop  
Joe Cotton  
Robert Bowe  
Jean O'Dea  
Tom Tessier

## Team 5

Steven Root  
Ed Vandoloski  
Matilda Rouillard  
Francis Olszewski  
Mary O'Brien

APPENDIX K

Cover Memo Accompanying Module  
Feedback Form

To: In-Service Participants  
From: Gregory W. Little  
Re: Evaluation of the Modules  
Date: March 5, 1979

As you know, two purposes for these workshops have been set. The first is to provide you with a meaningful in-service experience whereby information on mainstreaming students with special needs in vocational education will be presented. The second, and equally important, is to have you evaluate the in-service modules on mainstreaming. Your critical comments, suggestions, and reactions are welcomed and encouraged. Throughout these workshops you will be completing module feedback forms as you review the material and complete the exercises in each module. You are strongly encouraged to react critically and candidly to the statements in the module feedback form.

Your candid, and honest reactions to the modules will assist in the process of revising the material as needed so that other vocational teachers may benefit from learning about mainstreaming students with special needs. Please feel free to make comments on your feedback forms to support your evaluations.

Thank you.

## APPENDIX L

Raw Data on Participants' Responses on  
Competency Identification and Needs  
Assessment Questionnaire

TABLE 15  
RAW DATA ON PARTICIPANTS' RESPONSES ON COMPETENCY IDENTIFICATION  
AND NEEDS ASSESSMENT QUESTIONNAIRE

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Do you feel you need to know more about this task?		Standard Error
	Extremely Critical					Yes, Much More	Yes, a bit More	
	Unimportant 1	2	3	4	5			
1. Identify the behavioral and learning characteristics of special needs students.	3 (12%)	4 (16%)	8 (32%)	4 (16%)	18 (72%)	16 (64%)	9 (36%)	1.36 .094
2. Understand state and federal legislation on the education of Special Needs Students (P.L. 94-142, Chapter 766, P.L. 94-482, 504) and understand how it affects your role as vocational teacher.	3 (12%)	4 (16%)	8 (32%)	4 (16%)	6 (24%)	18 (72%)	6 (24%)	1.32 .111
3. Identify the definition of mainstreaming as it pertains to the inclusion of special needs students in vocational education.	1 (4%)	1 (4%)	12 (48%)	7 (28%)	4 (16%)	11 (44%)	12 (48%)	1.64 .128
4. Identify the rationale and factors which have helped and hindered the practice of mainstreaming	1 (4%)	4 (16%)	10 (40%)	4 (16%)	6 (24%)	11 (44%)	13 (52%)	1.60 .115

TABLE 15, cont'd.

Competencies or Tasks for Vocational Teachers With Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Do you feel you need to know more about this task?		Standard Error	Mean	Standard Error
	Unimportant 1	2	Important 3	4	Extremely Critical 5	Yes, More	Yes, a bit More			
5. Recognize the definition of students with special needs as defined by Chapter 766.	3 (12%)	1 (4%)	7 (28%)	7 (28%)	2 (8%)	10 (40%)	11 (48%)	3 (12%)	1.72	.136
6. Identify several ways to prepare yourself to receive a student with special needs into your vocational program.		1 (4%)	5 (20%)	8 (32%)	11 (44%)	12 (56%)	11 (47%)	1	1.72	.116
7. State the criteria in which students with special needs are identified.	4 (16%)		8 (32%)	9 (36%)	7 (28%)	11 (44%)	13 (52%)	1 (4%)	1.68	.118
8. Collaborate with other educators, specialists, and parents in evaluating the students' educational needs.	1 (4%)		3 (12.5%)	8 (33.3%)	12 (50%)	14 (58.3%)	6 (25%)	7 (28%)	1.58	.118
9. Identify the special needs indicators which can be used to assist team members in delineating students' needs.	3 (12.5%)	3 (12.5%)	5 (20.8%)	10 (41.7%)	3 (12.5%)	9 (37.5%)	12 (50%)	3 (12.5%)	1.75	.136





TABLE 15, cont'd.

