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IDENTIFICATION, VALIDATION AND DETERMINATION
OF SELF-PERCEIVED COMPETENCIES
NEEDED BY MICHIGAN VOCATIONALLY CERTIFIED
BUSINESS EDUCATION TEACHERS
IN INFORMATION PROCESSING
presented by

JOHN JOSEPH OLIVO, JR.

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of the requirements for

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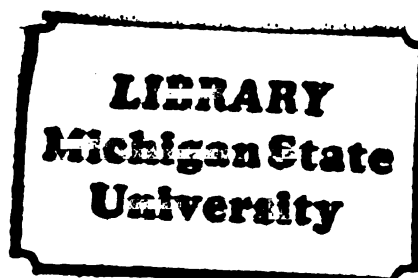

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IDENTIFICATION, VALIDATION AND DETERMINATION
OF SELF-PERCEIVED COMPETENCIES
NEEDED BY
MICHIGAN VOCATIONALLY CERTIFIED BUSINESS EDUCATION TEACHERS
IN INFORMATION PROCESSING

BY
John Joseph Olivo, Jr.

A DISSERTATION
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ABSTRACT

IDENTIFICATION, VALIDATION AND DETERMINATION OF SELF-PERCEIVED COMPETENCIES NEEDED BY MICHIGAN VOCATIONALLY CERTIFIED BUSINESS EDUCATION TEACHERS IN INFORMATION PROCESSING

By

John Joseph Olivo, Jr.

This study was an exploratory, descriptive investigation of the competencies needed by teachers of information processing. It was based on a survey of public secondary school business teachers to identify a list of self-perceived competencies considered to be important for teachers of information processing to possess and to determine the competencies in which the teachers felt they were least proficient and in need of further education.

Additional purposes of the study were: (1) to provide information to business teacher educators that would be useful in the developing of improved teacher education programs in information processing and (2) to ascertain teachers' perceptions of where within the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) teaching skill and/or knowledge in the competencies could be developed most effectively or most conveniently.

Data for the study were gathered by means of a mailed questionnaire which was developed specifically for this study. A total of 274 questionnaires were sent to public secondary school vocationally

certified business education teachers throughout Michigan. The findings reported in this study were based on the usable responses of 132 (48 percent) of those teachers.

The following conclusions were: Michigan vocationally certified business education teachers (MVCBET) perceived a need to acquire skills and/or knowledge in information processing. Michigan vocationally certified business education teachers indicated a need to further their education in information processing. All competency areas in this study could be included in business teacher education programs for information processing. All competency statements in this study could be included in business teacher education programs. A variety of preparation settings were indicated as appropriate whereby MVCBET could obtain education in information processing. There was no evidence that one preparation setting is best for acquiring competence in all six competency areas. The MVCBET who participated in this study were experienced professional business education teachers. The number of years of teaching experience had an effect on the perceptions of MVCBET on the importance and needs ratings of the competency areas and competency statements. The desirability of on-the-job experience for a teacher of information processing to possess had little effect on the importance and needs ratings expressed by MVCBET. Although teachers indicated their perceptions of the competency areas and statements as to the importance and their professional development need, it cannot be stated that these are the only needs of teachers.

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DEDICATED

To my father and mother, John and Angelina Olivo, who have always worked hard to give their children the opportunity to pursue their own goals--both in education and in chosen occupations, and whose love, understanding and moral support have been constant companions throughout my life.

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CHAPTER I

THE PROBLEM

Introduction

"Advanced technology is now making the integration of data and word processing a reality. Many administrative personnel are making this merger primarily to implement an information processing system that can meet the goals of data processing and word processing equally well."¹

With this change in focus, business educators are beginning to recognize the impact this technology can have on the office administration curriculum. "Business educators must prepare students not just for word processing or data processing as separate entities, but as subsystems of a more comprehensive information processing system utilized as a support function of a business or industry."² A problem exists, however, in the fact that research completed has concentrated on either word processing or data processing (Sherman, 1975; Saif, 1975; Bragg, 1976; Stelzner, 1978; Moody, 1978; Scriven, et al, 1981). This research focused primarily on the skills and/or knowledge needed by the office worker or business educator in the specific area. To date, formal research concerning the skills and/or knowledge needed by a teacher of information processing does not exist.

¹Christine M. Haff, "Prepare Students for Integrated DP/WP Systems," BUSINESS EDUCATION FORUM, Vol. 36, No 4, (January, 1982), p. 19.

²Haff, p. 19.

In view of the present situation, this study was an attempt to (1) identify and validate a list of general competency statements for teachers of information processing based upon professional/expert opinion, and (2) begin to examine and verify the competencies by obtaining reactions to the statements from vocationally certified business education teachers who may have skills and/or knowledge in information processing. For purposes of this study, the research defined information processing as the movement of words, symbols, or numbers from the origination of an idea to its final destination through the management of procedures, equipment, personnel and environment. It encompasses the merged capabilities of data and word processing and also reprographics, micrographics and telecommunications.

While professional opinion is an appropriate starting point for defining teacher competencies, opinion alone is not sufficient for the validation of proposed teaching skills (Shores, Cegelka, & Nelson, 1973). As Shores et al. (1973) have indicated, several additional procedural steps are required before competency statements are considered valid. This study, therefore, was intended to represent only the initial stages required to validate a list of general competency statements for teachers of information processing.

Background of the Study

Evolution of Information Processing

The Office

Many authorities have stated that the office has undergone relatively minor changes since the invention of the typewriter nearly a century ago.

The traditional flow of work and the processing of information are still relatively primitive compared with other areas of business and industry. "The office represents one of the most labor-intensive sectors of our economy, and yet it is a sector that has lagged woefully in productivity."³ It is generally accepted that clerical employees are among the least productive class of workers. "According to a recent study, the average clerical function is at least 25 percent less productive than it could be and costs business and industry over \$50 billion a year in wasted salary and fringe dollars."⁴ These are a few of the comments made by experts in the field of office services concerning the problems facing the office manager today. Not only must the office manager face these problems, but the business educator must face them as well.

"In today's office the cost of operations is rising faster than any other segment of business Several studies reveal that office costs are rising 12 percent to 15 percent per year and all indications are that present office costs will double over the next six years."⁵ James R. Mellor, Chairman, Computer and Business Equipment Manufacturers Association, reiterates this point. "Present office costs account for

³James R. Mellor, "Office of the Future--It's Here Right Now," THE OFFICE, (January, 1981), p. 137.

⁴Marion O. Fitch, "Office of the Future--Is Valid Theory But Far From Reality," THE OFFICE, (January, 1981), p. 116.

⁵John J. Connell, "Office of the 80s," BUSINESS WEEK, (February 18, 1980), p. 20.

almost 50 percent of a company's total operating expense. . . . Seventy-five percent of these office costs are labor related."⁶ In an age where modern technological advancements are being made in many areas of our society, why is it that many offices are still operating with outdated technology?

Several reasons have been offered to explain the rapidly increasing office costs and low productivity. John J. Connell, Executive Director, Office Technology Research Group, reports, "The problem is a constantly increasing workload being handled by growing numbers of increasingly expensive office workers."⁷ Dr. George R. Simpson of the Office Management System states, "A vast majority of offices within the business organization structure are still not held accountable for productivity which is a major factor in their poor showing."⁸ Dr. Seymour Wolfbein, an economist, focuses on some trends that have emerged in the seventies as contributing elements to the problems of today's office: "The decrease of new young employees entering the work force; an increase in functional illiteracy; and the growth in welfare payments."⁹ These trends, he states, will have a significant impact on office productivity in the next decade.

⁶Mellor, p. 137.

⁷Connell, p. 21.

⁸George Simpson, "Top Management Shakes Up The Office," TIME MAGAZINE, (February 11, 1976), p. 36.

⁹Fitch, p. 137.

Some solutions to the problems facing the office have been implemented by office managers. The use of computer technology and word processing have made substantial gains in cutting the cost of office operations. Despite these gains however, low productivity and high costs still exist in many offices today.

Word Processing: An Introduction

"In an analysis of the factors which are shaping today's office and most assuredly tomorrow's, the development of word processing stands out as perhaps the most significant."¹⁰ Within the last few years, an increasing number of researchers have begun to predict that word processing will be one of the fastest growing technologies of the next decade.¹¹

The word processing concept introduced in the late sixties generally involves: "(1) a change in the method of personnel utilization, providing more work specialization and improving career opportunities for secretaries while freeing managers so that they have more time to plan, organize, and coordinate; (2) the use of text-editing typewriters with magnetic recording features; and (3) the use of machine dictation equipment for recording of ideas as they originate."¹² Since that time, substantial gains have been made in the area of office automation.

¹⁰John J. Connell, "Word Processing's Role in Today and Tomorrow's Office," MANAGEMENT WORLD, (April, 1981), p. 1.

¹¹Charles W. Friedel, "DP: Can You Handle Word Processing?" SMALL SYSTEMS WORLD, (December, 1979), p. 28.

¹²Jolene D. Scriven, et al., National Study of Word Processing Installations in Selected Business Organizations, Delta Pi Epsilon Research Study, (St. Peter, Minnesota: Delta Pi Epsilon, 1981), p. 1.

Businesses that have incorporated the word processing concept have derived certain benefits. Faster document production is made possible through the use of dictation units and text editors. The business can save money as fewer people are needed to produce more work. Through the specialization of labor, workers can concentrate their efforts on a few specific tasks and perform them without interruption. These benefits are supported by findings of a recent Delta Pi Epsilon study.

An extremely large portion (97 percent) of the Principals/Originators said they believed that there were major benefits in word processing document production in their organization . . . Three-fourths of the Principals/Originators in the study indicated that greater productivity was a major benefit of word processing. In addition, an almost equal percentage indicated that high quality work was also a major benefit.¹³

John J. Connell summarizes the role that word processing has played in developing the concept of the office of the future. "Word processing has given us the opportunity to examine traditional office processes and consider new approaches to improve office productivity. . . . It has broken down the barriers between office personnel and technology that were brought on by the computers in the sixties."¹⁴

Currently, word processing is going through a change. "Word processing isn't just word processing anymore. . . . It is, in essence, only one tree in the forest called office automation."¹⁵ "Technology in the word

¹³Scriven, et al., p. 300.

¹⁴John J. Connell, "Word Processing's Role in Today and Tomorrow's Office," MANAGEMENT WORLD, (April, 1981), p. 1.

¹⁵Amy D. Wohl, "Office of the Future--Close but still Elusive," THE OFFICE, (January, 1981), p. 93.

processing field is changing so rapidly that it is difficult for business educators to keep pace with the new equipment constantly appearing on the market."¹⁶ "Word processing will cease to be a sub-system and become an integrated part of the total system."¹⁷ "The word processing environment has blossomed amid other new automated processes such as electronic mail, electronic calendaring and tickler files, automatic typesetting, automated microfilm storage and retrieval, optical character recognition, and facsimile."¹⁸ The preceding statements taken from current literature and research described the growth that has occurred and is still occurring in the word processing field. The increased reliance upon the computer to process information and the basic similarities between computer hardware technology used in data and word processing can result in the eventual merging of the two into a sophisticated "information processing system."

The Merging of Word and Data Processing

Although word and data processing originally were considered as two distinctly separate areas, technology is forcing the two areas closer and

¹⁶Ruth Anderson, "Word Processing," NBEA YEARBOOK, 1980, p. 56-57.

¹⁷Scriven, et al., p. 318.

¹⁸Michael E. Rider, "Word Processing and Office Systems," THE BALANCE SHEET, (December/January, 1980-81), p. 127.

closer together. "Both word processing and data processing do talk the same language to a degree."¹⁹

In very short order, it will become increasingly difficult to separate the technologies of business into word processing, data processing, facsimile, communications, data entry, electronic mail and other categories of technologies yet to come. . . The integration of word and data processing is one of the first duets to emerge singing the merging technologies theme.²⁰

Why has it become necessary to combine word processing and data processing? Cost considerations, particularly inflation, have affected both word processing and data processing necessitating their integration for increased versatility and for the cost-efficient use of people, procedures, and equipment.

Although data processing is primarily a manipulation of numbers and files, and word processing is a manipulator of documents, the two share a common goal--the management of information. . . . The two may also share a common tool that can be used effectively to accomplish the goal--the computer. Based on a mixture of commonality, compatibility, and exciting differences, a working relationship can exist between word processing and data processing.²¹

Both word processing and data processing have parallel goals: To present information that is timely, accurate, usable and appropriate

¹⁹Anderson, p. 57.

²⁰Carl Schanstra, "Integration of Data Processing and Word Processing," INFO SYSTEMS, (February, 1980), p. 35.

²¹G. Daryl Nord, "Interfacing Word Processing and Data Processing," BUSINESS EDUCATION FORUM, (April, 1979), p. 21.

when and where it is needed. "One of the important aspects of these two systems is the similarity of the processing functions. Data processing and word processing both process information (data or words), utilize computer technology for the actual processing, and serve as support documentation for managerial decision making."²² All indications and predictions made by experts in the area signify a merging between the two procedures. Business educators should not only possess a knowledge of word processing, but also have a basic knowledge of how data processing will relate in office automation in the future.

The technology needed to interface word and data processing is available. Amy Wohl illustrates this point:

There are already systems on the market which permit the simultaneous processing of data and words. . . . Many data processing vendors are now offering word processing software on small business computers; also word processing vendors have made the move to offer data processing capabilities on their office-oriented systems.²³

Wohl concludes by saying, "I expect word processing (and all office automation) to become part of an information processing system that also includes data processing."²⁴

During the past few years a growing number of businesses tried and tested the integration of word and data processing. The benefits of having higher efficiency, increased productivity power, increased availability of

²²Rita C. Kutie, "Beyond Word Processing," BUSINESS EDUCATION FORUM, (March, 1982), p. 23.

²³Amy D. Wohl, "What's Word Processing?" DATA MANAGEMENT, (May, 1979), p. 39.

²⁴Wohl, p. 39.

business information, and improved price/performance are just a few that have been cited. Through this integration, the employees of these businesses become information processors, handlers, analysts and decision makers.

Statement of the Problem

The problem in this study was to: (1) identify and validate a list of general competency statements for teachers of information processing based upon professional/expert opinion, (2) ascertain which of these competency statements Michigan vocationally certified business education teachers perceive as important for a teacher of information processing to possess, and (3) determine in which of these competencies Michigan vocationally certified business education teachers perceive themselves as needing further knowledge and/or skills.

The following research questions were set forth in three categories:

Demographic Data

1. What are the professional backgrounds of Michigan vocationally certified business education teachers (MVCBET)?

Descriptive Data

2. Do MVCBET perceive a need to acquire competencies in a formal preservice or in-service teacher education program in the area of information processing?

3. Do the respondents perceive that on-the-job experience in information processing is desirable in order to teach in the area of information processing?

4. To what extent have the respondents had specific preparation in their formal teacher education program to teach information processing?

5. Outside of formal classroom instruction in a teacher education program, in which, if any, of the following did the respondents participate or complete in order to prepare themselves in the area of information processing: Self study, workshops, seminars, vendor training, conferences?

6. Do the respondents have an interest in participating in professional education in-service activities in information processing within the next two or three years?

7. What is the relative importance of the competency areas and selected competency statements as perceived by MVCBET in information processing?

8. In which competency areas and specific competency statements do MVCBET perceive themselves to be in need of further knowledge and/or skills in the area of information processing? What are their professional development needs?

9. What are the perceptions of the respondents concerning the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) in developing competence in the selected competency areas?

Statistical Analysis of the Data

10. What is the relationship between the "Importance Rating" and "Professional Development Needs Rating" of the competency areas and competency statements as perceived by MVCBET?

11. What is the relationship between the "Importance Rating" MVCBET give to each competency area and the number of years the teachers have been teaching?

12. What is the relationship between the "Professional Development Needs Rating" MVCBET give to each competency area and the number of years the teachers have been teaching?

13. What is the difference between MVCBET who indicate that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the "Importance Rating" of the competency areas.

14. What is the difference between MVCBET who indicate that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the "Professional Development Needs Rating" of the competency areas.

Need for the Study

A study which ascertains the professional competencies needed by business education teachers in the area of information processing may be of great value. Ellis and Wootton (1970)²⁵ indicate that teachers need a constant check to see how well they are performing their professional obligations. Wentling and Lawson (1975)²⁶ believe that teaching personnel

²⁵Elmer Ellis and Lutian R. Wootton, "Valid Evaluation of Teaching is Imperative," KAPPA DELTA PI RECORD, VII, (April, 1970), p. 139.

²⁶Tim L. Wentling and Tom E. Lawson, "Why Evaluate Education and Training Personnel," EVALUATING OCCUPATIONAL EDUCATION AND TRAINING PROGRAMS, Allyn and Bacon, Inc., Boston, 1975, pp. 234-280.

evaluation, regardless of the method utilized, should provide information which will illuminate an individual's strengths and exemplary characteristics as well as his/her weaknesses. Ogundipe (1980)²⁷ states that when weaknesses are uncovered, the educator or trainer can begin to identify ways and means of remediating those deficiencies. In addition, Lambrecht and McLean (1977)²⁸ state that another important source of information for meeting the needs of teachers is to ask them for their own expression of the importance of topics for their classes and their own need for further instruction.

The compilation and validation of competencies needed by information processing teachers would provide an empirical base for the content of information processing courses and/or programs in teacher education institutions. The list of competencies would further provide a sound basis upon which administrative decisions could be made regarding the hiring of new teachers as well as evaluation of practicing teachers. It would aid administrators in the evaluation of existing programs.

"With today's businesses updating their offices with electronic information input and retrieval systems, the need for highly skilled personnel is omnipresent. To meet the employment demand, today's business

²⁷Rebecca Modupeola Ogundipe, "A Study of the Self-Perceived Professional Education Competencies Needed by Vocational Agriculture Teachers in Michigan," Doctoral Dissertation, Michigan State University, 1980, p. 85.

²⁸Judith J. Lambrecht and Gary N. McLean, "Content and Methodology Background and perceived Competencies of Data Processing Teachers," NABTE REVIEW, Issue 4, 1977, p. 25.

educators must keep abreast firsthand with what is happening in the realm of automated office."²⁹

A statement by the Policies Commission for Business and Economic Education "This We Believe About Competency-Based Education" states that "A continuous effort is needed to validate existing competencies for teacher education and to formulate additional teaching, technical, personal adjustment, and attitudinal competencies." In addition, the commission indicates that "preservice and inservice teacher education programs should be based upon identified teaching and technical competencies. This present study is an effort in that direction.

The Purpose of the Study

This study was an exploratory and descriptive investigation of the competencies needed by teachers of information processing. The study was designed to survey public secondary school vocationally certified business education teachers who may possess a knowledge and/or skills in information processing.

The first purpose served by this study was to assist the field of business education by identifying competencies perceived to be important for teachers of information processing to possess. This study provided descriptive research in the area of information processing that was not presently available.

²⁹Rider, p. 129.

A second purpose was to determine the competencies in which teachers feel they are least proficient and in need of further knowledge and/or skills. This is an important aspect of investigating teacher competencies since it is unreasonable to assume that any teacher education program is able to prepare a completely educated, competent teacher in a four-year undergraduate program or even with an additional year of graduate education (Conant, 1963; Briscoe, 1972; Hoeskema, 1975). "The very nature of teaching and teacher education makes this impossible, for the effective teacher is himself a continuing learner."³⁰

A third purpose of this study was to provide teacher educators with information that would be useful in developing better teacher education programs. By identifying the importance and need perceptions that business teachers hold in the area of information processing, teacher educators could prepare teachers to be more proficient and competent in information processing.

A fourth purpose was to determine the perceptions of the teachers concerning the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) in developing competence in the selected competency areas.

In conclusion, the present study contains the initial steps in developing and validating a list of generic competencies for teachers of information processing. The complete process would involve:

³⁰F. G. Briscoe. "The Professional Concerns of First-Year Secondary Teachers in Selected Michigan Public Schools: A Pilot Study." Doctoral Dissertation, Michigan State University, 1972, p. 1.

1. Compiling a list of competencies for teachers of information processing. This list should be based on the pertinent research and literature that is available, as well as on the opinion of professionals with expertise in the area of information processing.
2. Surveying teachers of information processing* to ascertain their perceptions of the importance of the identified competencies in the daily teaching of information processing.
3. Observing teachers of information processing in educational settings to determine if the competencies deemed important are, in fact, used in the teaching process.
4. Determining whether the application of the "important" competencies results in the positive growth of students in information processing.

The steps delineated here are comparable to those used by other researchers. Hoeksema (1975) identified a similar procedure in a study of competencies for teachers of mentally impaired. Coker (1976) also reported that the same basic process was used in specifying and validating teacher competencies for the Carroll County Project in Georgia.

*In this study, vocationally certified business education teachers with certification in office education were used because current programs in information processing do not exist, thus "information processing teacher," as defined by this study, do not exist.

Basic Assumptions for this Study

The following assumptions were made for this study.