Completion of Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming special needs students in vocational education?					Do you feel you need to know more about this task?		Mean	Standard Error
	Unimportant 1	2	Important 3	4	Extremely Critical 5	Yes, Much	Yes, a bit		
14. Determine the methods of obtaining information re- garding the work potential, specific skills, and abilities of special needs students			4 (16.7%)	7 (29.2%)	13 (54.1%)	17 (70.8%)	7 (29.2%)	1.26	.095
15. List the various methods of recording student perfor- mance during a vocational evaluation.	3 (12%)	1 (4%)	7 (28%)	8 (32%)	6 (24%)	12 (48%)	9 (36%)	1.68	.15
16. Identify the elements contained in an individ- ualized Educational Plan.	3 (12%)	3 (12%)	8 (32%)	7 (28%)	4 (16%)	11 (44%)	12 (48%)	1.64	.128
17. Determine the factors which should be considered prior to selecting a teaching strategy for special needs students.	1 (4.2%)	1 (4.2%)	5 (20.8%)	7 (29.2%)	10 (41.6%)	13 (54.2%)	10 (41.7%)	1.50	.10

TABLE 15, cont'd.

Competencies or Tasks for Vocational Teachers with Special Needs Students	How important is this competency or task in mainstreaming students in vocational education?					Do you feel you need to know more about this task?		Mean	Standard Error	N	Mean	Standard Error
	Unimportant 1	2	Important 3	4	Extremely Critical 5	Yes,						
						More	a bit More					
18. Develop learning prescriptions based upon student performance objectives for special needs students.	$\frac{1}{(4\%)}$	$\frac{1}{(4\%)}$	$\frac{8}{(32\%)}$	$\frac{7}{(28\%)}$	$\frac{8}{(32\%)}$	$\frac{15}{(60\%)}$	$\frac{9}{(36\%)}$	3.80	.216	1	1.44	.117
19. Identify various teaching strategies (activities or methods) which can be used with special needs students.	$\frac{1}{(4\%)}$		$\frac{4}{(16\%)}$	$\frac{6}{(24\%)}$	$\frac{14}{(56\%)}$	$\frac{19}{(76\%)}$	$\frac{4}{(16\%)}$	4.28	.204	2	1.32	.125

APPENDIX M

Raw Data on Participants' Responses  
on Modules 1-5

TABLE 16

## RESPONSES ON MODULES 1-5

PARTICIPANTS' RESPONSES ON MODULE 1							
(N = 25)	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
I. Module Objectives							
The objectives are clearly stated and readily apparent	3.600	.224	5 (20%)	11 (40%)	4 (16%)	4 (16%)	1 (4%)
The objectives relate to the Module topic	3.880	.145	4 (16%)	15 (60%)	5 (20%)	1 (4%)	
The objectives are attainable given the content of the module	3.440	.201	3 (12%)	10 (40%)	8 (32%)	3 (12%)	1 (4%)
The objectives are relevant in understanding the process of mainstreaming students with special needs	3.542	.217	4 (16.7%)	10 (41.7%)	6 (25%)	3 (12.5%)	1 (4.2%)
II. Subject Matter Content							
The material is well organized	3.000	.208	1 (4%)	8 (32%)	8 (32%)	6 (24%)	2 (8%)
Content is clear and concise (readability)	3.320	.214	1 (4%)	15 (60%)	1 (4%)	7 (28%)	1 (4%)
Use of sub-headings is effective	3.800	.153	2 (8%)	18 (72%)	4 (16%)		1 (4%)

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 1							
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
II. Subject Matter Content							
Length of module is appropriate	3.750	.150	2 (8.5%)	16 (66.7%)	4 (16.7%)	2 (8.3%)	
Content is relevant to module objectives	4.000	.147	4 (16.7%)	18 (75%)		2 (8.3%)	
Definition of terms provided as necessary	3.880	.133	2 (8%)	20 (80%)	1 (4%)	2 (8%)	
Case studies are realistic and helpful*							
III. Workbook Exercises							
Directions easily understood	3.12	.218	1 (4%)	11 (44%)	5 (20%)	6 (24%)	2 (8%)
Correlates with subject material	3.522	.217	3 (13%)	11 (47.8%)	5 (21.9%)	3 (13%)	1 (4.3%)
Sequenced properly	2.680	.229	1 (4%)	6 (24%)	6 (24%)	8 (32%)	4 (16%)
Assists in the mastery of the objectives	3.240	.226	3 (12%)	8 (32%)	8 (32%)	4 (16%)	2 (8%)



TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 1						
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2 Strongly Disagree 1
III. Workbook Exercises						
Supplementary information helpful	3.880	.133	3 (12%)	17 (68%)	4 (16%)	1 (4%)
* Not applicable: no case studies included.						
TOTAL SUMMARY MODULE EVALUATION (N=25)						
	Mean	Standard Error	Acceptable Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable Major Modification is Needed 2	1
	2.880	.156	4 (16%)	16 (64%)	3 (12%)	2 (8%)

TABLE 16, cont'd.

PARTICIPANTS' RESPONSE ON MODULE 2							
(N = 25)	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
I. Module Objectives							
The objectives are clearly stated and readily apparent	4.440	.101	11 (44%)	14 (56%)			
The objectives relate to the Module topic	4.440	.101	11 (44%)	14 (56%)			
The objectives are attainable given the content of the module	4.360	.128	11 (44%)	12 (48%)	2 (8%)		
The objectives are relevant in understanding the process of mainstreaming students with special needs	4.280	.108	8 (32%)	16 (64%)	1 (4%)		
II. Subject Matter Content							
The material is well organized	4.320	.111	9 (36%)	15 (60%)	1 (4%)		
Content is clear and concise (readability)	4.320	.138	10 (40%)	14 (56%)		1 (4%)	
Use of sub-headings is effective	4.080	.140	7 (28%)	13 (52%)	5 (20%)		

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 2							
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
II. Subject Matter Content							
Length of module is appropriate	4.292	.112	8 (33.3%)	15 (62.5%)	1 (4.2%)		
Content is relevant to module objectives	4.280	.092	7 (28%)	18 (72%)			
Definition of terms provided as necessary	4.240	.105	7 (28%)	17 (68%)	1 (4%)		
Case studies are realistic and helpful	4.120	.167	10 (40%)	8 (32%)	7 (28%)		
III. Workbook Exercises							
Directions easily understood	4.400	.100	10 (40%)	15 (60%)			
Correlates with subject material	4.320	.111	9 (36%)	15 (60%)	1 (4%)		
Sequenced properly	4.120	.133	7 (28%)	14 (56%)	4 (16%)		
Assists in the mastery of the objectives	4.160	.125	7 (28%)	15 (60%)	3 (12%)		

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 2						
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2 Strongly Disagree 1
III. Workbook Exercises						
Supplementary information helpful	4.280	.136	10 (40%)	12 (48%)	3 (12%)	
TOTAL SUMMARY MODULE EVALUATION						
(N=25)						
	Mean	Standard Error	Acceptable Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable Major Modification is Needed 2	1
	4.120	.133	7 (28%)	14 (56%)	4 (16%)	

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 3							
(N = 25)	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
I. Module Objectives							
The objectives are clearly stated and readily apparent	4.200	.100	6 (24%)	18 (72%)	1 (4%)		
The objectives relate to the Module topic	4.240	.105	7 (28%)	17 (68%)	1 (4%)		
The objectives are attainable given the content of the module	3.720	.158	3 (12%)	14 (56%)	6 (24%)	2 (8%)	
The objectives are relevant in understanding the process of mainstreaming students with special needs	4.240	.119	8 (32%)	15 (60%)	2 (8%)		
II. Subject Matter Content							
The material is well organized	4.200	.115	7 (28%)	16 (64%)	2 (8%)		
Content is clear and concise (readability)	4.280	.108	8 (32%)	16 (64%)	1 (4%)		
Use of sub-headings is effective	4.000	.120	4 (16.7%)	16 (66.7%)	4 (16.7%)		