1. The respondents provided accurate answers on the survey instrument.
2. The sample of the population of this study would be typical so as to allow the findings to be generalizable to other similar populations in a generic sense.
3. The perceived competencies needed by Michigan vocationally certified business education teachers in information processing would be a basis for the development of effective and relevant information processing courses and/or programs in business teacher education institutions.
4. Vocationally certified business education teachers in state reimbursed programs were chosen for this study primarily because their programs would be more inclined than non-reimbursed programs to have expensive information processing equipment.

Delimitations of the Study

The following were delimitations of this study.

1. Only competencies perceived as needed by Michigan vocationally certified business education teachers in information processing were identified. No attempt was made to collect data on other competencies needed by Michigan vocationally certified business education teachers.
2. The population of this study was limited to the 1980-81 list of public secondary school vocationally certified business education teachers in the State of Michigan as provided by the Vocational-Technical Education Service, Michigan Department of Education. The following

14.0000 Office of Education program codes were used:*

- 14.0000 - Office Education
- 14.0303 - General Office Clerks
- 14.0703 - Stenographers
- 14.0797 - Medical Secretary
- 14.0798 - Legal Secretary
- 14.0901 - Clerk Typists
- 14.9700 - Clerical Lab
- 14.9800 - Steno-Clerical Lab

These program codes were chosen because they specifically pertained to business education teachers in the area of office education.

Limitations of the Study

The following limitations were recognized:

1. The information collected in the study represented the perceptions, opinions and views of Michigan vocationally certified business education teachers only. No attempt was made to ascertain the perceptions of administrators, word or data processing employees or non-vocationally certified business education teachers.

*Commencing September, 1982, the C.I.P. (Classification of Instructional Programs) coding system will go into effect throughout the United States for all programs receiving funds under P.L. 94-482, the Vocational Education Amendments of 1976. The new code for secretarial and related programs will be 07.0601. The following course designations will be used with the 07.0601 code: Course 01- Stenography Laboratory, Course 02-Clerical Laboratory, Course 03-Legal Secretarial Laboratory, Course 04-Medical Secretarial/Medical Assisting Laboratory and Course 05-Combination Laboratory.

2. The results of this study were based on the responses of vocationally certified Michigan business education teachers; therefore, it is not possible to generalize the findings to other populations.

3. Business education teachers who were not defined in the sample may have different perceptions in the area of information processing from those of the population included in this study.

4. The perceived needs of the respondents of this study in information processing were just that--perceived, thus they may not represent the true needs of the respondents surveyed.

5. The study would not result in a fully validated list of teacher competencies. Only the initial steps of the validation process were carried out in this study.

Definition of Terms

The following terms are defined in the context in which they were used in this study. The basic references used in establishing the terminology were the Cotrell Study, Datapro Glossary of Word Processing Terms, and word processing and data processing textbooks.

1. Information Processing--Information processing is defined by the researcher as the movement of words, symbols, or numbers from the organization of an idea to its final destination through the management of procedures, equipment, personnel, and environment. It encompasses the merged capabilities of data and word processing and also reprographics, micrographics, and telecommunications.

2. Teacher Competency/Skills--Teacher competency/skills refers to the terms "teacher competencies" and "teacher skills" which are used interchangeably in this study. Both terms refer to knowledge, tasks, and functions that teachers perform and use in their daily work with students which result in the positive social, emotional, and cognitive growth of students.

3. Competency Areas--Competency areas refers to the six categories of teacher competencies selected for this study. They include: Program Planning, Development and Evaluation, Instructional Planning, Instructional Execution, Instructional Management, Instructional Evaluation and Contemporary Topics.

4. Micrographics--Micrographics refers to the photographic process by which a small image of a document is recorded on a storage medium for later viewing or printing in hard copy form. Examples include microfilm and microfiche.

5. Reprographics--Reprographics refers to the reproduction of text, drawings, or photographs. Examples include mimeograph, fluid duplicator, copier, and offset.

6. Telecommunications--Telecommunications refers to the electronic method of moving information via satellite, telephone lines, and/or electronic mail.

7. Vocationally Certified--Vocationally certified refers to any individual that fulfills the requirements for vocational certification as set forth by the Vocational-Technical Education Service, Michigan Department of Education.

8. Vocationally Certified Business Education Teacher--Vocationally certified business education teacher refers to any individual teaching a Michigan reimbursed vocational office education program and/or coordinating a Michigan reimbursed cooperative education program on the secondary level.

9. Unit of Instruction--Unit of instruction refers to a large body of study material that is intimately related. Examples include banking, business organizations and insurance.

10. Chapter of Instruction--Chapter of instruction refers to a small body of study material which specifically focuses on a particular topic. Examples include checking accounts, corporations and life insurance.

11. Independent Study--Independent study refers to a teaching method whereby individual differences in interest, ability and experience can be met. Some common types of independent study are: programmed instruction, supervised correspondence study, individual study projects, individually prescribed instruction and work related studies.

12. Vendor--Vendor refers to a manufacturer(s) and/or sales representative of information processing equipment.

Overview of the Study

The remainder of this study is organized as follows:

Chapter II consists of a review of literature. The review is presented in three sections: (1) a review of procedures for identifying and validating teacher competencies, (2) a review of competency-based teacher education and (3) a review of modern technology and its impact on the business education curriculum.

In Chapter III, the research design is presented. The following elements are discussed: the population, the sample and sampling technique, the procedures used to develop the survey instrument, the survey instrument, the pilot study, the collection of data, instrument reliability and the statistical analysis.

Chapter IV contains an analysis and interpretation of the major findings of the study.

Chapter V contains a summary, conclusions, implications and recommendations.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Several approaches were utilized for the purpose of reviewing existing literature and research. Four computer searches were conducted using the major retrieval system Educational Resources Information Center (ERIC) and Dissertation Abstracts International. In addition, manual searches were completed using the Delta Pi Epsilon Index of Doctoral Dissertations in Business Education (1900-1975) and the Business Education Indexes (1975-1980). These searches were conducted by focusing on various topics such as the identification and verification of teaching competencies, competency-based teacher education including vocational teacher education, information processing, word processing, data processing, and the office of the future.

The review of literature revealed limited research on competency-based teacher education which specifically focused on data processing. It appeared that research concerning competencies needed by teachers of word or information processing is nonexistent.

This chapter consists of three sections:

The first section contains literature on procedures which have been used in the identification and validation of teaching competencies. The second section reviews literature pertaining to competency-based teacher

education and more specifically to competency-based vocational teacher education. Section three reviews the literature focusing on the impact of modern technology on the business education curriculum.

Procedures for Identifying and Validating Teacher Competencies

In an effort to analyze the strategies by which competencies have been identified and validated, a review of literature regarding competency-based teacher education was undertaken. Although competency statements varied, there was an underlying common element: most of the statements were based on the "expert" opinion of teacher educators, educational administrators, researchers in vocational education, state department leaders and representatives from business and industry.

Shores, et al. (1973)¹ acknowledges that "expert" opinion is an appropriate starting point for identifying teacher competencies, but cautioned that opinion alone is not sufficient validation for critical teaching skills. Consequently, some teacher educators and researchers have taken the next step in competency verification. They have attempted to weigh the competencies derived from "expert" opinion against the judgment of practicing teachers. In most cases, this has involved asking teachers to rate the importance of pre-determined competency statements. This approach has been utilized by a number of researchers in a effort to identify and validate teacher competencies.

¹R. E. Shores, et al., "Competency Based Special Education Teacher Training." EXCEPTIONAL CHILDREN (November 1973), pp. 192-97.

Brown (1980)² was concerned with the identification, verification and validation of competencies needed by vocational teacher educators. Seventy-three vocational teacher educator competencies were identified through a literature review and validated by a panel of experts. Using a five-point scale, study participants indicated the degree of importance of the 73 competencies in the performing of duties as a vocational teacher educator at the graduate level.

Blank (1976)³ analyzed the professional competencies important to Florida's community college technical instructors. The survey instrument was developed based on titles of a series of professional vocational education modules developed by the Center for Vocational Education, The Ohio State University. Respondents rated each of the 82 items as to its importance to a first-year teacher, and its importance to an experienced teacher. Respondents also checked those items in which they believed improvement was needed.

Taylor (1977)⁴ conducted a study to determine a priority listing of teaching competencies needed by vocational trade and industrial teachers in Alabama based on the perceived importance for working with special needs

²Vickie E. Brown, "The Identification, Verification and Validation of Competencies Needed by Vocational Teacher Educators," Doctoral Dissertation, the University of Tennessee, 1980.

³William E. Blank, "Analysis of Professional Competencies Important to Florida's Community College Technical Instructors: Implications for Competency-Based Teacher Education," Doctoral Dissertation, The Florida State University, 1976.

⁴Grover C. Taylor, "A Study to Determine the Teaching Competencies Needed by Vocational Trade and Industrial Education Instructors in Alabama for Working with Students with Special Needs," Doctoral Dissertation, Auburn University, 1977.

students. In addition, Taylor examined the congruence between perceived importance and reported knowledge of the teaching competencies.

Sherman (1975)⁵ analyzed the competencies needed by introductory data processing teachers as perceived by authorities and teachers of data processing. A three-questionnaire modified Delphi technique was used as a tool for gathering, organizing and sharing opinions of the participants of the study. Participants were asked to rate, revise and expand upon the list of competency statements listed in each questionnaire resulting in three lists of competencies being developed. One list of competencies was rated crucial and highly desirable by business data processing authorities and Texas junior college teachers. The second list of competencies was rated crucial and highly desirable by both business data processing authorities and Texas high school teachers. The third list of competencies was rated crucial and highly desirable by a modal consensus of high school and junior college introductory data progressing teachers.

Newsham (1979)⁶ identified competencies needed by secondary business and office education teachers in Louisiana. The researcher surveyed literature to devise an instrument composed of items relating to

⁵Nora Jo Sherman, "An Analysis of Competencies Needed by Introductory Data Processing Teachers as Perceived by Authorities and Teachers of Data Processing," Doctoral Dissertation, University of Houston, 1975.

⁶Elizabeth H. Newsham, "Competencies Needed by Secondary Teachers in Business and Office Education in Louisiana," Doctoral Dissertation, The Louisiana State University and Agricultural and Mechanical College, 1979.

competency areas of planning, developing and evaluating the program, planning and implementing instruction for the classroom, evaluating instruction, guiding and understanding the student, managing the classroom, developing the professional role, communicating with the public, sponsoring student business and office education organizations, and coordinating on-the-job work experiences. The opinionnaire was submitted to a jury of thirty experts for validation. The population of the study responded to the 147 pre-determined competency statements as to the importance of the competency statements in relation to their teaching.

Glosson (1979)⁷ used a series of three Delphi questionnaires in an attempt to achieve consensus among teachers regarding the importance of predetermined competencies needed by teachers of vocational education for the handicapped. The questionnaire for Round I of the Delphi study was developed from competencies identified through a review of literature and evaluation of the initial instrument by a panel of experts. The Round I questionnaire consisted of 13 competencies and 133 subcompetencies.

Saif (1975)⁸ identified the technical competencies in business and electronic data processing needed by business electronic data processing teachers at the high school, junior college and four-year college levels. The researcher asked each participant to rate each pre-determined

⁷Linda R. Glosson, "Competencies Needed by Teachers of Vocational Education for the Handicapped: A Delphi Approach," Doctoral Dissertation, Texas Tech University, 1979.

⁸Khalid A. Saif, "Technical Competencies in Business and Electronic Data Processing Needed by Business Electronic Data Processing Teachers," Doctoral Dissertation, University of Northern Colorado, 1975.

competency statement (knowledge or skill) on a five-point scale, as to how he/she saw that item as contributing to the competency of a teacher to teach business electronic data processing at a particular educational level.

Byorek (1978)⁹ identified the competencies desirable for public secondary school business education teachers in the United States. The researcher compiled a list of 206 competencies from the literature and submitted them to a selected group of business education experts. A final list of 178 competencies was used for the study. The competencies were then distributed to a population of 300 members of the National Business Education Association who were asked to rate the importance of each pre-determined competency statement.

Although the practice of weighing expert opinion against the judgment of practicing teachers is an advancement over accepting expert opinion alone, this procedure does not result in fully valid competency statements (Shores, 1973).¹⁰ As Shores, et al. state:

Before a competency statement is considered valid, it should be demonstrated that successful teachers actually engage in the behavior or skill described, that the skill discriminates between successful and unsuccessful teachers, and that it has the desired effect on children's classroom performance.¹¹

⁹Joan B. Byorek, "Competencies Needed by Secondary School Business Education Teachers in the United States," Doctoral Dissertation, New York University, 1978.

¹⁰Shores, et al.

¹¹Shores, et al., p. 193.

The Carroll County Project (Coker, 1976)¹² in Carroll County, Georgia, represents one of the more comprehensive attempts in utilizing this procedure for competency identification and validation. The Project is a long-term, cooperative effort of the Carroll County School System and the School of Education of West Georgia College. The Project is supported by a grant from the Georgia State Department of Education and is designed to develop a plan for identifying and measuring teacher competencies which will serve as a basis for a competency-based certification system.

The first year of this study was spent reviewing literature, visiting field sites and collecting information. An advisory group of classroom teachers was also established who, with the assistance of three consultants in teacher effectiveness research, developed a generic list of teacher competencies. Performance criteria were then specified for each competency and assessment procedures were determined.

Measurement of the identified competencies began the following school year and involved 60 teachers and the approximately 1,800 students in their classrooms. The students were pre-tested in the fall and post-tested in the spring to determine their growth in the cognitive and affective domains. A series of structured observations were also employed throughout the year to collect data regarding student performance, teacher behavior and teacher-pupil interactions. It was intended that an analysis of the collected information would provide some insights into the relationship between teacher behavior and student outcome.

¹²H. Coker, "Identifying and Measuring Teacher Competencies: The Carroll County Project." JOURNAL OF TEACHER EDUCATION, 27 (Spring, 1976), pp. 54-56.

The project continues to operate and the Director, Homer Coker, has indicated that "many years of well-planned studies" will be needed before the final goal is attained.

The comprehensive, long-term investigations required to complete the entire process of identifying and validating teacher competencies is beyond the resources and time constraints of many studies. Therefore, in the majority of research projects in this area, only one or two steps in the total procedure are addressed.

Competency-Based Teacher Education

Since the current study was an attempt to determine competencies required of teachers of information processing, a review of literature relating to competency-based teacher education (CBTE) was undertaken.

The word competency has been interpreted to mean the "ability to do" in contrast to the more traditional emphasis on the "ability to demonstrate knowledge."¹³ Houston and Howsam (1972)¹⁴ reported that rarely, if ever, has any movement progressed through teacher education so rapidly or captured the attention of so many in as short a time as has the competency-based movement.

¹³Robert W. Houston and Robert B. Howsam, COMPETENCY-BASED TEACHER EDUCATION (Chicago: Science Research Associates, Inc., 1972), p. 3.

¹⁴Houston, p. 3.

Competency-based teacher education is not defined in standard dictionaries. Shearron (1973)¹⁵ defines CBTE as a data-based system for training teachers. It specifies that teachers must exhibit those competencies assumed to promote pupil learning and/or demonstrate their ability to promote desirable pupil learning. Steffensen (1974)¹⁶ submits that CBTE specifies the objectives for training of teachers in an explicit form and then proceeds to hold the prospective teachers accountable for meeting those objectives. Klingstedt (1972)¹⁷ states that CBTE is based on the specification or definition of what constitutes competency in a given field. According to Dodl and Schalock (1973)¹⁸ CBTE derives from instructional activities designed and implemented to produce teachers who possess designated competencies for entry into the teaching profession. Finally, Weber and Rathbone (1973)¹⁹ note that CBTE programs specify the

¹⁵Gilbert F. Shearron, "Inservice, Needs Assessment, Competency-Based Teacher Education," IN COMPETENCY, ASSESSMENT, RESEARCH, AND EVALUATION (Washington, DC: American Association of Colleges for Teacher Education, 1974), p. 113.

¹⁶James P. Steffensen, "Forward," IN COMPETENCY-BASED TEACHER EDUCATION (Berkeley: McCutchan Publishing Corporation, 1974), p. v.

¹⁷Joe Lars Klingstedt, "Introduction to Competency-Based Education," IN EXPLORING COMPETENCY-BASED EDUCATION (Englewood Cliffs: Educational Technology Publications, 1972), p. 7.

¹⁸Norman R. Dodl and H. Del Schalock, "Competency-Based Teacher Preparation," IN COMPETENCY-BASED TEACHER EDUCATION (Berkeley: McCutchan Publishing Corporation, 1974), p. 46.

¹⁹Wilford A. Weber and Charles Rathbone, "Developing Instructional Strategies," IN COMPETENCY-BASED TEACHER EDUCATION (Berkeley: McCutchan Publishing Corporation, 1974), p. 59.

competencies to be acquired by the student, the criteria to be applied in assessing the student's competence and the student's accountability for meeting those criteria. Pottinger and Goldsmith²⁰ state that although within the CBTE movement are mixed terms, assumed understandings, and diverse programmatic contexts, all of which add to the definitional confusion, some consensus emerges about the following important aspects of the concept:

1. that it is desirable;
2. that it can be taught;
3. that it can be measured; and,
4. that it can have a major impact on improving both the quality of education and professional service.

Characteristics of Competency-Based Teacher Education

Competency-based teacher education is an educational approach having two primary characteristics; they are:

- (1) precise learning objectives defined in behavioral, assessable terms are known to the learner and teacher alike; and,
- (2) the learner knows the learning expectation, accepts responsibility for doing the activity and expects to be held accountable for meeting the established conditions.

²⁰Paul S. Pottinger and Joan Goldsmith, *DEFINING AND MEASURING COMPETENCY* (California: Jossey-Bass Publishing Co., 1979).

Competencies are first identified as general goals, then stated as performance objectives which have a stated behavior to be changed, conditions for completing the learning efforts and a standard by which the learners' performance will be judged.²¹ Traditionally, the competencies for entering the teaching profession have been lacking or at best ambiguously defined. Lack of specific performance criteria thus made it impossible to measure either the effects of training on performance or the students' readiness to enter the teaching profession. Competency-based teacher education is designed to overcome this handicap.²²

The American Association of Colleges for Teacher Education (AACTE) established a committee in 1970 and commissioned several papers on the subject of competency-based teacher education. From these papers the following five characteristics of CBTE programs,²³ evolved:

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

²¹Robert H. Davis and Lawrence T. Alexander, LEARNING SYSTEM DESIGN (New York: McGraw-Hill Book Company, 1974).

²²Dodl, p. 46.

²³Stanley Elam, "Performance-Based Teacher Education: What is the State of the Art?" PBTE Series: No 1. Washington, D.C.: American Association of Colleges for Teacher Education, 1971.

3. assessment of the student's competency uses his performance as the primary source of evidence; takes into account evidence of the student's knowledge relevant to planning for, analyzing, interpreting, or evaluating situations or behaviors; and 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; and,
5. the instructional program is intended to facilitate the development and evaluation of the student's achievement of competencies specified.

It is through these characteristics that accountability in teacher education is possible.

In summary, competency-based teacher education is a departure from the traditional teacher education programs and has offered a promise of restructuring teacher education programs. Competency-based teacher education with its corollary characteristics offers theoretical constructs and practical approaches that can improve teacher education and thereby improve the education of students.²⁴

Competency-Based Vocational Teacher Education

Several studies have focused on identifying competencies important to vocational and technical teachers in general (Walsh 1960, Byrd 1966, Crawford 1967, Ratner 1967, Courtney 1968, Erpelding 1972, Cotrell, et. al. 1972, and Terry, et al. 1972). A brief overview of certain competency-based vocational teacher education (CBVTE) research and development activities which have focused on identifying competencies needed by vocational educators at various levels and in several service areas follows.

²⁴Houston, P. 16.

Byrd (1966)²⁵ conducted a study concerned with teacher competencies. Byrd reported that the teacher has distinctive roles in assuring continuity in the process of occupational training and competency in all phases of vocational and technical education. He considered the basic competencies needed as technical and personal. The personal competencies included role commitment, personal involvement, and recognition and transmission of respect for the dignity of work.

A study by Courtney (1968)²⁶ identified the need for a common core approach to competency identification. Courtney reported that much of the controversy surrounding teacher education deals with determining what should be included in programs.

A second study by Halfin and Courtney (1971)²⁷ ascertained the common training needs and requirements for teachers of vocational education. The study represented secondary level teachers of vocational-agriculture, trade and industry, home economics, and business and distributive education. Many professional competencies were found to be common to all five groups of vocational teachers.

²⁵F. N. Byrd, THE ROLE OF TEACHER EDUCATION INSTITUTIONS. SELECTION OF TEACHER BASIC COMPETENCIES NEEDED (Columbus: The Ohio State University, Center for Vocational and Technical Education, 1966), p. 11.

²⁶E. W. Courtney, A CONCEPTUAL BASIS FOR DEVELOPING COMMON CURRICULA IN TEACHER EDUCATION PROGRAMS FOR OCCUPATIONAL EDUCATION (ERIC Document Ed 022 028).

²⁷H. H. Halfin and E. W. Courtney, COMPETENCIES OF VOCATIONAL TEACHERS. A FACTOR ANALYSIS OF THE TRAINING NEEDS OF TEACHERS OF OCCUPATIONAL EDUCATION (Corvallis: Oregon State University, 1969).

Cotrell et al. (1971)²⁸ conducted several studies at the National Center for Research in Vocational Education, The Ohio State University. One of the studies identified the professional education competencies needed by vocational and technical education teachers. The first phase of this study was initiated to develop, demonstrate and test curriculum for the preparation and in-service education of vocational and technical education teachers. During this phase, 237 competencies were identified by a task force representing seven vocational subjects (agriculture, business and office, distributive, health occupation, home economics, technical, and trade and industrial education). Occupational analysis using introspection and interview techniques was utilized to identify the competencies. In order to verify the existing competencies and establish new competencies, the original competencies were screened by task forces of master teachers, teacher coordinators and others across the nation. It was concluded that most pedagogical competencies for teachers were common to all vocational services, and that meaningful and specific objectives could not be developed without consideration for a particular institutional setting.

In the second phase of the project, Cotrell, et al. (1972)²⁹ identified the competencies of teacher-coordinators in off-farm

²⁸Calvin J. Cotrell, et al. MODEL CURRICULA FOR VOCATIONAL AND TECHNICAL TEACHER EDUCATION: Report No 1, Performance Requirements for Teachers. (Columbus: The Ohio State University, Center for Vocational and Technical Education, 1971), ERIC Document Ed 059 355.

²⁹Calvin J. Cotrell, et al. MODEL CURRICULA FOR VOCATIONAL AND TECHNICAL TEACHER EDUCATION: Report No 3, Performance Requirements for Teachers. (Columbus: The Ohio State University, Center for Vocational and Technical Education, 1972), ERIC Document ED 063 455.

agriculture, distributive, wage-earning home economics, office occupations, special needs and trade and industrial education. The competencies important to teacher-coordinators are selected by a 300-member national task force representing eleven states having extensive experience with the types of cooperative programs in the study. From the data of Phase I and II of the project, 384 competencies were finally identified. These competencies were classified into the following 10 categories:

1. Program planning, development and evaluation
2. Instruction-planning
3. Instruction-execution
4. Instruction-evaluation
5. Management
6. Guidance
7. School-community relations
8. Student vocational organization
9. Professional role and development
10. Coordination

The primary contributions of this project were:

1. identification of an original, comprehensive listing of teacher and teacher-coordinator competencies;
2. development of individualized, performance-based instructional modules; and,
3. usefulness of the performance objective listing to several other Competency-Based Teacher Education (CBTE) projects in vocational education.

Terry (1972)³⁰ reported that vocational teacher educators from eight Illinois universities, while attending a conference, produced a set of approximately 225 vocational teacher competencies clustered into the following eight groups:

1. Philosophy
2. Organization and administration
3. Educational programs and long-range planning
4. Financial resources
5. Staffing
6. Physical facilities-equipment
7. Student personnel services-placement and follow-up
8. Community relations and learning resources.

This list was redistributed in a second vocational teacher educator conference in 1972. At this conference, 99 percent of the competencies were rated as "essential."

Modern Technology and the Business Education Curriculum

"The main objective of business education is to prepare students to work in an office, but what office? Ten years ago the office meant electric typewriters and shorthand dictation. Today it means electronic memory typewriters, machine dictation, text-editing machines and micro-computers."³¹

³⁰David Terry, et al. COMPETENCIES FOR TEACHERS: VOCATIONAL EDUCATION SHOWS THE WAY (Urbana: University of Illinois, 1972) ERIC Document ED 067 467.

³¹Haff, p. 19.

In conjunction with this statement, many articles have appeared that predict what the future will hold for the office.

Although word processing systems are more common in some types of companies and in certain geographic areas than others, the impact that word processing and other office technologies have made on the efficiency, productivity and the ability to decrease office costs are well-documented and accepted.

The combination or merging of data processing, word processing, micrographics, reprographics and telecommunications will provide the users with a single source of information, yet provide easy access to not only the businesses' data base, but other areas of information as well. This, in turn, will require a systems approach to handling information.

Management should gain more control over information if their businesses are to be cost-efficient in the emerging decade. Likewise, data processing and word processing personnel should be alert and knowledgeable to the possibilities of office automation and the impact that the computer has made and will make on the office.

Benden Menkus, an authority in the data processing field who has also been an observer of word processing's growth, cites three developments that can be expected to change the work environment by the mid-eighties:

1. entry into the office of the first generation of people to grow up with a computer as an integral part of the home/school world. These people will be accustomed to living in a word processing/data processing environment and will have heightened expectations.

2. the expansion of new, highly powerful and very cost-effective forms of data communications which will alter information movement and accessibility far more radically than did the telephone and the telegraph; and,
3. the replacement of paper as the dominant form of transporting information in our society.³²

"Collectively these developments are expected to lead to the gradual merger of word processing and data processing activities which, in turn, can be expected to lead to a radical restructuring of businesses and their life-styles."³³

The Delta Pi Epsilon study reinforces the previous statements by indicating that "the entire information processing industry has one of the largest growth rates in the country."³⁴

Despite the technological advancements that have been made and are being made in the office, the demand for personnel in office services will continue to rise. According to the Delta Pi Epsilon study:

All employment projections indicate that white-collar office workers will be in high demand. Clerical workers constitute the largest occupational group. Between 1978-1980, employment in these occupations is expected to grow from 16.9 to 21.7 million workers, a 28 percent increase (Occupational Outlook Handbook, 1980,:21). A US News and World Report (January 21, 1980: 67) article lists average annual openings until 1990 at 59,000 for typist and at 304,000 for secretaries and stenographers, the largest single field of all possible occupations.³⁵

³²Belden Menkins, "How Word Processing and Data Processing Relate," WORD PROCESSING WORLD, (May, 1979), p. 12.

³³Menkins, p. 13.

³⁴Scriven, et al., p. 2.

³⁵Scriven, et al., p. 2.

While future predictions show a demand for office service personnel, businesses today continue to complain of the severe shortages of skilled personnel to operate their word processing and information processing systems. "One of the biggest problems facing businesses implementing word processing and information systems today is finding highly skilled personnel necessary to operate the equipment and manage the production centers."³⁶ "As most businesses are aware, the demand for qualified, well-trained operators in word processing and information systems exceeds the supply. Despite this awareness, however, the need remains."³⁷

Research completed by business educators recognizes and emphasizes the need for business educators to provide skills and knowledge in the field of information processing. The Delta Pi Epsilon study (1981)³⁸ stated that office workers, especially word processing employees should be provided with a strong background in data processing because of the increased interaction between word and data processing. In addition, programs preparing persons for office positions should include a strong focus on the relationship between data and word processing. At a minimum level, this should include an overview of the two types of information systems, their similarities, their differences and how they may be interfaced operationally in the modern office.

³⁶"What's Happening on the Business Education Front," WORD PROCESSING AND INFORMATION SYSTEMS, (February, 1981), p. 22.

³⁷"Corporations Provide In-House Training," WORD PROCESSING AND INFORMATION SYSTEMS, (February, 1981), p. 16.

³⁸Scriven, et al.

Bragg's study (1976)³⁹ recommended that business teachers provide instructional experiences and activities to acquaint students with word processing terminology, equipment and tasks. Stelzner (1978)⁴⁰ stated that word processing concepts should quickly become a part of every business curriculum. Shearer's study (1978)⁴¹ recommended that schools at the secondary and postsecondary levels should at least offer instruction in word processing concepts and career opportunities. Although the studies mentioned above (Bragg, Stelzner and Shearer) focused primarily on word processing, this may indicate a future need for the same type of focus in information processing.

The accountability movement in education that began in the seventies is still present as we enter the eighties. The problems facing our public educational systems: discipline, finances, poor curriculum, and academic standards have become a growing concern of teachers, administrators, parents, and students. The emphasis upon the "basics" and teacher competency has resulted in tremendous pressures

³⁹S. M. Bragg, "A Comparative Study of Major Tasks Required of Word Processing/Administrative Support Personnel and the Traditional Secretaries," Doctoral Dissertation, University of Georgia, 1976.

⁴⁰S. Stelzner, "A Survey of the Member Companies of the New Jersey Word Processing Information Exchange Concerning Various Personnel Issues in Word Processing," (Master's Thesis, Montclair State College, 1978).

⁴¹M. D. Shearer, "Word Processing in the Omaha Metropolitan Area and Implications for Business Education in the Area," (Master's Thesis, University of Nebraska, 1978).

being placed upon the teaching profession. "Teaching behaviors are under constant study and analysis and there seems to be no doubt that evaluation of teaching effectiveness will continue to be increasingly emphasized in the years ahead."⁴²

The implications for business educators in the area of accountability are perhaps greater than those of other teaching areas. "Business teachers have generally been considered accountable in the past, regardless of whether or not an actual evaluation occurred. The improvement of our performance is measured by the performance of our students."⁴³ Aukerman continues by stating:

Our performance is more readily noticed than that of many other teachers because of the immediacy with which our graduates must apply their skills and knowledge. The vocational nature of business education makes the effectiveness of our teaching easily recognizable. We must make certain that the recognition is positive rather than negative.⁴⁴

Technology to update the office is here today. The existence of this technology is important to business educators who are involved in the type, adequacy and degree of education given to students in the area of office services. Today, in addition to preparing students in the "basics," business educators should begin to develop programs, courses and procedures ,

⁴²Richard Aukerman, "The Theory of Accountability in Education," NBEA YEARBOOK, 1978, p. 48.

⁴³Aukerman, p. 48.

⁴⁴Aukerman, p. 48.

for educating students in the more sophisticated areas of office services, namely, information processing.

"As vendors attempt to meet the challenge of producing equipment for integrated systems and business managers attempt to smooth the way, business educators must prepare students to meet the challenge of an integrated information processing system in the offices of today and tomorrow."⁴⁵ However, if business educators are to succeed in adequately preparing future office workers, they must keep updated and be aware of all the technological convergences that are taking place in the office and plan curriculum accordingly. "Office education teachers must familiarize themselves with a systems approach to information processing. . . . They must now develop new concepts that enhance the systems approach and move away from out-moded office procedures."⁴⁶

Summary

The first section of this review contained procedures for identifying and validating teacher competencies. Since the complete validation process is beyond the scope and resources of many research projects, most of the studies that were examined addressed only one or two steps in the total procedure. A method utilized in a number of the studies consisted of (1) developing a list of competency statements based on the opinions

⁴⁵Haff, p. 20.

⁴⁶Kutie, p. 24.

of experts, and (2) asking practicing teachers to rate each of the statements in terms of importance for teaching and working with students.

In section two, the literature focused on the subject of competency-based teacher education which included the definition, characteristics and competency-based vocational teacher education.

The final section of the review included literature regarding modern technology and the implications for the business education curriculum.

CHAPTER III

RESEARCH PROCEDURES

Introduction

This chapter presents the research design for the study. The following elements are discussed: the population, the sample and the sampling technique, the procedures used to develop the survey instrument, the survey instrument, the pilot study, the collection of data, the instrument reliability, and the statistical analysis.

Population

The population for this study consisted of the 822 vocationally certified business education teachers in the State of Michigan. The population was representative of eight of the Office of Education 14.0000 program codes listed by the 1980-1981 Vocational-Technical Education Services, Michigan Department of Education. The codes included: 14.0000--Office Education; 14.0303--General Office Clerks; 14.0703--Stenographers; 14.0797--Medical Secretary; 14.0798--Legal Secretary; 14.0901--Clerk Typist; 13.9700--Clerical Lab; and 14.9800--Steno-Clerical Lab.

Sample and the Sampling Technique

The size of the sample was derived after consultation with professors of research and research consultants at Michigan State University. All agreed that one-third of the population (274 subjects) would be adequate

for establishing a valid opinion consensus.

A systematic sampling procedure was used to obtain randomization from among the population. This consisted of starting at a random point in the list and selecting every Kth element (in this study every 3rd). This "systematic sample with a random start" is, according to Babbie,¹ virtually identical to simple random sampling if the list of elements is "randomized" in advance of sampling. In systematic sampling care must be given to periodicity of elements in the list. This means that if a cyclical list pattern exists, a biased sample may be drawn. In this study, the list of vocationally certified business education teachers was ordered only by Career Education Planning Districts (CEPD), thus eliminating any periodicity or cyclical pattern.

Procedures Used to Develop the Survey Instrument

In designing this descriptive study, it was decided that the most logical method for collecting the data would be through the use of a questionnaire.

The first step in the development of the questionnaire was the compilation of a list of competencies perceived to be needed by teachers of information processing. Compilation of the list began with an extensive review of literature pertaining to teacher competencies. The review included research studies, journal articles and textbooks from the area of

¹Earl R. Babbie, The Practice of Social Research (California: Wadsworth Publishing Company, 1975), p. 259.

business and vocational education and other academic areas. In addition, competencies were listed from the researcher's own teaching experience and his observations in information processing centers.

An initial list of 105 competencies was compiled. The list was condensed by eliminating or combining similar competencies until a list of 80 competency statements remained. The final 80 competencies were then categorized into six competency areas established by the Cotrell study (1972) which includes program planning, development and evaluation, instructional planning, instructional management, instructional evaluation, and competency topics.

The second step was the validation of the list of competencies by a panel of experts considered to have a knowledge and/or skills in information processing. The panel consisted of 32 representatives from business and industry, education, and vendors. An individual was selected to participate as a panel member if he/she met any of the following criteria.

- (1) published textbook(s) or article(s) in the area of word/information processing or data processing;
- (2) participated in national or state convention as a speaker or panel member discussing the topic of information processing and/or word or data processing; and/or,
- (3) conducted in-service programs for business education teachers in information processing and/or word or data processing.

The procedures used to validate the competency statements consisted of a two-phase modified Delphi technique which is described in the following section.

Phase I. On October 5, 1981, a cover letter (Appendix A) and questionnaire listing the competency statements (Appendix B) were sent to the panel of experts. Panel members were requested to respond to each competency statement in terms of its importance for a teacher of information processing to possess. The following rating scale was provided:

- C = Crucial
- H = Highly Desirable
- D = Desirable, but not absolutely necessary
- N = Nonimportant
- I = Incorrectly stated; needs revision
- X = Do not use; concept inappropriate

Twenty-seven (84 percent) of the thirty-two panel members responded to this request.

To develop the final questionnaire, the responses were tallied and analyzed through the use of a weighted mean. In addition, those competencies rated as I (Incorrectly stated; needs revision) were reworded or combined with other competency statements.

A weighted mean ("Crucial" equals 4 points; "Highly Desirable" equals 3 points; "Desirable" equals 2 points; and "Nonimportant" equals 1 point) was calculated for each competency statement. The weighted mean values for the 80 competency statements ranged from a weighted mean value of 1.92 which indicated that the competencies were considered less than desirable, to a weighted mean value of 3.64 which indicated that the competencies were considered to be highly desirable.

Competency statements receiving a weighted mean of 2.50 or greater were defined as being appropriate for a teacher of information processing. The 2.50 weighted mean cutoff was considered appropriate because "Crucial," "Highly Desirable," and "Desirable, but not absolutely necessary" all refer to a positive level of commitment. Other competency statements recommended by members of the panel were also recorded.

The computational analysis made of the responses resulted in 60 competency statements being accepted and 9 competency statements being rejected. An additional 22 competency statements were suggested for inclusion by members of the panel.

Phase II. On November 12, 1981, a cover letter (Appendix C) and revised questionnaire (Appendix D) were sent to those 27 panel members who responded to the first questionnaire. Panel members were instructed to review the questionnaire listing the 60 competency statements which were chosen as being appropriate, the 9 competency statements that were deemed inappropriate and the additional 22 recommended competency statements for a second evaluation. This second evaluation consisted of reviewing all the competency statements and placing a check mark beside the competency(cies) the members strongly believed should be included or excluded from the study. Twenty two or 81 percent of the panel members returned the second questionnaire. The research determined that if one-third of the members who responded indicated that a certain competency statement of the 60 competency statements chosen as appropriate should be

discarded, that competency statement was not included in the final questionnaire. If one-third indicated that a certain competency statement of the 9 competency statements that were chosen as inappropriate should be included, that competency statement was incorporated in the final questionnaire. In addition, if two-thirds of the members who responded designated that a certain competency statement of the 22 competency statements that were suggested for inclusion by the members of the panel should be included, that competency statement was also incorporated in the final questionnaire.

An analysis of the responses to the second questionnaire resulted in the 60 competency statements originally deemed appropriate being retained and an additional 10 competency statements being added. Eight of the additional ten competency statements were from the 22 recommended by panel members and two came from the 9 statements that were originally deemed inappropriate. As a result, a list of 70 competency statements was developed for use in the survey instrument.

The third step in the development of the questionnaire was to design a format that would facilitate the efficiency and accuracy of responses to the survey items. Although several existing instruments were examined the overall format of the instrument used in this investigation was devised specifically for this study.

The fourth step was to develop and refine the questionnaire by having the researcher's guidance committee chairperson, professionals with

expertise in the area of information processing and graduate students in business education critically review the questionnaire. As a result of their suggestions, modifications were made to the questionnaire.

The Survey Instrument

The questionnaire developed for this study can be found in Appendix F. It consists of three parts:

Part I Personal and Professional Data

In this part, 11 questions were designed to obtain personal and professional background data from the respondents. The information collected was to be used for descriptive purposes.

Part II Selected Competencies for Teachers of Information Processing

In this part, the 70 competency statements were listed. The statements were presented in random order within each of the six competency areas. The respondents were asked to rate each statement according to the following two steps.

Step 1 Importance Rating

Each competency statement was to be rated on a five-point importance scale with 5 representing "most important" and 1 representing "least important." "Importance Rating," therefore, refers to the number value assigned by the respondents to each competency statement indicating the importance of the competency for a teacher of information processing to possess.

Step 2 Professional Development Needs

"Professional Development Needs" refers to the teacher competencies in which respondents indicated a need for further improved knowledge and/or skills in information processing. The "Professional Development Needs Rating" for the competencies are listed below:

DOES NOT APPLY (DNA) This competency statement does not apply to my present position.

NONE (N) I presently do not need additional knowledge and/or skills development in this competency.

VERY LOW (VL) I may need some additional knowledge and/or skills development in this competency.

LOW (L) I need some additional knowledge and/or skills development in this competency.

MODERATE (M) I would find it helpful to develop additional knowledge and/or skills in this competency.

HIGH (H) I would find it important to develop additional knowledge and/or skills in this competency.

VERY HIGH (VH) I would find it extremely important to develop knowledge and/or skills in this competency.

For the purposes of statistical analysis, the researcher assigned numerical values to these responses as follows:

<u>Scale</u>		<u>Need to Further Improve Knowledge and/or Skills</u>
0	represents	DOES NOT APPLY
1		NONE
2		VERY LOW
3		LOW
4		MODERATE
5		HIGH
6		VERY HIGH

"Professional Development Needs Rating," therefore, refers to the numerical value assigned to competencies on the basis of respondents' ratings of their professional development need for a particular competency or competency area.

Part III Development of Teaching Competence

In this section of the questionnaire, respondents were asked to indicate where teaching skills in each of the six competency areas could be developed most effectively. Competency areas refers to the six categories of teacher competencies selected for this study. These six categories were derived by grouping the 70 competency statements into the following general areas.

A. Program Planning, Development and Evaluation: The ability to assess community and study needs, conduct an occupational analysis, and develop and evaluate a comprehensive curriculum in the area of information processing.

B. Instructional Planning: The skills in writing performance objectives, developing lesson plans and developing and/or modifying material

for use in information processing programs.

C. Instructional Execution: The ability to use a variety of motivational techniques, employ simulation techniques, operate various types of information processing equipment and structure activities and tasks to maximize learning and successful experiences for students.

D. Instructional Management: The ability to prepare budgets purchase supplies and equipment, organize and implement an information processing lab/classroom facility.

E. Instructional Evaluation: The ability to construct and use formal and informal tests, to use observational techniques, to assess student achievement in various information processing skill areas and to determine student readiness for specific learning activities.

F. Contemporary Topics: Having the knowledge of current topics in the area of information processing and an awareness of one's own needs for professional development.

This task was accomplished by requesting the respondents to rank four possible preparation settings. Preparation settings refers to the environments where the development of skill in each of the six competency areas could occur. The settings include the following:

A. College Course Work: All classroom work and activities (excluding field experiences) for which college credit is given.

B. Student Teaching: All supervised field experiences which are part of a professional training program.

C. In-Service Training: All conferences, workshops, consultant help and the like, which take place during an employment period and which may or may not result in college credit.

D. On-the-Job Experience: Actual employment experience as a teacher.

Respondents were directed to assign the numbers 1-4 to each preparation setting using the rating scale listed below:

- 1 = MOST effective setting
- 2 = SECOND most effective setting
- 3 = THIRD most effective setting
- 4 = LEAST most effective setting

The preparation settings were then ranked for each of the six competency areas.