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 3							
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
II. Subject Matter Content							
Length of module is appropriate	4.000	.141	5 (20%)	16 (64%)	3 (12%)	1 (4%)	
Content is relevant to module objectives	4.120	.120	6 (24%)	16 (64%)	3 (12%)		
Definition of terms provided as necessary	4.400	.115	11 (44%)	13 (52%)	1 (4%)		
Case studies are realistic and helpful	4.200	.153	9 (36%)	13 (52%)	2 (8%)	1 (4%)	
III. Workbook Exercises							
Directions easily understood	3.760	.156	3 (12%)	15 (60%)	5 (20%)	2 (8%)	
Correlates with subject material	4.200	.115	7 (28%)	16 (64%)	2 (8%)		
Sequenced properly	3.880	.203	6 (24%)	14 (56%)	2 (8%)	2 (8%)	1 (4%)
Assists in the mastery of the objectives	4.083	.103	4 (16.7%)	18 (75%)	2 (8.3%)		



TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 3						
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2 Strongly Disagree 1
III. Workbook Exercises						
Supplementary information helpful	4.200	.115	7 (28%)	16 (64%)	2 (8%)	
TOTAL SUMMARY MODULE EVALUATION						
(N=25)						
	Mean	Standard Error	Acceptable Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable Major Modification is Needed 2	1
	3.800	.153	4 (16%)	7 (28%)	1 (4%)	

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 4							
(N = 25)	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
I. Module Objectives							
The objectives are clearly stated and readily apparent	4.200	.115	7 (28%)	16 (64%)	2 (8%)		
The objectives relate to the Module topic	4.280	.092	7 (28%)	18 (72%)			
The objectives are attainable given the content of the module	4.000	.129	4 (16%)	18 (72%)	2 (8%)	1 (4%)	
The objectives are relevant in understanding the process of mainstreaming students with special needs	4.240	.087	6 (24%)	19 (76%)			
II. Subject Matter Content							
The material is well organized	4.040	.070	2 (8%)	22 (88%)	1 (4%)		
Content is clear and concise (readability)	4.200	.115	7 (28%)	16 (64%)	2 (8%)		
Use of sub-headings is effective	4.240	.119	8 (32%)	15 (60%)	2 (8%)		

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 4							
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
II. Subject Matter Content							
Length of module is appropriate	4.120	.156	7 (28%)	16 (64%)		2 (8%)	
Content is relevant to module objectives	4.160	.095	5 (20%)	19 (76%)	1 (4%)		
Definition of terms provided as necessary	4.320	.111	9 (36%)	15 (60%)	1 (4%)		
Case studies are realistic and helpful	4.320	.160	12 (48%)	10 (40%)	2 (8%)	1 (4%)	
III. Workbook Exercises							
Directions easily understood	3.920	.152	5 (20%)	14 (56%)	5 (20%)	1 (4%)	
Correlates with subject material	4.280	.092	7 (28%)	18 (72%)			
Sequenced properly	4.000	.115	3 (12%)	20 (80%)	1 (4%)	1 (4%)	
Assists in the mastery of the objectives	3.960	.168	6 (24%)	14 (56%)	3 (12%)	2 (8%)	

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES TO MODULE 4						
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2 Strongly Disagree 1
III. Workbook Exercises						
Supplementary information helpful	4.360	.114	10 (40%)	14 (56%)	1 (4%)	
TOTAL SUMMARY MODULE EVALUATION (N=25)						
	Mean	Standard Error	Acceptable Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable Major Modification is Needed 2	1
	4.160	.125	7 (28%)	15 (60%)	3 (12%)	

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 5							
(N = 25)	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
I. Module Objectives							
The objectives are clearly stated and readily apparent	4.320	.095	8 (32%)	17 (68%)			
The objectives relate to the Module topic	4.280	.092	7 (28%)	18 (72%)			
The objectives are attainable given the content of the module	4.080	.128	5 (20%)	18 (72%)	1 (4%)	1 (4%)	
The objectives are relevant in understanding the process of mainstreaming students with special needs	4.240	.119	8 (32%)	15 (60%)	2 (8%)		
II. Subject Matter Content							
The material is well organized	4.000	.129	4 (16%)	18 (72%)	2 (8%)	1 (4%)	
Content is clear and concise (readability)	3.920	.172	5 (20%)	16 (64%)	1 (4%)	3 (12%)	
Use of sub-headings is effective	4.125	.125	6 (25%)	15 (62.5%)	3 (12.5%)		

TABLE 16, cont'd.