The purpose of this section was to determine the perceptions of the respondents as to where within the preparation settings, skill in each of the six competency areas could be developed most effectively.

Pilot Study

A pilot study was conducted utilizing 12 local business education teachers in the Lansing, East Lansing, Michigan, area.

All subjects completed the questionnaire in the same manner as teachers in the actual study would be requested to do. Upon finishing the questionnaire, the pilot subjects were interviewed individually to ascertain their reactions and comments. As a result of the pilot study, minor changes in format and content wording were made.

Collection of Data

A questionnaire, a cover letter, an incentive, and a pre-addressed postage-paid envelope for returning the questionnaire were mailed to each of the 274 Michigan vocationally certified business education teachers. Thirty-nine percent (106 out of 274) were returned. To help ensure a high response, a follow-up letter and another copy of the questionnaire was sent to those who did not respond to the first mailing. Using this approach 57 percent (155 out of 274) were returned. Eight five percent (132 out of 155) of the returned questionnaires were usable for the study. Copies of the first cover letter and of the follow-up letter, along with the questionnaire and the incentive, are provided in Appendices F through I.

Instrument Reliability

Part II of the questionnaire was composed of 70 competency statements which were categorized into six competency areas. These competency areas were taken from the Cotrell study (1972) and include the following: Program Planning, Development and Evaluation; Instructional Planning; Instructional Execution; Instructional Management; Instructional Evaluation; and Contemporary Topics. Respondents were requested to indicate the importance of the competency statement for a teacher of information processing to possess and then to indicate their perceived need for further knowledge and/or skills for that particular competency statement.

Using the Statistical Package for the Social Sciences (SPSS), reliability tests were completed to determine whether any of the competency

statements were inappropriate for the identified competency areas.

Comback's Alpha ranging from .76 to .98 were obtained for the six competency areas, yielding correlations for both importance and needs. Given these values, it can be stated that Part II of the questionnaire resulted in consistency of measure. Thus, the competency statements were appropriately chosen for each competency area. Results of the reliability tests for the competency areas are located in Appendix K.

Analysis of Data

The data received from the respondents was transferred to optical scanning sheets. From these sheets, data cards were produced for use in the computer facilities at Michigan State University.

Statistical Package for the Social Sciences (SPSS) was used to analyze the data. The specific subprograms used were FREQUENCIES, ANALYSIS OF VARIANCE, PEARSON CORRELATION AND BREAKDOWN, which provided both descriptive and statistical analysis. In consultation with research personnel at Michigan State University a .05 level of significance was considered appropriate for the study.

CHAPTER IV

FINDINGS

Introduction

This chapter presents the data received from the Michigan vocationally certified business education teachers who participated in this study.

Of the 274 questionnaires mailed, 155 (57 percent) were completed and returned. Of those returned, four were received too late to be included in the data, six were rejected because the respondents did not respond to major portions of the questionnaire or responded in such a way that the information could not be used, five were returned because of an incorrect address, six were returned because the teacher was no longer employed by the school district, and two were discarded because they were completed by teachers who were not part of the population sample. The findings reported in this chapter were based on the responses from the 132 teachers representing 48 percent of the sample population.

The format for presenting the results is to first report demographic data concerning the respondents (Research Question 1) and then to answer the remaining research questions in sequential order.

Research Questions

Research Question 1: What are the professional backgrounds of Michigan vocationally certified business education teachers (MVCBET)?

Highest Degree Held

One hundred seven teacher (81 percent) held the master's degree. Twenty-two of the teacher (16.70 percent) held, as their highest degree, the bachelor's degree. No teacher reported holding the doctorate. Table 1 reveals the highest degree held by the respondents.

Table 1
Highest Degree Held By Michigan Vocationally Certified
Business Education Teachers

(N=132)

Highest Degree Held	Responses	Percent of Responses
Bachelor	22	16.70
Master	107	81.00
Specialist	3	2.30
Doctorate	<u>0</u>	<u>0.00</u>
Totals	132	100.00

Business Degrees and Majors

As shown in Table 2, 110 respondents had obtained a baccalaureate in business education and 78 a master's in business education.

Table 2

Business Degrees and Majors Held By
Michigan Vocationally Certified Business Education Teachers

(N=132)

Business Degree and Major	Response ^a	Percent of ^b Responses	Percent of ^c Respondents
ASSOCIATE			
Executive Secretary	12	4.98	9.10
Legal Secretary	4	1.65	3.03
General Business	6	2.44	4.52
Accounting	3	1.22	2.25
Total	25	10.20	18.90
BACHELOR			
Business Education	110	44.72	83.33
Distributive Education	7	2.80	5.30
Business/Distributive Education	10	4.06	7.59
Business Administration	3	1.22	2.28
Total	130	52.80	98.50
MASTER			
Business Education	78	31.71	59.10
Distributive Education	3	1.22	2.25
Business/Distributive Education	7	2.85	5.30
Business Administration	3	1.22	2.25
Total	91	37.00	68.90
TOTAL	246	100.00	186.30

^aNumber exceeds 132 because respondents were directed to indicate all degrees held with a major in business.

^bLists each frequency (percent of responses) as a percentage of the total number of responses (246).

^cLists each frequency (percent of respondents) as a percentage of the total number of respondents (132). The percentage in this column may sum as high as 100 times the number of categories (business degrees and majors) since each respondent could have obtained a degree on each level.

Teaching Experience

As indicated in Table 3, the years of teaching experience in business education ranged from 1 to 40 years. The mean number of years of teaching experience in business education was 14 years (SD 6.74). Thus, sixty-eight percent of the population had between 7 and 21 years of teaching experience in business education.

Table 3

Years of Teaching Experience in Business Education
of Michigan Vocational Certified Business Education Teachers
(N=132)

Years Teaching	Response	Percent of Responses
1	2	1.50
3	1	.80
4	3	2.30
5	4	3.00
6	3	2.30
7	8	6.10
8	5	3.80
9	9	6.80
10	6	4.50
11	8	6.10
12	12	9.10
13	11	8.30
14	9	6.80
15	8	6.10
16	5	3.80
17	5	3.80
18	2	1.50
19	4	3.00
20	5	3.80
21	5	3.80
22	4	3.00
23	2	2.30
25	3	2.30
26	2	1.50
29	1	.80
39	3	2.30
31	1	.80
40	1	.80
TOTAL	132	100.00

Certification

As revealed in Table 4, 63 of the respondents (47.70 percent) were certified by the 14.9800 steno-clerical Office Education Code. In Michigan, however, 33 (25 percent) of the respondents held the general office education 14.0000 Office Education Code. Only 7 (5.30 percent) held the 14.9700 Office Education Code (clerical lab).

Table 4

Types of Office Education Certification by Code and Title Held
Michigan Vocationally Certified Business Education Teachers
(N=132)

Office Education Code and Title	Responses	Percent of Responses
14.9800 Steno-Clerical Lab	63	47.70
14.0000 Office Education	33	25.00
14.0901 Clerk Typist	15	11.40
14.0703 Stenographers	14	10.60
14.9700 Clerical Lab	<u>7</u>	<u>5.30</u>
TOTAL	132	100.00

Geographic Location

Table 5 denotes the number of percent of the respondents within each Career Education Planning Districts (CEPD). Ninety-three percent

of the respondents were located in the lower peninsula of Michigan. The largest response (15 or 11.40 percent) came from CEPD's 30 (Oakland County) and 42 (Wayne County) which are both located in or near the city of Detroit. See Map D in Appendix L for Career Education Planning Districts.

Table 5
Distribution of Respondents by
Career Education Planning Districts (CEPD)
(N=132)

Career Education Planning Districts (CEPD)		Response	Percent of Responses
UPPER PENINSULA	1	1	.80
	2	2	1.50
	3	1	.80
	4	1	.80
	5	2	1.50
	6	1	.80
LOWER PENINSULA	7	2	1.50
	9	1	.80
	10	1	.80
	12	2	1.50
	13	1	.80
	14	2	1.50
	17	2	1.50
	18	2	1.50
	21	1	.80
	22	1	.80
	23	2	1.50
	24	2	1.50
	25	3	2.30
	26	2	1.50
	27	1	.80
	28	3	2.30
	29	8	6.10

Table 5 Continued

Career Education Planning Districts (CEPD)	Response	Percent of Responses
30	3	2.30
31	4	3.00
32	6	4.50
33	5	3.80
34	1	.80
35	3	2.30
36	1	.80
37	2	1.50
38	2	1.50
39	15	11.40
40	7	5.30
41	9	6.80
42	15	11.40
43	2	1.50
45	1	.80
46	2	1.50
47	1	.80
49	3	2.30
50	3	2.30
51	1	.80
52	1	.80
53	1	.80
TOTAL	132	100.00

Research Question 2: Do MCVBET perceive a need to acquire competencies in a formal pre-service or in-service teacher education program in the area of information processing?

One hundred twenty (90.90 percent) of the responding teachers indicated that they perceived a need to acquire competencies in a formal pre-service or in-service teacher education program in information processing.

Twelve of the respondents (9.10 percent) indicated that they did not perceive a need to acquire competencies in a formal pre-service or in-service teacher education program in information processing. Reasons stated by these twelve respondents included: retirement, no longer teaching in the skills area, will be leaving the educational field and the school district could not afford to purchase the equipment necessary to teach information processing. Table 6 summarizes the data for this question.

Table 6
The Need to Acquire Skills and/or Knowledge in
Information Processing
(N=132)

Response	Number	Percent
Yes	120	90.90
No	<u>12</u>	<u>9.10</u>
TOTAL	132	100.00

Research Question 3: Do the respondents perceive that on-the-job experience in information processing is desirable in order to teach in the area of information processing?

As shown in Table 7, 90 of the 132 respondents (68.20 percent) indicated that on-the-job experience in information processing is desirable in order to teach in the area of information processing. Nearly one-third of the population (31.80 percent) indicated that on-the-job experience is not desirable for a teacher of information processing to possess.

Table 7

The Desirability of On-The-Job Experience in Order to Teach
Information Processing
(N=132)

Response	Number	Percent
Yes	90	68.20
No	<u>42</u>	<u>31.80</u>
TOTAL	132	100.00

Research Question 4: To what extent have the respondents had specific preparation in their formal teacher education program to teach information processing?

One hundred seventeen (88.60 percent) of the respondents indicated that they have not had specific preparation in their formal teacher education program to teach information processing. Of the 15 respondents who had specific training in information processing, the unit of instruction was found to be the most common form of preparation. Tables 8 and 9 summarizes the data for this question.

Table 8

Michigan Vocationally Certified Business Education Teachers who had
Specific Preparation in Teaching Information Processing
(N=132)

Response	Number	Percent
Yes	15	11.40
No	<u>117</u>	<u>88.60</u>
TOTAL	132	100.00

Table 9

Types of Preparation Completed by
Michigan Vocational Certified Business Education Teachers in a
Formal Teacher Education Program in Information Processing
(N=15)

Response	Number ^a	Percent of ^b Number	Percent of ^c Respondents
Unit of Instruction	12	52.20	80.00
Chapter of Instruction	7	30.40	46.70
Independent Study	<u>4</u>	<u>17.40</u>	<u>26.70</u>
TOTAL	23	100.00	153.40

^aNumber exceeds 15 because respondents were directed to indicate all types of preparation completed.

^bLists each frequency (percent of number) as a percentage of the total number (23).

^cLists each frequency (percent of respondents) as a percentage of the total number of respondents (15). The percentage in this column may sum as high as 100 times the number of categories (response) since each respondent could have participated in more than one type of preparation.

Research Question 5: Outside of formal classroom instruction in a teacher education program in which, if any, of the following did the respondents participate or complete in order to prepare themselves in the area of information processing (self study, workshops, seminars, vendor training, conferences)?

As shown in Table 10, 95 of the respondents (27.60 percent of the responses or 76.00 percent of the respondents) indicated that self study was the area most often completed in order to prepare them in the area of

information processing. More than half of the respondents participated in some type of workshop or conference in order to gain preparation in information processing.

Table 10
Preparation Completed Other than a Formal Program in
Information Processing
(N=125)

Area	Response ^a	Percent of Responses ^b	Percent of Respondents ^c
Self Study	95	27.60	76.00
Conferences	73	21.20	58.40
Workshops	68	19.80	54.40
Vendor Training	57	16.60	45.60
Seminars	39	11.30	31.20
Other	<u>12</u>	<u>3.50</u>	<u>9.60</u>
TOTAL	344	100.00	275.20

^aNumber exceeds 125 because respondents were directed to indicate all types of preparation completed.

^bLists each frequency (percent of responses) as a percentage of the total number of responses (344).

^cLists each frequency (percent of respondents) as a percentage of the total number of respondents (125). The percentage in this column may sum as high as 100 times the number of categories (areas) since each respondent could have participated in more than one type of preparation.

Research Question 6: Do the respondents have an interest in participating in professional education in-service activities in information processing within the next two or three years.

As shown in Table 11, 124 of the respondents (93.90 percent) indicated that they would be interested in participating in in-service activities within the next two or three years in information processing. Table 12 illustrates the type of course work the respondents would prefer for these in-service activities. Sixty-four of the respondents (51.70 percent) indicated that they would prefer either credit or non-credit course work. Fifty (40.30 percent) of the respondents indicated that they would prefer non-credit course work for the in-service activities.

Table 11

Interest in Participating in Professional Education
In-service Activities in Information Processing

(N=132)

Response	Number	Percent
Yes	124	93.90
No	<u>8</u>	<u>6.10</u>
TOTAL	132	100.00

Table 12

Types of Course Work Desired for In-service Activities in
Information Processing
(N=124)

Response	Number	Percent
Credit Course Work	10	8.00
Non-Credit Course Work	50	40.30
All of the Above	<u>64</u>	<u>51.70</u>
TOTAL	124	100.00

Research Question 7: What is the relative importance of the competency areas and selected competency statements as perceived by MVCBET in information processing?

To determine the relative importance of the six competency areas and 70 competency statements as perceived by MVCBET in information processing, all of the competency areas and competency statements included in the questionnaire were ranked according to their median Importance Rating. In addition to ranking the competency statements in order of importance, they were divided into the following categories:

- 4.500-4.999 Very High Importance
- 4.000-4.499 High Importance
- 3.500-3.999 High-Moderate Importance
- 3.000-3.499 Moderate Importance
- 2.999-2.500 Moderate-Low Importance

The competency area considered by the respondents to be of Very High Importance was "Instructional Evaluation." The remaining five

competency areas were all considered by the respondents to be of High Importance. A listing of all six competency areas according to their median Importance Rating is presented in Table 13. Table 13a shows the breakdown of Contemporary Topics.

Of the 70 competency statements selected for the study, 22 (31 percent) were rated as having Very High Importance, 30 (43 percent) as having High Importance and 16 (23 percent) as having High-Moderate Importance. Only 2 (3 percent) competency statements were considered to have Moderate Importance. This indicated that 52 (74 percent) of the competency statements were perceived to be of Very High or High Importance by Michigan vocationally certified business education teachers. It also revealed that 68 (97 percent) were found to be of Very High through High-Moderate Importance for teachers, while only two (3 percent) were designated as being of Moderate Importance. Table 14 provides a median Importance Rating ranking of all 70 competency statements. A ranking of the competency statements according to their median Importance Rating within each of the six competency areas is presented in Appendix M.

The top six competencies perceived to be of Very High Importance for teachers of information processing to possess, according to median scores, were:

- . Develop units of instruction. (4.813)
- . Operate a visual display terminal (one-line, partial screen, full screen). (4.767)
- . Develop lesson plans. (4.750)
- . Operate dictation/transcription equipment. (4.741)

- . Develop student performance objectives. (4.705)
- . Identify sources of instructional materials. (4.705)

Four of the highest rated competencies reflected teachers' concern about Instructional Planning in information processing. The remaining two competencies pertained to Instructional Execution.

In descending order, the six lower rated competency statements, according to median scores, were perceived to be:

- . Phototypesetting.(knowledge of:) (3.768)
- . History/development of word processing. (knowledge of:) (3.756)
- . Microforms. (knowledge of:) (3.750)
- . Prepare budgets. (3.662)
- . Prepare grant proposals. (3.305)
- . History and development of information processing. (knowledge of:) (3.296)

Three of these competencies pertained to Contemporary Topics. The other two competencies were concerned with Instructional Management and Planning, Development and Evaluation of information processing. Of the six lower rated competencies only two received a Moderate Importance Rating. The remaining four competencies were given High-Moderate Importance Rating.

As can be seen in Table 15, the majority of the competencies within the six competency areas were rated as having Very High to High Importance for teachers of information processing.

Research Question 8: In which competency areas and specific competency statements do MVBET perceive themselves to be in need of further knowledge and/or skills in the area of information processing. What are their professional development needs?

Table 13

Median Importance Rating of the Six Competency Areas for
Information Processing

Competency Area	Range of Response	Median
Instructional Evaluation	1.50-5.00	4.537
Instructional Execution	1.75-5.00	4.450
Instructional Planning	2.16-5.00	4.435
Planning, Development & Evaluation	2.00-5.00	4.135
Instructional Management	2.00-5.00	4.050
Contemporary Topics	1.23-5.00	4.009

Table 13a

Median Importance Rating of the Contemporary Topics
for Information Processing

Specific Topics	Range of Responses	Median
Word Processing	1.71-5.00	4.100
Information Processing	1.36-5.00	4.091
Data Processing	1.33-5.00	4.008
Reprographics	1.00-5.00	3.967
Telecommunications	1.00-5.00	3.965
Micrographics	1.00-5.00	3.926

Table 14
Relative Importance of the 70 Teaching Competencies

Importance	Median
<u>Very High Importance (4.500-4.99</u>	
10. Develop units of instruction.	4.813**
21. Operate a visual display terminal (one line, partial screen, full screen).	4.767
11. Develop lesson plans.	4.750
22. Operate dictation/transcription equipment.	4.741
9. Develop student performance objectives.	4.705*
12. Identify sources of instructional materials.	4.705*
4. Develop a course of study.	4.695
20. Operate an electronic typewriter.	4.685
52. Word processing recording media and equipment.	4.665*
16. Direct student laboratory experiences.	4.632
3. Develop information processing program objectives.	4.620*
29. Establish productivity standards for students.	4.608
19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	4.583
32. Monitor student progress.	4.583
17. Plan and direct individualized instructional programs.	4.570
38. Careers in information processing.	4.557
8. Evaluate the information processing program.	4.543
28. Manage an information processing lab/classroom facility.	4.543

Table 14--Continued

Importance	Median
53. Career paths in word processing.	4.543
50. Terminology of word processing.	4.537*
14. Prepare teacher-made instructional materials.	4.530
30. Test student cognitive (knowledge) performance.	4.529*
<u>High Importance (4.000-4.499)</u>	
1. Conduct a survey to determine employment demands and types/brands of equipment being used throughout the school district community.	4.466
15. Employ simulation techniques.	4.440
31. Test student psychomotor (skill) performance.	4.429
6. Integrate information processing courses into overall curriculum.	4.414
39. Future trends and technological changes in information processing.	4.391
49. Career paths in data processing.	4.365
26. Provide for safety needs of students.	4.355
25. Recommend and/or purchase supplies and equipment (bids and specifications).	4.354*
48. Terminology of data processing.	4.321
41. Work flow within an office or an organization.	4.287
56. Components of a procedures manual.	4.260
61. Copying equipment.	4.238
27. Plan/layout an information processing lab/classroom facility.	4.214

Table 14--Continued

Importance	Median
2. Report the findings of a school district community survey to school administrators.	4.210
47. Data processing systems and procedures.	4.179
37. Computer aided transcription (CAT).	4.167
43. Microprocessors.	4.160
55. Word processing systems and designs.	4.160
46. Data recording media and equipment.	4.136
13. Develop a co-op or work experience program in information processing.	4.115
65. Electronic mail systems.	4.108
23. Estimate present and future instructional resource needs.	4.104
42. Data base management systems (DBMS).	4.096
67. Computer-based message systems.	4.056
45. Computer programming.	4.049
36. Optical character recognition (OCR).	4.048
34. Records management.	4.040
40. Networks.	4.040
69. Management information systems.	4.028
5. Conduct a student follow-up study.	4.000
<u>High-Moderate Importance (3.500-3.999)</u>	
35. Voice processing.	3.982
68. Communicating with modems.	3.962

Table 14--Continued

Importance	Median
44. Computer components.	3.951
63. Intelligent printers/copiers.	3.947
64. Facsimile.	3.920
66. Public and private teletype.	3.904
60. Computer assisted retrieval (CAR).	3.875
18. Provide instruction for students with special needs (gifted/handicapped).	3.866
70. Satellite communications.	3.841
58. Computer input microfilm.	3.827
54. Components of a feasibility study.	3.798
59. Computer output microfilm.	3.795
62. Phototypesetting.	3.768
51. History/development of word processing.	3.756
57. Microforms.	3.750
24. Prepare budgets.	3.662
<u>Moderate Importance (3.000-3.499)</u>	
7. Prepare grant proposals.	3.305
33. History and development of information processing.	3.296

*Seven or 10 percent of the competency statements had a range of responses from 2.00-5.00.