PARTICIPANTS' RESPONSES ON MODULE 5						
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2 Strongly Disagree 1
II. Subject Matter Content						
Length of module is appropriate	3.840	.189	5 (20%)	14 (56%)	4 (16%)	1 (4%)
Content is relevant to module objectives	4.160	.138	7 (28%)	16 (64%)	1 (4%)	1 (4%)
Definition of terms provided as necessary	4.200	.163	9 (36%)	14 (56%)	2 (8%)	
Case studies are realistic and helpful	4.120	.167	8 (32%)	14 (56%)	1 (4%)	2 (8%)
III. Workbook Exercises						
Directions easily understood	4.000	.141	5 (20%)	16 (64%)	3 (12%)	1 (4%)
Correlates with subject material	4.120	.156	8 (32%)	13 (52%)	3 (12%)	1 (4%)
Sequenced properly	3.760	.166	3 (12%)	16 (64%)	3 (12%)	3 (12%)
Assists in the mastery of the objectives	3.960	.187	17 (28%)	13 (52%)	2 (8%)	3 (12%)



TABLE 16, cont'd.

PARTICIPANTS' RESPONSES TO MODULE 5							
	Mean	Standard Error	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
III. Workbook Exercises							
Supplementary information helpful	4.120	.167	8 (32%)	14 (56%)	1 (4%)	2 (8%)	
TOTAL SUMMARY MODULE EVALUATION (N=25)							
	Mean	Standard Error	Acceptable Retain in Present Form 5	Acceptable, Some Modifications Needed 3	Not Acceptable Major Modification is Needed 2		1
	3.680	.160	1 (4%)	4 (16%)	1 (4%)		1 (4%)

APPENDIX N

Raw Data on Participants' Responses  
on Pre/Post Attitude Survey

TABLE 17  
RAW DATA ON PARTICIPANTS' RESPONSES ON PRE/POST ATTITUDE SURVEY

	SA 1		A 2		U 3		D 4		SD 5	
	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%
1. Students with special needs should have equal access to vocational programs as do "average" students.	7 (28%)	9 (36%)	10 (40%)	14 (56%)	1 (4%)		6 (24%)	2 (8%)	1 (4%)	
* 2. Students with special needs will be ridiculed by the other students in a regular classroom.	2 (8%)	1 (4%)	5 (20%)	5 (20%)	4 (16%)	8 (32%)	13 (42%)	7 (28%)	1 (4%)	4 (16%)
* 3. Most special needs students pose a significant safety problem within the shop environment.	9 (36%)	2 (8%)	9 (36%)	6 (24%)	2 (8%)	5 (20%)	5 (20%)	10 (40%)		2 (8%)
4. I feel all students should be given the opportunity to participate in vocational programs, not just the best students.	10 (40%)	8 (32%)	14 (56%)	15 (60%)		1 (4%)	1 (4%)	1 (4%)		
5. Vocational teachers should take part in assessing the needs of students with special needs.	16 (64%)	17 (68%)	8 (32%)	8 (32%)			1 (4%)			
* 6. Special needs students require a different curriculum which will force teachers to throw out a lot of material they like to teach.	4 (16%)	1 (4.3%)	5 (2.0%)	7 (30.4%)	6 (24%)	3 (13.2%)	8 (32%)	7 (30.4%)	2 (8%)	5 (21.7%)

TABLE 17, cont'd.