**One competency statement had a range of response from 3.00-5.00.

Sixty-two or 89 percent of the competency statements had a range of responses from 1.00-5.00.

To determine which competency areas and specific competency statements MVCBET perceive themselves to be in need of further knowledge and/or skills in information processing, all of the competency areas and competency statements included in the questionnaire were ranked according to their median Professional Development Need Rating. In addition to ranking the competency statements in order of need, they were divided into the following categories:

- 5.000-5.999 Very High Professional Development Need
- 4.500-4.999 High Professional Development Need
- 4.000-4.499 Moderate-High Professional Development Need
- 3.500-3.999 Moderate-Low Professional Development Need
- 3.000-3.499 Low Professional Development Need
- 2.000-2.999 No Professional Development Need

The competency area with the highest median Professional Development Need Rating was "Instructional Planning." Three of the six competency areas were rated in the same category as Instructional Planning--Moderate-High Professional Development Need. A listing of all six competency areas according to their median Professional Development Need Rating is presented in Table 16. Table 16A shows the breakdown of Contemporary Topics.

Teachers perceived their Professional Development Needs to be High or Moderate-High for 60 (86.00 percent) of the 70 competency statements, Moderate-Low for 9 (13.00 percent) of the competencies and Low for one (1.00 percent) of the competency statements. Of the 60 competencies that received a High or Moderate-High Professional Development Need

Table 15

Percentage of Competencies at Each Importance Level for the Six Competency Areas

Competency Area	Importance Ratings				
	Very High (4.500-4.999)	High (4.000-4.499)	High-Moderate (3.500-3.999)	Moderate (3.000-3.499)	Moderate-Low (2.999-2.500)
Planning, Development & Evaluation (N=8)	N 3 37.50	4 50.00	0 0	1 12.50	0 0
Instructional Planning (N=6)	N 5 83.50	1 16.70	0 0	0 0	0 0
Instructional Execution (N=8)	N 6 75.00	1 12.50	1 12.50	0 0	0 0
Instructional Management (N=6)	N 1 16.70	4 66.60	1 16.70	0 0	0 0
Instructional Evaluation (N=4)	N 3 75.00	1 25.00	0 0	0 0	0 0
Contemporary Topics (N=38)	N 4 10.00	19 50.00	14 37.00	1 3.00	0 0

Rating, 21 were considered to have High Professional Development Need Ratings and 39 were considered to have Moderate-High Professional Development Need Ratings. Table 17 provides a median Professional Development Need Rating ranking for all 70 competency statements. A ranking of the competency statements according to their median Professional Development Need Rating within each of the six competency areas is presented in Appendix N.

The top six competencies perceived by the respondents as having the highest priority for additional professional education, according to median scores, were:

- . Operate a visual display terminal (one line partial screen, full screen). (4.833)
- . Identify sources of instructional materials. (4.796)
- . Microprocessors. (knowledge of:) (4.713)
- . Develop units of instruction. (4.703)
- . Develop student performance objectives. (4.703)
- . Develop lesson plans. (4.692)

The first competency statement listed above was ranked as the top professional development need; it reflected the teachers' concerns about Instructional Execution. Four of the other competencies pertained to the desire teachers had to increase their knowledge and/or skills in the area of Instructional Planning. All of the competencies had received High Professional Development Need Ratings.

The five competencies perceived by the respondents as having a lower rated priority for professional education, according to median scores, were:

- . Prepare grant proposals. (3.842)

Table 16

Median Professional Development Need Rating
of the Six Competency Areas for Information Processing

Competency Area	Range of Responses	Median
Instructional Planning	.33-6.00	4.458
Instructional Evaluation	1.00-6.00	4.275
Contemporary Topics	.40-6.00	4.245
Planning, Development & Evaluation	.75-6.00	4.214
Instructional Execution	.63-6.00	3.953
Instructional Management	.83-6.00	3.833

Table 16a

Median Professional Development Need Rating
of the Contemporary Topics for Information Processing

Specific Topics	Range of Responses	Median
Data Processing	.67-6.00	4.317
Telecommunications	.33-6.00	4.312
Word Processing	.29-6.00	4.310
Information Processing	.09-6.00	4.233
Micrographics	.75-6.00	4.229
Reprographics	.25-6.00	4.069

Table 17
Ranking of Perceived Professional Development Needs

Need	Median
<u>High Professional Development Need (4.500-4.999)</u>	
21. Operate a visual display terminal (one line, partial screen, full screen).	4.833
12. Identify sources of instructional materials.	4.796
43. Microprocessors.	4.713
10. Develop units of instruction.	4.703
9. Develop student performance objectives	4.703
11. Develop lesson plans.	4.692
39. Future trends and technological changes in information processing.	4.679
4. Develop a course of study.	4.667
6. Integrate information processing courses into the overall curriculum.	4.667
37. Computer aided transcription (CAT).	4.528
14. Prepare teacher-made instructional materials.	4.625
8. Evaluate the information processing program.	4.600
68. Communicating with modems.	4.557
67. Computer-based message systems.	4.554
49. Career paths in data processing.	4.547
42. Data base management systems.	4.543
52. Word Processing recording media and equipment.	4.541
3. Develop information processing program objectives.	4.534

Table 17--Continued

Need	Median
69. Management information systems.	4.530
70. Satellite communications.	4.515
57. Microforms.	4.514
<u>Moderate-High Professional Development Need (4.000-4.499)</u>	
15. Employ simulation techniques.	4.344
36. Optical character recognition (OCR).	4.333
58. Computer input microfilm (CIM).	4.329
59. Computer output microfilm (COM).	4.329
23. Estimate present and future instructional resource needs.	4.319
66. Public and private teletype.	4.300
45. Computer programming.	4.289
63. Intelligent printers/copiers.	4.262
62. Phototypesetting.	4.243
41. Work flow within an office or an organization.	4.232
30. Test student cognitive (knowledge) performance.	4.219
64. Facsimile.	4.218
20. Operate an electronic typewriter.	4.211
44. Computer components.	4.207*
1. Conduct a survey to determine employment demands and types/brands of equipment being used throughout the school district community.	4.155
31. Test student psychomotor (skill) performance.	4.138

Table 17--Continued

Need	Median
5. Conduct a student follow-up study.	4.132
54. Components of a feasibility study.	4.077
35. Voice Processing.	4.069
2. Report the findings of a school district community survey to school administrators.	4.063
13. Develop a co-op or work experience program in information processing.	4.033
55. Word processing systems and designs.	4.484
19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	4.462
48. Terminology of data processing.	4.458
25. Recommend and/or purchase supplies and equipment (bids and specification).	4.447
47. Data processing systems and procedures.	4.444*
50. Terminology of word processing.	4.433
60. Computer assisted retrieval (CAR).	4.429
38. Careers in information processing.	4.425
53. Career paths in word processing.	4.422
46. Data recording media and equipment.	4.421
16. Direct student laboratory experiences.	4.420
40. Networks.	4.417
29. Establish productivity standards for students.	4.414
28. Manage an information processing lab/classroom facility.	4.414

Table 17--Continued

Need	Median
56. Components of a procedures manual.	4.406
17. Plan and direct individualized instructional programs.	4.400
65. Electronic mail systems.	4.385
32. Monitor student progress.	4.346
<u>Moderate-Low Professional Development Need (3.500-3.999)</u>	
18. Provide instruction for students with special needs (gifted/handicapped).	3.970
24. Prepare budgets.	3.952
27. Plan/layout an information lab/classroom facility.	3.931
34. Records management.	3.906
61. Copying equipment.	3.882
7. Prepare grant proposals.	3.842
26. Provide for safety needs of students.	3.621
51. History/development of word processing.	3.538
33. History and development of information processing.	3.500
<u>Low Professional Development Needed (3.000-3.4999)</u>	
22. Operate dictation/transcription equipment.	3.250

Sixty eight (97 percent) of the competency statements had a range of responses from 1.00-6.00.

*Two of the competency statements or 3 percent had a range of responses from 2.00-6.00.

- . Provide for safety needs of students. (3.621)
- . History/development of word processing (knowledge of:) (3.538)
- . History and development of information processing (knowledge of:) (3.500)
- . Operate dictation/transcription equipment. (3.250)

Two of the competencies listed above pertained to Contemporary Topics. Another two dealt with Instructional Management, and one dealt with Planning, Development and Evaluation of information processing. Although these five competencies were ranked in terms of Professional Development Needs, none received a rating low enough to indicate that no additional professional education was needed. Only one "operate dictation/transcription equipment" was categorized as a Low Professional Need.

Three of the competencies in the lowest priority group, "history/development of word processing, history and development of information processing, and prepare grant proposals" also were included in the lowest importance group of competency statements.

As shown in Table 18, teachers perceived their Professional Development Needs to be Moderate-High or Moderate-Low for most of the competencies within six of the eight competency areas.

Research Question 9: What are the perceptions of the respondents concerning the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) in developing competence in the selected competency areas?

After ranking the median rating scores of the preparation settings for the six competency areas (Table 19), the following information emerged:

Table 18

Percentage of Competencies at Each Level of Professional Development Need for
the Six Competency Areas

Competency Area	Professional Development Need Rating					No
	Very High (5.000-5.999)	High (4.500-4.999)	Moderate-High (4.000-4.499)	Moderate-Low (3.400-3.999)	Low (3.000-3.499)	
Planning, Development & Evaluation (N=8)	N 0	4 50.00	3 37.50	1 12.50	0 0	0 0
Instructional Planning (N=6)	N 0	5 83.30	1 16.70	0 0	0 0	0 0
Instructional Execution (N=8)	N 0	1 12.50	5 62.50	1 12.50	1 12.50	0 0
Instructional Management (N=6)	N 0	0 0	3 50.00	3 50.00	0 0	0 0
Instructional Evaluation (N=4)	N 0	0 0	4 100.00	0 0	0 0	0 0
Contemporary Topics (N=38)	N 0	11 29.00	23 60.50	4 10.50	0 0	0 0

a. Teachers perceived in-service training to be the most effective setting for developing competency in Program Planning, Development & Evaluation, Instructional Execution, Instructional Management and Contemporary Topics. This setting was perceived to be the overall most effective setting. The setting was not perceived as being the least effective for developing competence in any of the competency areas.

b. Teachers rated college course work as the most effective setting for developing skill in Instructional Planning and Instructional Evaluation. This setting was perceived to be the overall second most effective setting. Again, the setting was not perceived as being the least effective for developing competence in any of the competency areas.

c. Teachers indicated that on-the-job experience was the next to the least effective setting for acquiring skill in five of the six competency areas.

d. Teachers rated student teaching as being the least effective setting for developing competency in all of the six competency areas.

e. Median rating scores for the competency areas of Instructional Execution and Instructional Evaluation were very closely ranked. For these competency areas no preparation setting was considered to stand out as the best or least effective.

Research Question 10: What is the relationship between the "Importance Rating" and the "Professional Development Need Rating" of the competency areas and the competency statements as perceived by MVCBET?

Table 19

Ranking for Preparation Settings for Competency Areas

Competency Areas	<u>Preparation Settings</u>	
	1 = <u>Most</u> effective 2 = <u>Second</u> most effective 3 = <u>Third</u> most effective 4 = <u>Least</u> effective	Median
<u>Program Planning, Development & Evaluation.</u> The ability to assess community and student needs, conduct an occupational analysis, and develop and evaluate a comprehensive curriculum in information processing.	1. In-service training 2. College course work 3. On-the-job experience 4. Student teaching	1.70 2.12 2.67 3.57
<u>Instructional Planning.</u> Skills in writing performance objectives, developing lesson plans, and developing and/or modifying material for use in information processing programs.	1. College course work 2. In-service training 3. On-the-job experience 4. Student teaching	1.47 1.92 2.21 3.21
<u>Instructional Execution.</u> The ability to use a variety of motivational techniques, employ simulation techniques, operate various types of information processing equipment, structure activities and tasks, and to maximize learning and successful experiences.	1. In-service training 2. College course work 3. On-the-job experience 4. Student teaching	2.25 2.35 2.55 2.87
<u>Instructional Management.</u> The ability to prepare budgets, purchase supplies and equipment, and organize and implement an information processing lab/classroom facility.	1. In-service training 2. On-the-job experience 3. College course work 4. Student teaching	1.79 2.30 2.36 3.62
<u>Instructional Evaluation.</u> The ability to construct and use formal and informal tests, to use observational techniques, to assess students' achievement in various information processing skill areas, and to determine students' readiness for specific learning activities.	1. College course work 2. In-service training 3. On-the-job experience 4. Student teaching	2.29 2.51 2.59 2.67

Table 19--Continued

Competency Areas	Preparation Settings	
	1 = <u>Most</u> effective	
	2 = <u>Second</u> most effective	
	3 = <u>Third</u> most effective	
	4 = <u>Least</u> effective	Median
<hr/>		
Contemporary Topics. Having knowledge of current topics in the area of information processing, and an awareness of one's own needs for professional development.	1. In-service training	1.40
	2. College course work	2.35
	3. On-the-job experience	2.61
	4. Student teaching	3.68

Pearson Product Moment Correlations* between importance and needs were computed for all 11 scales** and all 70 competency statements. For all 11 scales, the correlations between importance and need were significantly different from zero, at alpha less than .01 for 10 scales, and at alpha less than .05 for 1 scale. For each scale, the correlations were positive indicating that the scales with a high importance also were seen by the respondents to have a high need. Those scales with a low importance also were seen by the respondents to have a low need. For the 11 scales, however, 4 had relatively low correlations (.2-.3) and 7 were in the moderate range (.4-.6).

*All correlations in this study are Pearson Product Moment Correlations.

**The 11 scales are the 6 competency areas; however, for statistical purposes the competency area "Contemporary Topics" was broken down by topic area--Information Processing, Data Processing, Word Processing, Micrographics, Reprographics and Telecommunications, thus 22 scales were derived.

For all 70 competency statements, the correlations between importance and need were significantly different from zero, at alpha less than .01 for 64 competency statements, at alpha less than .05 for 5 competency statements, and at alpha less than .10 for 1 competency statement. The correlations for the 70 competency statements were also positive indicating the same relationships existed between important and needs as previously stated for the 11 scales. Thirty-nine of the correlations were found to be low (.2-.3) and 31 were moderate (.4-.6). The specific correlation coefficients and significance for each competency statement and scale are located in Appendix O. Scattergrams located in Appendix P illustrate the above information graphically for each of the 11 scales.

Research Question 11: What is the relationship between the Importance Rating MCVBET gave to each competency area and the number of years the teachers have been teaching?

As shown in Table 20, correlations between the number of years the teachers have been teaching and the importance ratings were all negative. This indicated that teachers with greater experience perceived the competency areas to have a lower importance, while teachers with less experience tended to perceive them as being more important. Even though they were all negative, the correlations for 8 of the 11 scales* were not significantly different from zero. This

*The 11 scales are the 6 competency areas; however, for statistical purposes the competency area "Contemporary Topics" was broken down by topic area--information processing, data processing, word processing, micrographics, reprographics, and telecommunications, thus 11 scales were derived.

indicated that essentially no relationship exists between the two variables for these scales. There was a significant correlation at alpha less than .05 between the number of years the teachers have been teaching and the importance rating for 3 scales--Information Processing, Word Processing, and Reprographics (-.15, -.17, -.16, respectively). Although these 3 scales were significant, the low correlations coefficients disclose that these relationships were weak.

Research Question 17: What is the relationship between the Professional Development Need Rating MVBCET gave to each competency area and the number of years the teachers have been teaching.

Correlations between the number of years the teachers have been teaching and the professional development need were all positive. This indicated that teachers with more experience feel a higher need in the competency areas, while teachers with less experience feel a lower need in the competency areas. Although they were all positive, the correlations for 7 of the 11 scales* were not significantly different from zero, see Table 21. Again, this showed that essentially no relationship exists between the two variables for these scales. Nevertheless, there was a significant correlation at alpha less than .05 for the number of years the teachers have been teaching and the professional development need rating for 4 scales--Planning, Development

*The 11 scales are the 6 competency areas; however, for statistical purposes the competency area "Contemporary Topics" was broken down by topic area--information processing, data processing, word processing, micrographics, reprographics, and telecommunications, thus 11 scales were derived.

Table 20
Correlation Between Importance Rating
and the Number of Years of Teaching Experience

Scales (Competency Areas)	Correlation Coefficient	p-value
Planning, Development & Evaluation	-.0482	.292
Instructional Planning	-.0465	.298
Instructional Execution	-.0887	.156
Instructional Management	-.0107	.452
Instructional Evaluation	-.1174	.090
Information Processing	-.1556	.037*
Data Processing	-.0752	.196
Word Processing	-.1744	.023*
Micrographics	-.1086	.107
Reprographics	-.1662	.028*
Telecommunications	-.1239	.078

*Significant at $p < .05$.

Table 21

Correlation Between Professional Development Need Rating and the
Number of Years of Teaching Experience

Scales (Competency Areas)	Correlation Coefficient	p-value
Planning Development & Evaluation	.1969	.012*
Instructional Planning	.1863	.016*
Instructional Execution	.1090	.107
Instructional Management	.1098	.105
Instructional Evaluation	.0673	.221
Information Processing	.0163	.426
Data Processing	.1689	.016*
Word Processing	.0633	.235
Micrographics	.0034	.485
Reprographics	.1609	.033*
Telecommunications	.0228	.398

*Significant at $p < .05$.

& Evaluation, Instructional Planning, Data Processing and Reprographics, (.19, .18, .16, .16, respectively). Despite the fact that these 4 scales were significant, the low correlation discloses that these relationships were weak.

Research Question 13: What is the difference between MVCBET who indicated that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the Importance Rating of the competency areas.

As shown in Table 22, the results of the Analyses of Variance indicated that for 9 of the 11 scales* there was no significant difference between the two groups. This revealed that teachers holding different perceptions of the desirability of on-the-job experience did not respond differently to the importance of these scales. There was, however, a significant difference for two of the scales at alpha less than .05--Planning, Development & Evaluation and Word Processing. In both cases, the teachers who indicated that on-the-job experience was desirable rated the scales as being more important than did teachers who did not view on-the-job experience as desirable.

Research Question 14: What is the difference between MVCBET who indicated that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the Professional Development Needs Rating of the competency areas?

*The 11 scales are the 6 competency areas; however, for statistical purposes the competency area "Contemporary Topics" was broken down by topic area--information processing, data processing, word processing, micrographics, reprographics, and telecommunications, thus 11 scales were derived.

The results of the Analyses of Variance revealed that for 9 of the 11 scales* there was no significant difference between the two groups. This indicated that teachers having different perceptions on the desirability of on-the-job experience did not respond differently to the need of these scales. There was, however, a significant difference at alpha less than .05 for two of the scales--Planning, Development & Evaluation and Word Processing. In both cases, the teachers who indicated that on-the-job experience was desirable revealed a higher need for the scales than did teachers who did not view on-the-job experience as desirable. Table 23 displays the information for this question. In both analyses of variance the same two scales (Planning, Development & Evaluation and Word Processing) were significantly different between the groups.

Additional Statistical Analyses

Analyses of Variance were completed using the number of years of teaching experience as the dependent variable and each of the following as independent variables: desirability of on-the-job experience, obtained formal preparation in information processing, need to acquire skills and/or knowledge in information processing, and interest in

*The 11 scales are the 6 competency areas; however, for statistical purposes the competency area "Contemporary Topics" was broken down by topic area--information processing, data processing, word processing, micrographics, reprographics, and telecommunications, thus 11 scales were derived.

Table 22

Analyses of Variance Results on the Desirability of On-The-Job Experience
with Dependent Measures Related to the Importance Rating
Given 11 Information Processing Scales

Dependent Variables (Competency Areas)	Mean Square Between Groups	Mean Square Within Groups	F-Ratio	p-Value
Planning, Development & Evaluation	3.2926	.4251	7.7253	.0062*
Instructional Planning	.8651	.3605	2.3996	.1238
Instructional Execution	.1970	.4200	.4689	.4947
Instructional Management	.1253	.4928	.2542	.6150
Instructional Evaluation	1.2287	.4564	2.6925	.1032
Information Processing	1.6007	.4710	3.4130	.0670
Data Processing	.0365	.6804	.0537	.8171
Word Processing	1.9916	.4997	3.9859	.0480*
Micrographics	.3072	.8220	.3458	.5575
Reprographics	2.2413	.8226	2.7245	.1012
Telecommunications	1.9052	.8424	2.2617	.1350
Degrees of Freedom	1, 130.	*alpha less than .05		

Table 22b

Mean Importance Rating Given to Each
of 11 Information Processing Competency Areas

Competency Areas	Means (Standard Deviation)	
	Group 1 No ^a	Group 2 Yes ^b
Planning, Development & Evaluation	3.8512 (.7373)	4.1903 (.6087)
Instructional Planning	4.2262 (.6490)	4.4000 (.5767)
Instructional Execution	4.2351 (.7142)	4.3181 (.6153)
Instructional Management	3.9802 (.6859)	4.0463 (.7093)
Instructional Evaluation	4.2262 (.7279)	4.4333 (.6500)
Information Processing	3.8398 (.6829)	4.0768 (.6879)
Data Processing	4.0635 (.7408)	4.0278 (.8609)
Word Processing	3.0914 (.7242)	4.1651 (.6985)
Micrographics	3.6964 (.8510)	3.8000 (.9817)
Reprographics	3.6786 (.8523)	3.9583 (.9311)
Telecommunications	3.6865 (.9204)	3.9444 (.9166)
^a Teachers who responded negatively (no)		^b Teachers who responded positively (yes)

Table 23

Analyses of Variance Results on the Desirability of On-The-Job Experience
with Dependent Measures Related to the Professional Development Needs Rating
Given 11 Information Processing Scales

Dependent Variables (Competency Areas)	Mean Square Between Groups	Mean Square Within Groups	F-Ratio	p-Value
Planning, Development & Evaluation	10.5560	1.8575	5.6829	.0186*
Instructional Planning	1.6126	2.3839	.6764	.4123
Instructional Execution	3.7301	2.0029	1.8623	.1747
Instructional Management	2.6229	2.0707	1.2667	.2625
Instructional Evaluation	6.3865	2.1923	2.9177	.0900
Information Processing	5.7414	1.5789	3.6364	.0587
Data Processing	.7024	2.1425	.3278	.5679
Word Processing	16.9715	1.8300	9.2738	.0028*
Micrographics	.3819	3.6015	.1060	.7452
Reprographics	.1154	2.6580	.0434	.8352
Telecommunications	.7879	2.4128	.3266	.5687
Degrees of Freedom 1, 130	*alpha less than .05			

Table 23b

Mean Professional Development Need Rating Given to each
of 11 Information Processing Competency Areas

Competency Areas	Means (Standard Deviation)	
	Group 1 No ^a	Group 2 Yes ^b
Planning, Development & Evaluation	3.4345 (1.4264)	4.0417 (1.3327)
Instructional Planning	3.9127 (1.4994)	4.1500 (1.5641)
Instructional Execution	3.6696 (1.5876)	4.0306 (1.3283)
Instructional Management	3.4048 (1.5408)	3.7074 (1.3896)
Instructional Evaluation	3.6607 (1.3824)	4.1333 (1.5238)
Information Processing	3.6623 (1.2291)	4.1101 (1.2690)
Data Processing	3.8730 (1.5464)	4.0296 (1.4240)
Word Processing	3.4286 (1.4657)	4.1984 (1.2975)
Micrographics	3.6429 (1.7618)	3.7583 (1.9572)
Reprographics	3.7024 (1.4004)	3.6389 (1.7260)
Telecommunications	3.9008 (1.4109)	4.0067 (1.6147)
^a Teachers who responded negatively (no)	^b Teachers who responded positively (yes)	

participation in in-service activities in information processing in order to determine if any differences existed between teachers who responded positively (yes) to these independent variables and those who responded negatively (no). As shown in Appendix Q no significant differences existed between groups who differed on the independent variables with respect to the amount of teaching experience they had.

A significant difference in the number of years of teaching experience (at alpha less than .05) existed between groups who indicated an interest in participating in in-service activities in information processing and those who did not. This indicated that teachers with more years of teaching experience did not perceive an interest in participating in in-service activities in the area of information processing, while teachers with fewer years of teaching experience did indicate an interest in participating in in-service activities.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Summary

This study was an exploratory, descriptive investigation of the competencies needed by teachers of information processing. It was based on a survey of public secondary school business education teachers who were vocationally certified. The study was designed to identify a list of self-perceived competencies considered to be important for teachers of information processing to possess and to determine the competencies in which the teachers felt they were least proficient and in need of further education.

Additional purposes of the study were: (1) to provide information to business teacher educators that would be useful in the developing of improved teacher education programs in information processing and (2) to ascertain teachers' perceptions of where within the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) teaching skill and/or knowledge in the competencies could be developed most effectively or most conveniently.

Data for the study were gathered by means of a mailed questionnaire which was developed specifically for this study. A total of 274 questionnaires were sent to public secondary school vocationally

certified business education teachers throughout Michigan. The findings reported in this study were based on the usable responses of 132 (48 percent) of those teachers.

Analysis of the collected data relating to the specific research questions for this study revealed the following findings:

Research Question 1: What are the professional backgrounds of Michigan vocationally certified business education teachers (MVCBET)?

1. One hundred seven (81.00 percent) of the respondents possessed a master's degree.
2. One hundred thirty of the respondents majored in business while pursuing the baccalaureate degree.
3. Teaching experience in business education ranged from 1 to 40 years with the mean being 14 years (SD 6.74) and the mode being 12 years.
4. Steno-clerical lab certification (14.9800) was obtained by sixty-three (47.70 percent) of the respondents.
5. Ninety-three percent of the respondents were located in the lower peninsula of Michigan. Career Education Planning Districts 39 (Oakland County) and 42 (Wayne County) provided the largest response return (15 or 11.40 percent).

Research Question 2: Do MVCBET perceive a need to acquire competencies in a formal pre-service or in-service teacher education program in the area of information processing?

One hundred twenty (90.90 percent) of the responding teachers indicated that they perceived a need to acquire competencies in a formal pre-service or in-service teacher education program in information processing.

Research Question 3: Do the respondents perceive that on-the-job experience in information processing is desirable in order to teach in the area of information processing?

Ninety of the 132 respondents (68.20 percent) indicated that on-the-job experience in information processing was desirable in order to teach information processing. Nearly one-third of the respondents (31.80 percent) indicated that on-the-job experience was not desirable in order to teach information processing.

Research Question 4: To what extent have the respondents had specific preparation in their formal teacher education program to teach information processing?

One hundred seventeen (88.60 percent) of the respondents indicated that they did not have specific preparation in their formal teacher education program to teach information processing.

Research Question 5: Outside of formal classroom instruction in a teacher education program in which, if any, of the following did the respondents participate or complete in order to prepare themselves in the area of information processing (self study, workshops, seminars, vendor training, conferences)?

Ninety-five of the respondents (76 percent) indicated that self study was the area most often completed in order to prepare them in information processing. Over half of the respondents participated in some type of workshop or conference in order to gain preparation in information processing.

Research Question 6: Do the respondents have an interest in participating in professional education in-service activities in information processing within the next two or three years?

One hundred twenty four of the respondents (93.90 percent) indicated that they would be interested in participating in in-service

activities. Sixty-four (51.70 percent) revealed that they would prefer either credit or non-credit course work.

Research Question 7: What is the relative importance of the competency areas and selected competency statements as perceived by MVCBET in information processing?

Respondents perceived the competency area Instructional Evaluation to be of very high importance. Teachers perceived 68 (97 percent) of the competency statements to be of very high through high-moderate importance while only two (3 percent) were designated as being of moderate importance. None of the competencies were rated as being of moderate-low importance for teachers of information processing to possess.

The top six competencies perceived of Very High Importance for teachers of information processing to possess, according to median scores, were:

- . Develop units of instruction. (4.813)
- . Operate a visual display terminal (one-line partial screen, full screen). (4.467)
- . Develop lesson plans. (4.750)
- . Operate dictation/transcription equipment. (4.741)
- . Develop student performance objectives. (4.705)
- . Identify sources of instructional materials. (4.705)

The specific competencies perceived to be of lower importance for teachers of information processing to possess, according to median scores were:

- . Phototypesetting. (knowledge of:) (3.768)

- . History/development of word processing. (knowledge of:) (3.756)
- . Microforms. (knowledge of:) (3.750)
- . Prepare budgets. (3.662)
- . Prepare grant proposals. (3.305)
- . History and development of information processing. (knowledge of:) (3.296)

Research Question 8: In which competency areas and specific competency statements do MCVBET perceive themselves to be in need of further knowledge and/or skills in the area of information processing. What are their professional development needs?

The top six competencies perceived by the respondents as having the highest priority for additional professional education, according to median scores, were:

- . Operate a visual display terminal (one-line partial screen, full screen). (4.833)
- . Identify sources of instructional materials. (4.796)
- . Microprocessors. (knowledge of:) (4.713)
- . Develop units of instruction. (4.703)
- . Develop student performance objectives. (4.703)
- . Develop lesson plans. (4.692)

The five competencies perceived by the respondents as having a lower priority for professional education, according to median scores, were:

- . Prepare grant proposals. (3.842)
- . Provide for safety needs of students. (3.621)
- . History/development of word processing. (knowledge of:) (3.538)

- . History and development of information processing.
(knowledge of:) (3.500)
- . Operate dictation/transcription equipment. (3.250)

The competency area with the highest median Professional Development Needs Rating was Instructional Planning. Three of the six competency areas were rated in the same category as Instructional Planning--Moderate-High Professional Development Need.

Research Question 9: What are the perceptions of the respondents concerning the various preparation settings (college course work, student teaching, in-service training, and on-the-job experience) in developing competence in the selected competency areas?

The value of the various preparation settings for developing competence in the competency areas was:

- a. In-service training was found to be the most effective setting for developing competence in Program Planning, Development & Evaluation, Instructional Execution, Instructional Management and Contemporary Topics.
- b. College course work was the most effective setting for developing competence in Instructional Planning and Instructional Evaluation. This setting was perceived to be the overall second most effective setting.
- c. On-the-job experience was next to the least effective setting for acquiring competence in five of the six competency areas.
- d. Student teaching was found to be the least effective setting for all of the six competency areas.

Research Question 10: What is the relationship between the "Importance Rating" and the "Professional Development Need Rating" of the competency areas and the competency statements as perceived by MVCBET?

Pearson Correlations between importance and needs were computed for all scales and competency statements. For all scales and competency statements, the correlations between importance and needs were

significantly different from zero. For each scale and competency statements with a high importance were also seen by the respondents to have a high need. Those scales and competency areas with a low importance also were seen by the respondents to have a low need.

Research Question 11: What is the relationship between the Importance Rating MVCBET gave to each competency area and the number of years the teachers have been teaching?

Correlations between the number of years the teachers have been teaching and the importance ratings were all negative. This signified that teachers with greater experience perceived the competency areas to have a lower importance, while teachers with less experience tended to perceive them as being more important.

Research Question 12: What is the relationship between the Professional Development Need Rating MVCBET gave to each competency area and the number of years the teachers have been teaching?

Correlations between the number of years the teachers have been teaching and the importance ratings were all positive. This indicated that teachers with more experience feel a higher need in the competency areas, while teachers with less experience feel a need in the competency areas.

Research Question 13: What is the difference between MVCBET who indicated that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the Importance Rating of the competency areas.

Analyses of Variance indicated that for 9 of the 11 scales there was no significant difference between the two groups. This revealed that teachers having different perceptions of the desirability of on-the-job experience did not respond differently to the importance of these scales.

For the two scales that showed a significant difference, teachers who indicated that on-the-job experience was desirable rated the scales as being more important than did teachers who did not view on-the-job experience as desirable.

Research Question 14: What is the difference between MVCBET who indicated that on-the-job experience is desirable for a teacher to possess in order to teach information processing and those who do not on their perception of the Professional Development Needs Rating of the competency areas?

Analyses of Variance revealed that for 9 of the 11 scales there was no significant difference between the two groups. This indicated that teachers having different perceptions of the desirability of on-the-job experience did not respond differently to the need of these scales. For the two scales that showed a significant difference, teachers who indicated that on-the-job experience was desirable revealed a higher need for the scales than did teachers who did not view on-the-job experience as desirable.

Conclusions

Based upon the findings of this study, the following conclusions were drawn:

1. Michigan vocationally certified business education teacher (MVCBET) perceived a need to acquire skills and/or knowledge in information processing. A large majority (90.90 percent) stated a perceived need to acquire competencies in information processing because they lacked specific preparation in a formal teacher education program in information processing.

2. Michigan vocationally certified business education teachers indicated a need to further their education in information processing. Although a majority (76.00 percent) completed self study programs as a means to acquire skills and/or knowledge in information processing, over 90 percent stated a desire to participate in in-service education as a means of acquiring these skills and/or knowledge.

3. All competency areas in this study could be included in business teacher education programs for information processing since all of them were rated as of very high or high importance for a teacher of information processing to possess.

4. All competency statements in this study could be included in business teacher education programs since none of them received a rating lower than of moderate importance.

5. A variety of preparation settings were indicated as appropriate whereby MVCBET could obtain education in information processing. Median rating scores indicated that in-service education was the most effective followed by college course work, on-the-job experience and student teaching.

6. There is no evidence that one preparation setting is best for acquiring competence in all six competency areas. Four areas were found to be best acquired by means in in-service education and two by college course work.

7. The MVCBET who participated in this study were experienced professional business education teachers as evidenced by the range of years' teaching experience and degrees obtained.

8. The number of years of teaching experience had an effect on the perceptions of MVCBET on the importance and needs ratings of the competency areas and competency statements.

9. The desirability of on-the-job experience for a teacher of information processing to possess had little effect on the importance and needs ratings expressed by MVCBET.

10. Although teachers indicated their perceptions of the competency areas and statements as to the importance and their professional development need, it cannot be stated that these are the only needs of teachers. However, inferences about the content of business teacher education programs in information processing can be made on the basis of the data obtained in this study. The competencies identified in Part II of the survey instrument may furnish a data base from which business teacher education programs in the area of information processing could be developed.

Implications

Teacher Education Programs

Since no current list of competencies needed by teachers of information processing was available at the time of this study, the list of competencies and related data obtained through this study provides a data base for the development of business teacher education programs in information processing (pre-service or in-service).

Specific implications for developing the programs are:

1. The 70 teaching competencies identified in this study and ranked according to the Median Importance and Professional Development Need ratings provide a basis and direction for developing the content of information processing teacher education programs. For example, the competencies that were rated as having high or very high importance and the professional development needs identified as being high or moderate-high provide content that could be addressed in in-service educational programs in information processing.

2. The results of the study suggest the relative amount of emphasis that should be placed on competency areas during the planning of courses in business teacher education programs. Specifically, the data indicates that the educational programs could be designed so primary emphasis is placed on Instructional Planning and Instructional Evaluation competencies. A major emphasis could also be placed on promoting teacher competence in Instructional Execution.

3. The information contained in this study will be helpful for establishing efficient, high-quality business teacher education programs and should be considered when teacher preparation programs in information processing are being designed and developed. For example, the study results suggest that in-service education is the most effective setting for developing teaching competence in Program Planning, Development and Evaluation, Instructional Execution, Instructional Management and Contemporary Topics. Other settings such as college course work and on-the-job experience are more effective for developing competence in other competency areas.

4. Any or all of the competency areas identified in this study could be incorporated into business education courses.

School Programs and Personnel

1. The competencies identified in this study could provide a basis for school personnel when recruiting, hiring and assigning teachers in information processing.

2. The competency list can assist administrators and their staff members in determining which teachers have the necessary skills and/or knowledge and are most qualified to teach information processing.

3. School personnel can utilize this information provided in this study in planning in-service education for teachers in business education and/or information processing.

Recommendations

The following recommendations are made:

1. Further research should be carried out to validate through other tests and/or measurements of teachers in educational settings, the competencies identified in this study to determine which competencies are, in fact, needed to teach information processing.

2. Research should be conducted to determine whether student behavior (cognitive, affective and psychomotor) is changed as a result of the teacher's application of the specific teaching competencies.

3. Since the respondents of this study were of a homogeneous grouping, research should be conducted which obtains the perceptions of teachers sampled from a broader population.

4. Research should be conducted to determine the nature, extent and construct of the "self-study" made by the respondents in this study in information processing.

APPENDICES

APPENDIX A
COVER LETTER
TO
PANEL OF EXPERTS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS

EAST LANSING • MICHIGAN • 48824

DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

October 5, 1981

title first name last name
position¶*
department¶*
building¶*
university
address¶*
city , state zip code

Dear title last name

The technological advancements that have occurred in the office over the past two decades--"data processing" in the sixties, "word processing" in the seventies, and now "information processing" in the eighties--have made it difficult for business educators to keep up-to-date.

In order to effectively prepare future office employees, business educators need to be adequately prepared. Your expert advice is needed to determine and validate a list of competencies that are considered essential to business educators in the area of information processing. Several research studies identified competencies needed by entry-level word processing employees. A study to determine the competencies needed by business education teachers to prepare those employees has not been completed. This study will attempt to determine those competencies.

You have been selected to assist in this validation because of the outstanding contributions you have made in the field of word processing.

If you are willing to participate in this study, please review the enclosed material and feel free to add or delete any of the competencies listed. In addition, any comment(s) you can offer will be most welcomed. Your prompt action in validating and returning the list of competencies by October 30, will be greatly appreciated.

If you have questions, please contact me at the address listed above or by telephone, call collect, (517) 353-6450 (school) or (517) 332-4938 (home).

Sincerely

John Olivo
Researcher

Dr. Robert Poland
Department Chairperson

Enclosures

APPENDIX B
QUESTIONNAIRE I
TO
PANEL OF EXPERTS

PART II: SELECTED COMPETENCIES FOR INFORMATION PROCESSING

INFORMATION PROCESSING is defined as the movement of words symbols or numbers from the origination of an idea to its final destination through the management of procedures, equipment, and personnel. It encompasses the merged capabilities of data and word processing and also reprographics, micrographics and telecommunications.

DIRECTIONS: Within each of the 5 columns at the right, please react to each of the competency statements by placing only one check mark (✓) in the appropriate column using the following criteria.

- C = Crucial
- H = Highly desirable
- D = Desirable but not absolutely necessary
- N = Nonimportant
- I = Incorrectly stated; needs revision
- X = Do not use; concept inappropriate

THE TEACHER OF INFORMATION PROCESSING SHOULD UNDERSTAND AND/OR POSSESS THE ABILITY TO DEMONSTRATE THE FOLLOWING COMPETENCY STATEMENTS IN INFORMATION PROCESSING:

	C	H	D	N	I	X
PLANNING, DEVELOPMENT & EVALUATION OF INFORMATION PROCESSING PROGRAMS						
1. <u>Conduct a community survey to determine employment demands and student interest</u>						
2. <u>Report the findings of a community survey</u>						
3. <u>Develop information processing program objectives</u>						
4. <u>Conduct an occupational analysis</u>						
5. <u>Develop a course of study</u>						
6. <u>Conduct a student follow-up study</u>						
7. <u>Evaluate the information processing program</u>						
8. <u>Other (please specify)</u>						

THE TEACHER OF INFORMATION PROCESSING SHOULD UNDERSTAND AND/OR POSSESS THE ABILITY TO DEMONSTRATE THE FOLLOWING COMPETENCY STATEMENTS IN INFORMATION PROCESSING:

	C	H	D	N	I	X
INSTRUCTIONAL PLANNING IN INFORMATION PROCESSING						
9. <u>Develop student performance objectives</u>						
10. <u>Develop a unit of instruction</u>						
11. <u>Develop a lesson plan</u>						
12. <u>Select student instructional materials</u>						
13. <u>Prepare teacher-made instructional materials</u>						
14. <u>Other (please specify)</u>						
INSTRUCTIONAL EXECUTION IN INFORMATION PROCESSING						
15. <u>Employ simulation techniques</u>						
16. <u>Direct student laboratory experiences</u>						
17. <u>Plan and direct individualized instructional programs</u>						
18. <u>Provide instruction for handicapped students</u>						
19. <u>Provide instruction for gifted students</u>						
20. <u>Provide instruction for students with special needs</u>						
21. <u>Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.)</u>						
ABILITY TO OPERATE:						
22. <u>Facsimile</u>						
23. <u>Memory Typewriter</u>						
24. <u>Cathode Ray Tube Display (one line, partial screen, full screen)</u>						

THE TEACHER OF INFORMATION PROCESSING SHOULD UNDERSTAND AND/OR POSSESS THE ABILITY TO DEMONSTRATE THE FOLLOWING COMPETENCY STATEMENTS IN INFORMATION PROCESSING:

	C	H	D	N	I	X
25. <u>Phototypesetting</u>						
26. <u>Copying equipment</u>						
27. <u>Dictation/transcription equipment</u>						
28. <u>Magnetic media keyboards</u>						
29. <u>Other (please specify)</u>						
INSTRUCTIONAL MANAGEMENT IN INFORMATION PROCESSING						
30. <u>Estimate instructional resource needs</u>						
31. <u>Prepare budgets</u>						
32. <u>Purchase supplies and equipment (specifications and bids)</u>						
33. <u>Provide for safety needs of students</u>						
34. <u>Organize an information processing lab/classroom facility</u>						
35. <u>Manage the information processing lab/classroom facility</u>						
36. <u>Other (please specify)</u>						
INSTRUCTIONAL EVALUATION IN INFORMATION PROCESSING						
37. <u>Establish productivity standards for students</u>						
38. <u>Test student cognitive (knowledge) performance</u>						
39. <u>Test student psychomotor (skill) performance</u>						
40. <u>Monitor student progress</u>						
41. <u>Other (please specify)</u>						

THE TEACHER OF INFORMATION PROCESSING SHOULD UNDERSTAND AND/OR POSSESS THE ABILITY TO DEMONSTRATE THE FOLLOWING COMPETENCY STATEMENTS IN INFORMATION PROCESSING:

	C	H	D	N	I	X
CONTEMPORARY TOPICS IN INFORMATION PROCESSING						
KNOWLEDGE OF:						
42. <u>History and development of information processing</u>						
43. <u>Data Processing(please check response(s))</u>						
a. <u>data recording media and equipment</u>						
b. <u>computer components</u>						
c. <u>data processing systems and procedures</u>						
d. <u>computer programming</u>						
e. <u>programming languages</u>						
f. <u>time sharing</u>						
g. <u>data management</u>						
h. <u>microprocessors</u>						
i. <u>history/development of DP</u>						
j. <u>terminology of data processing</u>						
k. <u>career paths in data processing</u>						
44. <u>Word Processing(please check response(s))</u>						
a. <u>terminology of word processing</u>						
b. <u>history/development of WP</u>						
c. <u>WP recording media & equipment</u>						
d. <u>career paths in word processing</u>						
e. <u>components of a feasibility study</u>						
f. <u>word processing systems designs</u>						
g. <u>components of a procedures manual</u>						

THE TEACHER OF INFORMATION PROCESSING SHOULD UNDERSTAND AND/OR POSSESS THE ABILITY TO DEMONSTRATE THE FOLLOWING COMPETENCY STATEMENTS IN INFORMATION PROCESSING:

	C	H	D	N	I	X
45. <u>Records Management</u>						
46. <u>Micrographics(please check response(s))</u>						
a. <u>microfilm</u>						
b. <u>microforms</u>						
c. <u>computer input microfilm</u>						
d. <u>computer output microfilm</u>						
47. <u>Reprographics(please check response(s))</u>						
a. <u>copying</u>						
b. <u>phototypesetting</u>						
c. <u>offset process</u>						
48. <u>Telecommunications(please check response(s))</u>						
a. <u>electronic mail systems</u>						
b. <u>public and private teletype</u>						
c. <u>communication system requirements</u>						
d. <u>computer based message systems</u>						
e. <u>communicating with modems</u>						
f. <u>management information systems</u>						
g. <u>satellite communications</u>						
49. <u>Voice Processing</u>						
50. <u>Optical Character Recognition (OCR)</u>						
51. <u>Computer Aided Transcription (CAT)</u>						
52. <u>Careers in Information Processing</u>						
53. <u>Consulting</u>						
54. <u>Terminology and technological changes in information processing</u>						
55. <u>Other (please specify)</u>						

THANK YOU

APPENDIX C

SECOND VALIDATION COVER LETTER

TO

PANEL OF EXPERTS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS

EAST LANSING • MICHIGAN • 48824

DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

November 12, 1981

title first name last name
position¶*
department¶*
building¶*
university
address¶*
city , state zip code

Dear title last name

Thank you for assisting in the study to validate needed competencies for teachers in the area of information processing.