	SA 1		A 2		U 3		D 4		SD 5	
	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%
* 7. I believe that including students with special needs into vocational programs will deprive average students from participating.	1 (4%)	3 (12%)	9 (36%)	3 (12%)	2 (8%)	6 (24%)	9 (36%)	7 (28%)	4 (16%)	6 (24%)
8. The integration of special needs students into vocational programs represents an opportunity for teachers to grow both personally and professionally.	11 (44%)	6 (24%)	8 (32%)	10 (40%)	3 (12%)	3 (12%)	2 (8%)	5 (20%)	1 (4%)	1 (4%)
* 9. I believe that vocational education for students with special needs is useless since these students are not going to get jobs anyway.			1 (4%)	1 (4%)	1 (4%)	1 (4%)	9 (36%)	11 (44%)	1 (4%)	1 (4%)
* 10. Students with special needs should not be "mainstreamed" into vocational programs. In other words, separate vocational programs should be developed to meet their Needs.	6 (24%)	1 (4%)	5 (20%)	3 (12%)	3 (12%)	4 (16%)	9 (36%)	10 (40%)	2 (8%)	7 (28%)
11. Students with special needs have the same emotional needs and feelings as the average student.	9 (36%)	9 (36%)	8 (32%)	10 (40%)	3 (12%)	1 (4%)	2 (8%)	5 (20%)	3 (12%)	

TABLE 17, cont'd.

	SA		A		U		D		SD	
	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%
12. If I were a parent of a student with special needs, I would want him/her to be in a regular vocational program for most of the school day.	5 (20%)	3 (12%)	11 (44%)	15 (60%)	3 (12%)	6 (24%)	5 (20%)	1 (4%)	1 (4%)	
13. Special needs students would not be enrolling in vocational programs if laws were not passed requiring it.	1 (4%)	1 (4%)	11 (44%)	8 (32%)	4 (16%)	5 (20%)	5 (20%)	8 (32%)	4 (16%)	3 (12%)
14. Students with special needs should be counselled and prepared for jobs which involve repetitive, menial type of activities.	3 (12%)		5 (20%)	5 (20%)	4 (16%)	1 (4%)	6 (24%)	10 (40%)	7 (28%)	9 (36%)
15. I feel that placing a special needs student in a typical classroom will damage the student's self-image.	2 (8%)	1 (4%)	7 (28%)	2 (8%)	1 (4%)	6 (24%)	11 (44%)	12 (48%)	4 (16%)	
16. Students with special needs should be allowed to choose the vocational program they want, regardless of their skills, or abilities, and potential in the particular field.			2 (8%)	4 (16%)	2 (8%)	2 (8%)	7 (28%)	6 (24%)	14 (56%)	13 (52%)

TABLE 17, cont'd.

	A		SA		U		D		SD	
	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%	Pre #/%	Post #/%
17. Certain special needs students should be allowed to concentrate on only portions of a vocational curriculum if this will enable them to become proficient on a task and secure a job.	4 (16%)	8 (32%)	11 (44%)	14 (56%)	1 (4%)	1 (4%)	7 (28%)	2 (8%)	2 (8%)	2 (8%)
18. Individual teacher attitudes toward special needs students are an extremely important criterion in determining the success or failure of special needs students in vocational education programs.	14 (56%)	8 (32%)	11 (44%)	16 (64%)		1 (4%)				

Note: N = 25

1 SA = Strongly Agree

2 A = Agree

3 U = Undecided

4 D = Disagree

5 SD = Strongly Disagree

\*Responses in the SA and A category represent favorable attitudes toward mainstreaming. Items marked \* were worded in such a fashion that responses in the D and SD category actually represent a favorable attitude toward mainstreaming.



## APPENDIX O

Raw Data on Participants' Responses  
on Pre/Post Knowledge Test

TABLE 18  
 RAW DATA ON PARTICIPANTS' RESPONSES ON  
 PRE/POST KNOWLEDGE TEST

Teacher #	Pre-Test Score	Post-Test Score
1	70	94
2	24	57
3	26	47
4	24	55
5	26	42
6	38	55
7	50	75
8	36	78
9	62	92
10	49	80
11	34	64
12	53	54
13	54	78
14	34	42
15	22	42
16	73	79
17	35	48
18	51	64
19	42	82
20	8	9
21	35	69
22	28	48
23	34	49
24	24	51
25	57	90

Note: Possible Score = 105.  
 Range: Pretest, 8-73 (mean 39.560)  
 Posttest, 9-94 (mean 61.760)