The information you provided was compiled and statistically analyzed. As a result of your response and other contributors 60 competency statements were chosen as appropriate for teachers of information processing.

As an expert in the word processing/data processing field, your contribution to this study has been very valuable. Because your expert advise has been so useful, I would like to have your assistance in completing the second phase of the validation procedure. I would appreciate a second opinion on the competency statements that were chosen as appropriate for teachers of information processing (yellow sheet), and those that were eliminated (blue sheet). Also, other competencies recommended by yourself and other contributors (white sheet) are included. After an analysis of this second opinion, a final list of competencies chosen as appropriate for teachers of information processing will be derived. This final list will be forwarded to you within the next month.

By taking a few minutes to review the enclosed materials, you will be strengthening the validation procedures of the study. In addition, your prompt action in returning the enclosed materials by November 30 will be greatly appreciated.

If you have any questions, please contact me at the address listed above or by telephone, call collect, (517) 353-6450 (university) or (517) 332-4938 (home).

Sincerely

John Olivo
Researcher

Dr. Robert Poland
Department Chairperson

Enclosures

APPENDIX D
QUESTIONNAIRE II
TO
PANEL OF EXPERTS

INFORMATION PROCESSING is defined as the movement of words, symbols, or numbers from the origination of an idea to its final destination through the management of procedures, equipment, personnel, and environment. It encompasses the merged capabilities of data and word processing and also reprographics, micrographics, and telecommunications.

COMPETENCIES CHOSEN FOR TEACHERS OF INFORMATION PROCESSING

The statistical analysis made of the responses to the questionnaire have resulted in 60 competency statements BEING CHOSEN as appropriate for teachers of information processing. Please review this list and place a check mark (✓) in the space provided if you STRONGLY BELIEVE that the competency SHOULD NOT BE INCLUDED in the study.

The teacher of information processing should understand and/or possess the ability to demonstrate the following competency statements in the area of information processing.

PLANNING, DEVELOPMENT & EVALUATION OF INFORMATION PROCESSING PROGRAMS

- _____ 1. Conduct a survey to determine employment demands and types/brands of equipment being used throughout the school district community.
- _____ 2. Report the findings of a school district community survey to school administrators.
- _____ 3. Develop information processing program objectives.
- _____ 4. Develop a course of study.
- _____ 5. Conduct a student follow-up study.
- _____ 6. Evaluate the information processing program.

INSTRUCTIONAL PLANNING IN INFORMATION PROCESSING

- _____ 7. Develop student performance objectives.
- _____ 8. Develop a units of instruction.
- _____ 9. Develop a lesson plans.
- _____ 10. Select student instructional materials.
- _____ 11. Prepare teacher-made instructional materials.

INSTRUCTIONAL EXECUTION IN INFORMATION PROCESSING

- _____ 12. Employ simulation techniques.
- _____ 13. Direct student laboratory experiences.
- _____ 14. Plan and direct individualized instructional programs.

- _____ 15. Provide instruction for students with special needs (gifted/handicapped).
- _____ 16. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).
- _____ 17. Operate and electronic typewriter.
- _____ 18. Operate a visual display terminal (one line, partial screen, full screen).
- _____ 19. Operate dictation/transcription equipment.

INSTRUCTIONAL MANAGEMENT IN INFORMATION PROCESSING

- _____ 20. Estimate instructional resource needs.
- _____ 21. Prepare budgets.
- _____ 22. Recommend and/or purchase supplies and equipment (specifications and bids).
- _____ 23. Provide for safety needs of students.
- _____ 24. Plan/layout an information processing lab/classroom facility.
- _____ 25. Manage the information processing lab/classroom facility.

INSTRUCTIONAL EVALUATION IN INFORMATION PROCESSING

- _____ 26. Establish productivity standards for students.
- _____ 27. Test student cognitive (knowledge) performance.
- _____ 28. Test student psychomotor (skill) performance.
- _____ 29. Monitor student progress.

CONTEMPORARY TOPICS IN INFORMATION PROCESSING (KNOWLEDGE OF:)

- _____ 30. History and development of information processing.
- _____ 31. Records Management.
- _____ 32. Voice Processing
- _____ 33. Optical Character Recognition (OCR)
- _____ 34. Computer Aided Transcription (CAT)
- _____ 35. Careers in Information Processing
- _____ 36. Future trends and technological changes in information processing.

PLEASE CONTINUE

Data Processing (Knowledge of:)

- _____ 37. Data recording media and equipment.
- _____ 38. Data processing systems and procedures.
- _____ 39. Microprocessors.
- _____ 40. Terminology of data processing.
- _____ 41. Career paths in data processing.

Word Processing (Knowledge of:)

- _____ 42. Terminology of word processing.
- _____ 43. History/development of word processing.
- _____ 44. Word processing recording media & equipment.
- _____ 45. Career paths in word processing.
- _____ 46. Components of a feasibility study.
- _____ 47. Word processing systems designs.
- _____ 48. Components of a procedures manual.

Micrographics (Knowledge of:)

- _____ 49. Microfilm.
- _____ 50. Microforms.
- _____ 51. Computer input microfilm (CIM).
- _____ 52. Computer output microfilm (COM).

Reprographics (Knowledge of:)

- _____ 53. Copying equipment.
- _____ 54. Phototypesetting.

Telecommunications (Knowledge of:)

- _____ 55. Electronic mail systems.
- _____ 56. Public and private teletype.
- _____ 57. Computer-based message systems.
- _____ 58. Communicating with modems.
- _____ 59. Management information systems.
- _____ 60. Satellite communications.

THANK YOU

COMPETENCIES NOT CHOSEN FOR TEACHERS OF INFORMATION PROCESSING

The statistical analysis made of the responses to the questionnaire have resulted in 9 competency statements NOT BEING CHOSEN as appropriate for teachers of information processing. Please review this list and place a check mark (✓) in the space provided if you STRONGLY BELIEVE that the competency SHOULD BE INCLUDED in the study. (Knowledge of:)

- _____ 1. Facsimile.
- _____ 2. Computer components.
- _____ 3. Computer programming.
- _____ 4. Programming languages.
- _____ 5. Time sharing.
- _____ 6. Data management.
- _____ 7. History/development of data processing.
- _____ 8. Offset process.
- _____ 9. Consulting.

THANK YOU

OTHER COMPETENCIES RECOMMENDED

Listed below are competency statements recommended by contributors to the study. Please review this list and place a check mark (✓) in the space provided if you STRONGLY BELIEVE that the competency statement SHOULD BE INCLUDED in the study.

The teacher of information processing should understand and/or possess the ability to demonstrate the following competency statements in the area of information processing.

- _____ 1. Telephone.
- _____ 2. Research the existing information processing programs being offered in similar educational institutions and the extent of their success.
- _____ 3. Identify sources of instructional materials (vendors, publishers, etc.).
- _____ 4. Estimate present and future equipment needs.
- _____ 5. Work flow within an office or an organization.
- _____ 6. Service availability for equipment.
- _____ 7. Networks.
- _____ 8. Information banks.
- _____ 9. Test student affective domain performance.
- _____ 10. Make changes as a result of evaluation.
- _____ 11. Develop a student recordkeeping system.
- _____ 12. Develop an instructional management system.
- _____ 13. Offer co-op or work experience in information processing.
- _____ 14. Integrate information processing courses into overall curriculum.
- _____ 15. Intelligent printer/copiers.
- _____ 16. Prepare grant proposals.
- _____ 17. Program generators.
- _____ 18. Computer assisted retrieval (CAR).
- _____ 19. Data base management systems (DBMS).
- _____ 20. Computer aided design (CAD).
- _____ 21. Videodisc.
- _____ 22. Holography.

THANK YOU

APPENDIX E

THANK-YOU LETTER

TO

PANEL OF EXPERTS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS
DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

EAST LANSING • MICHIGAN • 48824

February 25, 1982

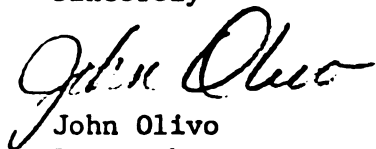
MY SINCERE THANKS FOR YOUR HELP.

Thank you for assisting in the study to determine and validate the professional competencies needed by business education teachers in the area of information processing.

The information you provided will be a valuable contribution in an effort to determine the competencies needed by Michigan vocationally certified business education teachers in the area of information processing. From the data collected, business teacher education institutions will be able to begin developing and implementing courses, workshops, and in-service training to assist the business education teachers of Michigan to become better prepared in the area of information processing.

I have enclosed a copy of the final list of competency statements.

Sincerely



John Olivo
Researcher

Enclosure

APPENDIX F

TEACHERS' QUESTIONNAIRE

INFORMATION PROCESSING QUESTIONNAIRE

PART 1: PERSONAL AND PROFESSIONAL INFORMATION

DIRECTIONS: PLEASE RESPOND TO EACH ITEM BY WRITING IN THE INFORMATION REQUESTED OR CHECKING THE APPROPRIATE RESPONSE(S) FOR EACH QUESTION. YOU ARE ASSURED THAT ALL INFORMATION YOU SUPPLY WILL BE KEPT CONFIDENTIAL AND NO INDIVIDUAL WILL BE IDENTIFIED IN THE REPORT OF THIS STUDY.

1. Your Name _____
 2. School Name _____
 3. School Address _____
 4. School Telephone Number () _____
 5. Please check the degree(s) you have earned. Write in your major for each degree in the space provided.
- | DEGREE | MAJOR |
|------------------------------|-------|
| Associate's Degree _____ | _____ |
| Bachelor's Degree _____ | _____ |
| Master's Degree _____ | _____ |
| Specialist's Degree _____ | _____ |
| Doctor's Degree _____ | _____ |
| Other (Please specify) _____ | _____ |

6. How many years have you been teaching in the area of business education (include the current school year)? _____

7. Do you perceive that you need to acquire knowledges and/or skills in a formal pre-service or in-service teacher education program in the area of information processing? INFORMATION PROCESSING is defined as the movement of words, symbols, or numbers from the origination of an idea to its final destination through the management of procedures, equipment, personnel, and environment. It encompasses the merged capabilities of data and word processing and also reprographics, micrographics, and telecommunications.

Yes _____
No _____

If no, please state reason. _____

8. Do you perceive that on-the-job experience in information processing is desirable in order to teach in the area of information processing?

Yes _____
No _____

9. Did you have specific preparation in teaching information processing within methods course(s) in your formal teacher education training program?

Yes _____
No _____

If yes, please check the appropriate response(s)

_____ unit of instruction
_____ chapter of instruction
_____ independent study

10. Other than preparation within a formal program, which, if any, have you completed in order to prepare yourself in the area of information processing?

_____ self-study _____ vendor training
_____ workshops _____ conferences
_____ seminars _____ other (please specify) _____

11. Are you interested in participating in professional education in-service activities in the area of information processing in the next two or three years?

Yes _____
No _____

If yes, for:

_____ Credit course work.
_____ Non-credit course work.
_____ All of the above.

If no, please state reason. _____

PLEASE CONTINUE TO PART II

STEP 1

IMPORTANCE OF THE COMPETENCY STATEMENT FOR A TEACHER OF INFORMATION PROCESSING

STEP 2

YOUR NEED TO FURTHER IMPROVE YOUR KNOWLEDGE AND/OR SKILLS IN THE AREA OF INFORMATION PROCESSING

COMPETENCY STATEMENTS

INSTRUCTIONAL EXECUTION IN INFORMATION PROCESSING

LEAST	1	2	3	4	5	MOST	DNA	N	VL	L	M	H	VH
1	2	3	4	5		15. Employ simulation techniques.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		16. Direct student laboratory experiences.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		17. Plan and direct individualized instructional programs.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		18. Provide instruction for students with special needs (gifted/handicapped).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		20. Operate an electronic typewriter.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		21. Operate a visual display terminal (one-line, partial screen, full screen).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		22. Operate dictation/transcription equipment.	DNA	N	VL	L	M	H	VH

INSTRUCTIONAL MANAGEMENT IN INFORMATION PROCESSING

1	2	3	4	5		23. Estimate present and future instructional resource needs.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		24. Prepare budgets.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		25. Recommend and/or purchase supplies and equipment (bids and specifications).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		26. Provide for safety needs of students.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		27. Plan/layout an information processing lab/classroom facility.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		28. Manage an information processing lab/classroom facility.	DNA	N	VL	L	M	H	VH

STEP 1

IMPORTANCE OF THE COMPETENCY STATEMENT FOR A TEACHER OF INFORMATION PROCESSING

COMPETENCY STATEMENTS

INSTRUCTIONAL EVALUATION IN INFORMATION PROCESSING

LEAST	1	2	3	4	5	MOST	DNA	N	VL	L	M	H	VH
1	2	3	4	5		29. Establish productivity standards for students.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		30. Test student cognitive (knowledge) performance.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		31. Test student psychomotor (skill) performance.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		32. Monitor student progress.	DNA	N	VL	L	M	H	VH

CONTEMPORARY TOPICS IN INFORMATION PROCESSING; KNOWLEDGE OF:

Information Processing -- Knowledge of:

1	2	3	4	5		33. History and development of information processing.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		34. Records management.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		35. Voice processing.	DNA	N	VL	L	M	H	VH
1	2	3	4	5		36. Optical character recognition (OCR).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		37. Computer aided transcription (CAT).	DNA	N	VL	L	M	H	VH
1	2	3	4	5		38. Careers in information processing.	DNA	N	VL	L	M	H	VH

1	2	3	4	5		39. Future trends and technological changes in information processing.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	--	-----	---	----	---	---	---	----

1	2	3	4	5		40. Networks.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	---------------	-----	---	----	---	---	---	----

1	2	3	4	5		41. Work flow within an office or an organization.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	--	-----	---	----	---	---	---	----

1	2	3	4	5		42. Data base management systems (DBMS).	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	--	-----	---	----	---	---	---	----

1	2	3	4	5		43. Microprocessors.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	----------------------	-----	---	----	---	---	---	----

Data Processing -- Knowledge of:

1	2	3	4	5		44. Computer components.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	--------------------------	-----	---	----	---	---	---	----

1	2	3	4	5		45. Computer programming.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	---------------------------	-----	---	----	---	---	---	----

1	2	3	4	5		46. Data recording media and equipment.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	---	-----	---	----	---	---	---	----

1	2	3	4	5		47. Data processing systems and procedures.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	---	-----	---	----	---	---	---	----

1	2	3	4	5		48. Terminology of data processing.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	-------------------------------------	-----	---	----	---	---	---	----

1	2	3	4	5		49. Career paths in data processing.	DNA	N	VL	L	M	H	VH
---	---	---	---	---	--	--------------------------------------	-----	---	----	---	---	---	----

APPENDIX G

COVER LETTER TO TEACHERS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS
DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

EAST LANSING • MICHIGAN • 48824

January 6, 1982

title first name last name
Business Education Department
school
city , state zip code

Dear title last name

You can provide valuable input for the planning of professional development programs in the area of information processing.

The technological advancements that have occurred in the office over the past two decades--"data processing" in the sixties, "word processing" in the seventies, and now "information processing" in the eighties--have made it difficult for business educators to keep up-to-date.

In order to effectively prepare future office workers, business educators need to be adequately prepared. Your help is needed to determine teacher preparation needs in the area of information processing. Several research studies identified competencies needed by entry-level word processing employees. A study to determine the competencies needed by business education teachers to prepare those employees has not been completed. This study will attempt to determine those competencies.

By taking a few minutes to complete the enclosed questionnaire, you can provide some needed assistance by identifying your needs for implementing and instructing an information processing program and also provide data that may become a basis for in-service and pre-service program development by Michigan business teacher training institutions.

Sincerely

John Olivo
Researcher

Dr. Robert Poland
Department Chairperson

Enclosures

PLEASE RETURN THE ENCLOSED QUESTIONNAIRE BY JANUARY 18, 1982

APPENDIX H

INCENTIVE

Business Education Teachers

MAKE THE DIFFERENCE

BUMPER STICKER

**THANK
YOU**

APPENDIX I
FOLLOW-UP LETTER
TO
NON-RESPONDENTS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS

EAST LANSING • MICHIGAN • 48824

DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

January 26, 1982

I NEED YOUR HELP!

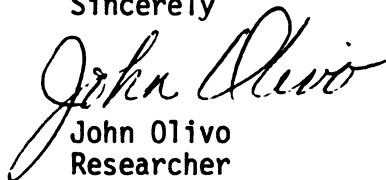
A short time ago you should have received a questionnaire concerning the competencies needed by Michigan business education teachers in the area of information processing. This is an important study because the results will provide guidance to business teacher educators in planning and implementing effective pre-service and in-service education programs in the area of information processing.

In order to make the results of this study of maximum value, it is important that I receive complete responses from each person surveyed. To date, I have not received a response from you.

For your convenience, another copy of the questionnaire and pre-addressed stamped envelope have been enclosed with this letter.

Please complete the questionnaire and return it by FEBRUARY 8, 1982. The information YOU can provide is crucial to this study; therefore your cooperation and assistance will be greatly appreciated.

Sincerely



John Olivo
Researcher

Enclosures

If you have already mailed your questionnaire, please disregard this letter.

APPENDIX J

THANK-YOU LETTER

TO

TEACHERS

MICHIGAN STATE UNIVERSITY

COLLEGE OF BUSINESS

EAST LANSING • MICHIGAN • 48824

DEPARTMENT OF BUSINESS LAW AND OFFICE ADMINISTRATION

February

Business Education Department

Dear

Thank you for assisting in the study to ascertain the professional competencies needed by Michigan business education teachers in the area of information processing.

The information you provided will be a valuable contribution in an effort to determine the competencies needed by Michigan business education teachers in the area of information processing. From the data collected, business teacher education institutions will be able to begin developing and implementing courses, workshops and in-service training to assist the business education teachers of Michigan to become better prepared in the area of information processing.

Sincerely

John Olivo
Researcher

APPENDIX K

RELIABILITY TESTS FOR THE SIX COMPETENCY AREAS

APPENDIX
INSTRUMENT RELIABILITY*

Competency Areas	Importance Alpha	Need Alpha
Program Planning, Development & Evaluation (Competency statements 1-8)	.81	.89
Instructional Planning (Competency statements 9-14)	.76	.92
Instructional Execution (Competency statements 15-22)	.84	.91
Instructional Management (Competency statements 23-28)	.79	.89
Instructional Evaluation (Competency statements 29-32)	.90	.95
Contemporary Topics (Competency statements 33-70)	.97	.98
Specific Breakdown of Contemporary Topics		
Information Processing (Competency statements 33-43)	.92	.94
Data Processing (Competency statements 44-49)	.94	.96
Word Processing (Competency statements 50-56)	.87	.95
Micrographics (Competency statements 57-60)	.96	.98
Reprographics (Competency statements 61-64)	.92	.92
Telecommunications (Competency statements 65-70)	.95	.96

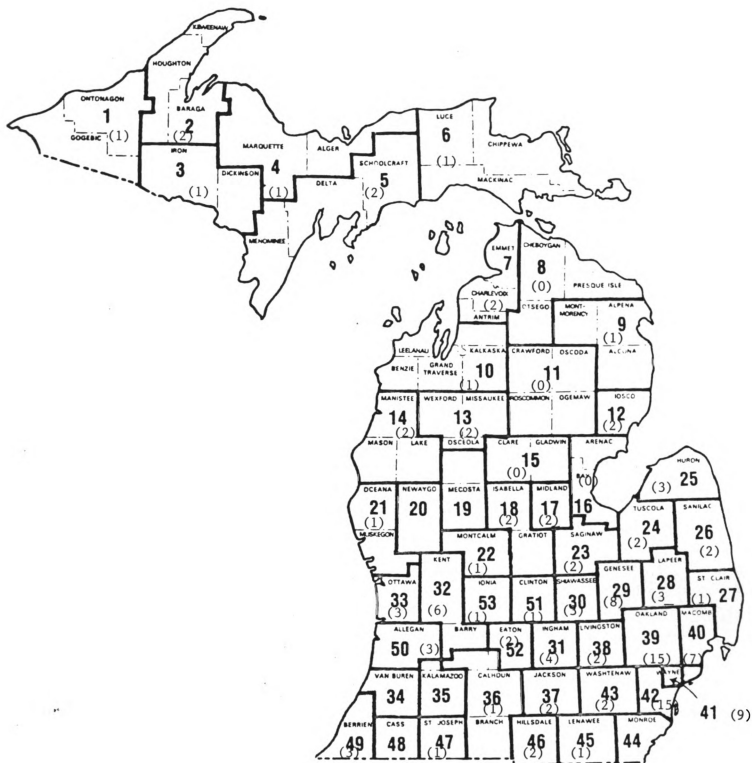
*Reliability range 1.0-1.0

APPENDIX L

CEPD MAP D

CAREER EDUCATION PLANNING DISTRICTS

Map (D)



APPENDIX M

MEDIAN IMPORTANCE RATING OF
THE COMPETENCY STATEMENTS WITHIN
THE SIX COMPETENCY AREAS

APPENDIX

IMPORTANCE RANKING BY MEDIAN OF THE COMPETENCY STATEMENTS WITHIN THE SIX COMPETENCY AREAS

Competency Statements	Overall Rank by Median Score	Median Score
Planning, Development & Evaluation of Information Processing Programs		
4. Develop a course of study.	1	4.695
3. Develop information processing program objectives.	2	4.620
8. Evaluate the information processing program.	3	4.543
1. Conduct a survey to determine employment demands and types/brands of equipment being used throughout the school district community.	4	4.466
6. Integrate information processing courses into overall curriculum.	5	4.414
2. Report the findings of a school district community survey to school administrators.	6	4.210
5. Conduct a student follow-up study.	7	4.000
7. Prepare grant proposals.	8	3.305
Instructional Planning in Information Processing		
10. Develop units of instruction.	1	4.813
11. Develop lesson plans.	2	4.750
9. Develop student performance objectives.	3.5	4.705
12. Identify sources of instructional materials.	3.5	4.705
14. Prepare teacher-made instructional materials.	5	4.530
13. Develop a co-op or work experience program in information processing.	6	4.115

Competency Statements	Overall Rank by Median Score	Median Score
Instructional Execution in Information Processing		
21. Operate a visual display terminal (one-line, partial screen, full screen).	1	4.767
22. Operate dictation/transcription equipment.	2	4.741
20. Operate an electronic typewriter.	3	4.685
16. Direct student laboratory experiences.	4	4.632
19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	5	4.583
17. Plan and direct individualized instructional programs.	6	4.570
15. Employ simulation techniques.	7	4.440
18. Provide instruction for students with special needs (gifted/handicapped).	8	3.866
Instructional Management in Information Processing		
28. Manage an information processing lab/classroom facility.	1	4.543
26. Provide for safety needs of students.	2	4.355
25. Recommend and/or purchase supplies and equipment (bids and specifications).	3	4.354
27. Plan/layout an information processing lab/classroom facility.	4	4.214
23. Estimate present and future instructional resources needs.	5	4.104
24. Prepare budgets.	6	3.662
Instructional evaluation in Information Processing		
29. Establish productivity standards for students.	1	4.608

Competency Statements	Overall Rank by Median Score	Median Score
32. Monitor student progress.	2	4.583
30. Test student cognitive (knowledge) performance.	3	4.529
31. Test student psychomotor (skill) performance.	4	4.429
Contemporary Topics in Information Processing		
Information Processing--Knowledge of:		
38. Careers in information processing.	1	4.557
39. Future trends and technological changes in information processing.	2	4.391
41. Work flow within an office or an organization.	3	4.287
37. Computer aided transcription (CAT).	4	4.167
43. Microprocessors.	5	4.160
42. Data base management systems (DBMS).	6	4.096
36. Optical character recognition (OCR).	7	4.048
34. Records management.	8.5	4.040
40. Networks.	8.5	4.040
35. Voice processing.	10	3.982
33. History and development of information processing.	11	3.296
Data Processing-Knowledge of:		
49. Career paths in data processing.	1	4.365
48. Terminology of data processing.	2	4.321
47. Data processing systems and procedures.	3	4.174
46. Data recording media and equipment.	4	4.136
45. Computer programming.	5	4.049

Competency Statements	Overall Rank by Median Scores	Median Score
44. Computer components.	6	3.951
Word Processing--Knowledge of:		
52. Word processing recording media and equipment.	1	4.665
53. Career paths in word processing.	2	4.543
50. Terminology of word processing.	3	4.537
56. Components of a procedures manual.	4	4.260
55. Word processing systems and designs.	5	4.160
54. Components of a feasibility study.	6	3.798
51. History/development of word processing.	7	3.756
Micrographics--Knowledge of:		
60. Computer assisted retrieval (CAR).	1	3.875
58. Computer input microfilm (CIM).	2	3.827
59. Computer output microfilm (COM).	3	3.795
57. Microforms.	4	3.750
Reprographics--Knowledge of:		
61. Copying equipment.	1	4.238
63. Intelligent printers/copiers.	2	3.947
64. Facsimile.	3	3.920
62. Phototypesetting.	4	3.768
Telecommunications--Knowledge of:		
65. Electronic mail systems.	1	4.108

Competency Statements	Overall Rank by Median Score	Median Score
67. Computer-based message systems.	2	4.056
69. Management information systems.	3	4.028
68. Communicating with modems.	4	3.962
66. Public and private teletype.	5	3.904
70. Satellite communications.	6	3.841

APPENDIX N

MEDIAN PROFESSIONAL DEVELOPMENT NEED RATING
OF COMPETENCY STATEMENTS WITHIN
THE SIX COMPETENCY AREAS

APPENDIX

RANKING OF PROFESSIONAL DEVELOPMENT NEEDS BY MEDIAN WITHIN THE SIX COMPETENCY AREAS

Competency Statements	Overall Rank by Median Score	Median Score
Planning, Development & Evaluation of Information Processing Programs		
4. Develop a course of study.	1.5	4.667
6. Integrate information processing courses into overall curriculum.	1.5	4.667
8. Evaluate the information processing program.	3	4.600
3. Develop information processing program objectives.	4	4.534
1. Conduct a survey to determine employment demands and types/brands of equipment being used throughout the school district community.	5	4.155
5. Conduct a student follow-up study.	6	4.132
2. Report the findings of a school district community survey to school administrators.	7	4.063
7. Prepare grant proposals.	8	3.842
Instructional Planning in Information Processing		
12. Identify sources of instructional materials.	1	4.796
9. Develop student performance objectives.	2.5	4.703
10. Develop units of instruction.	2.5	4.703
11. Develop lesson plans.	4	4.692
14. Prepare teacher-made instructional materials.	5	4.625
13. Develop a co-op or work experience program in information processing.	6	4.033

Competency Statements	Overall Rank by Median Score	Median Score
Instructional Execution in Information Processing		
21. Operate a visual display terminal (one line, partial screen, full screen).	1	4.833
19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	2	4.462
16. Direct student laboratory experiences.	3	4.420
17. Plan and direct individualized instructional programs.	4	4.400
15. Employ simulation techniques.	5	4.344
20. Operate an electronic typewriter.	6	4.211
18. Provide instruction for students with special needs (gifted/handicapped).	7	3.970
22. Operate dictation/transcription equipment.	8	3.250
Instructional Management in Information Processing.		
25. Recommend and/or purchase supplies and equipment (bids and specifications).	1	4.447
28. Manage an information processing lab/classroom facility.	2	4.414
23. Estimate present and future instructional resource needs.	3	4.319
24. Prepare budgets.	4	3.952
27. Plan/layout an information processing lab/classroom facility.	5	4.319
26. Provide for safety needs of students.	6	3.621
Instructional Evaluation in Information Processing		
29. Establish productivity standards for students.	1	4.414

Competency Statements	Overall Rank by Median Score	Median Score
31. Test student psychomotor (skill) performance	2.5	4.346
32. Monitor student progress.	2.5	4.346
30. Test student cognitive (knowledge) performance.	4	4.219

Contemporary Topics in Information Processing

Information Processing--Knowledge of:

43. Microprocessors.	1	4.713
39. Future trends and technological changes in information processing.	2	4.679
37. Computer aided transcription (CAT).	3	4.628
42. Data base management systems (DBMS).	4	4.543
38. Careers in information processing.	5	4.425
40. Networks.	6	4.417
36. Optical character recognition (OCR).	7	4.333
41. Work flow within an office or an organization.	8	4.232
35. Voice processing.	9	4.069
34. Records management.	10	3.906
33. History and development of information processing.	11	3.500

Data Processing--Knowledge of:

49. Career paths in data processing.	1	4.547
48. Terminology of data processing.	2	4.458
47. Data processing systems and procedures.	3	4.444
46. Data recording media and equipment.	4	4.289

Competency Statements	Overall Rank by Median Score	Median Score
45. Computer programming.	5	4.421
44. Computer components.	6	4.207
Word Processing--Knowledge of:		
52. Word processing recording media and equipment.	1	4.541
55. Word processing systems and designs.	2	4.484
50. Terminology of word processing.	3	4.433
53. Career paths in word processing.	4	4.422
56. Components of a procedures manual.	5	4.406
54. Components of a feasibility study.	6	4.077
51. History/development of word processing.	7	3.538
Micrographics--Knowledge of:		
57. Microforms.	1	4.514
58. Computer input microfilm (CIM).	2.5	4.329
59. Computer output microfilm (COM).	2.5	4.329
60. Computer assisted retrieval (CAR).	4	4.429
Reprographics--Knowledge of:		
63. Intelligent printers/copiers.	1	4.262
62. Phototypesetting.	2	4.243
64. Facsimile	3	4.218
61. Copying equipment.	4	3.882

Competency Statements	Overall Rank by Median Score	Median Score
<hr/>		
Telecommunications--Knowledge of:		
68. Communicating with modems.	1	4.557
67. Computer-based message systems.	2	4.554
69. Management information systems.	3	4.530
70. Satellite communications.	4	4.515
65. Electronic mail systems.	5	4.385
66. Public and private teletype.	6	4.300

APPENDIX 0

PEARSON CORRELATIONS FOR
THE SIX COMPETENCY AREAS AND
70 COMPETENCY STATEMENTS

APPENDIX
Table
CORRELATION BETWEEN IMPORTANCE RATING AND
PROFESSIONAL DEVELOPMENT NEED RATING
SCALES

Scales (Competency Areas)	Correlation Coefficient	p-value (exact probability)
Planning, Development & Evaluation	.4133	.001
Instructional Planning	.2191	.006
Instructional Execution	.2835	.001
Instructional Management	.4052	.001
Instructional Evaluation	.1935	.013
Information Processing	.5251	.901
Data Processing	.2401	.003
Word Processing	.3960	.001
Micrographics	.4583	.001
Reprographics	.4269	.001
Telecommunications	.5625	.001

APPENDIX

Table

CORRELATION BETWEEN IMPORTANCE RATING AND
PROFESSIONAL DEVELOPMENT NEED RATING
COMPETENCY STATEMENTS

Competency Statements	Correlation Coefficient	p-value (exact probability)
1. Conduct a survey to determine the employment demands and types/brands of equipment being used throughout the school district community.	.3609	.001
2. Report the findings of a school district community survey to school administrators.	.4300	.001
3. Develop information processing program objectives.	.2493	.002
4. Develop a course of study.	.2792	.001
5. Conduct a student follow-up study.	.3478	.001
6. Integrate information processing courses into overall curriculum.	.5061	.001
7. Prepare grant proposals.	.6514	.001
8. Evaluate the information processing program	.3283	.001
9. Develop student performance objectives.	.3078	.001
10. Develop units of instruction.	.1857	.016
11. Develop lesson plans.	.3239	.001
12. Identify sources of instructional materials.	.1612	.032
13. Develop a co-op or work experience program in information processing.	.4271	.001

Table Continued

Competency Statements	Correlation Coefficient	p-value (exact probability)
14. Prepare teacher-made instructional materials.	.3909	.001
15. Employ simulation techniques.	.3410	.001
16. Direct student laboratory experiences.	.2608	.001
17. Plan and direct individualized instructional programs.	.2608	.001
18. Provide instruction for students with special needs (gifted/handicapped).	.5532	.001
19. Demonstrate the keyboarding of data on magnetic media (tape, disc, card, etc.).	.3682	.001
20. Operate an electronic typewriter.	.3809	.001
21. Operate a visual display terminal (one-line, partial screen, full screen).	.2622	.001
22. Operate dictation/transcription equipment.	.2687	.001
23. Estimate present and future instructional resource needs.	.4571	.001
24. Prepare budgets.	.5751	.001
25. Recommend and/or purchase supplies and equipment (bids and specifications).	.4378	.001
26. Provide for safety needs of students.	.4264	.001
27. Plan/layout an information processing lab/classroom facility.	.3976	.001
28. Manage an information processing lab/classroom facility.	.3397	.001

Table Continued

Competency Statements	Correlation Coefficient	p-value (exact probability)
29. Establish productivity standards for students.	.1588	.034
30. Test student cognitive (knowledge) performance.	.1936	.013
31. Test student psychomotor (skill) performance.	.2819	.001
32. Monitor student progress.	.1305	.068
33. History and development of information processing.	.6166	.001
34. Records management.	.3895	.001
35. Voice processing.	.4947	.001
36. Optical character recognition (OCR).	.4165	.001
37. Computer aided transcription (CAT).	.4080	.001
38. Careers in information processing.	.3595	.001
39. Future trends and technological changes in information processing.	.4029	.001
40. Networks.	.4526	.001
41. Work flow within an office or an organization.	.4416	.001
42. Data base management systems (DBMS).	.4911	.001
43. Microprocessors.	.4332	.001
44. Computer components.	.1792	.020
45. Computer programming.	.2957	.001
46. Data recording media and equipment.	.2401	.003
47. Data processing systems and procedures.	.2313	.004

Table Continued

Competency Statements	Correlation Coefficient	p-value (exact probability)
48. Terminology of data processing.	.2316	.004
49. Career paths in data processing.	.2886	.001
50. Terminology of word processing.	.2470	.002
51. History/development of word processing.	.3919	.001
52. Word processing recording media and equipment.	.2605	.001
53. Career paths in word processing.	.2504	.002
54. Components of a feasibility study.	.4454	.001
55. Word processing systems designs.	.4554	.001
56. Components of a procedures manual.	.4720	.001
57. Microforms.	.4246	.001
58. Computer input microfilm (CIM).	.4442	.001
59. Computer output microfilm (COM).	.4682	.001
60. Computer assisted retrieval (CAR).	.4248	.001
61. Copying equipment.	.2502	.002
62. Phototypesetting.	.4273	.001
63. Intelligent printers/copiers.	.3842	.001
64. Facsimile.	.4166	.001
65. Electronic mail systems.	.4990	.001
66. Public and private teletype.	.4953	.001
67. Computer-based message systems.	.5002	.001
68. Communicating with modems.	.4989	.001

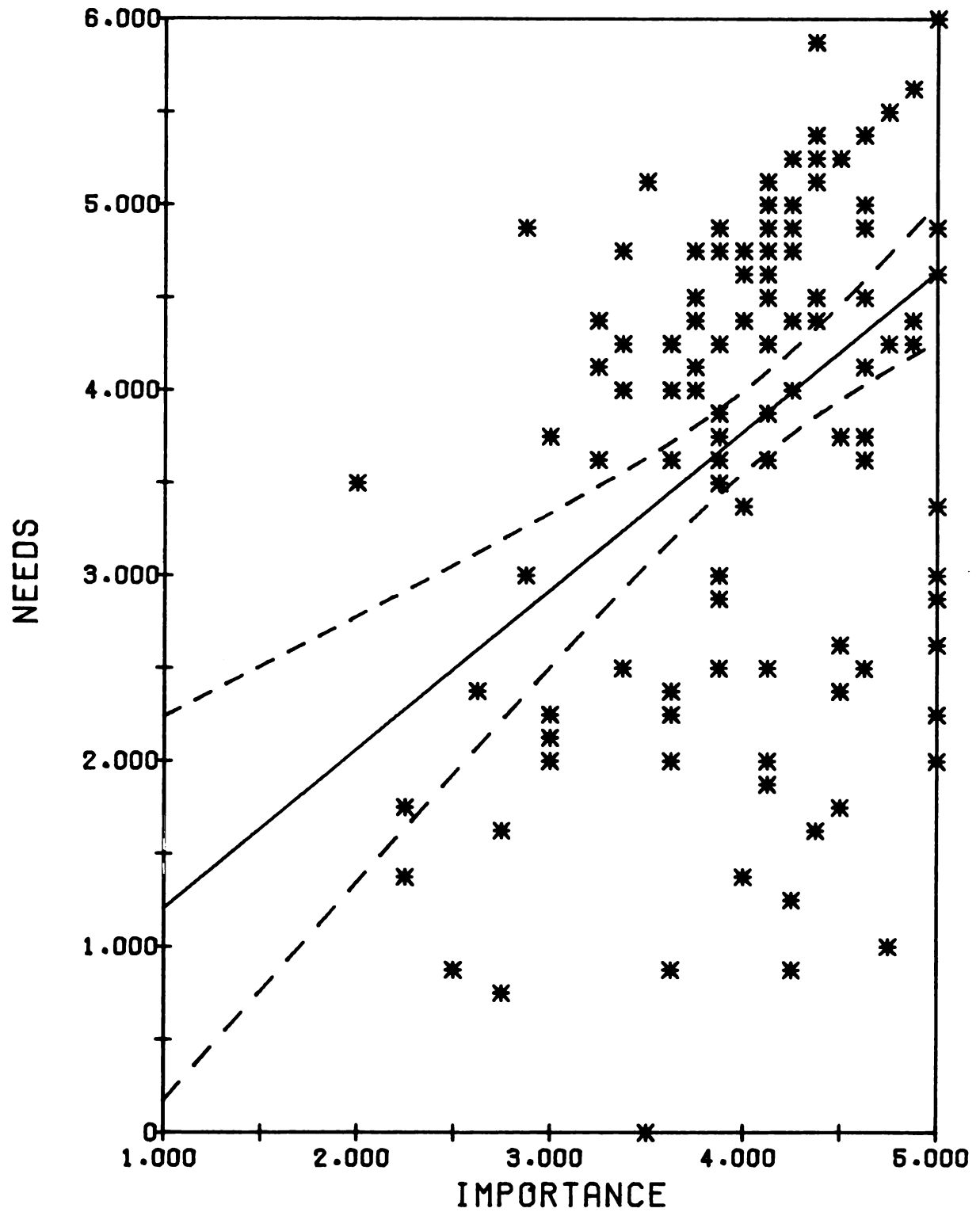
Table Continued

Competency Statements	Correlation Coefficient	p-value (exact probability)
69. Management information systems.	.5275	.001
70. Satellite communications.	.5263	.001

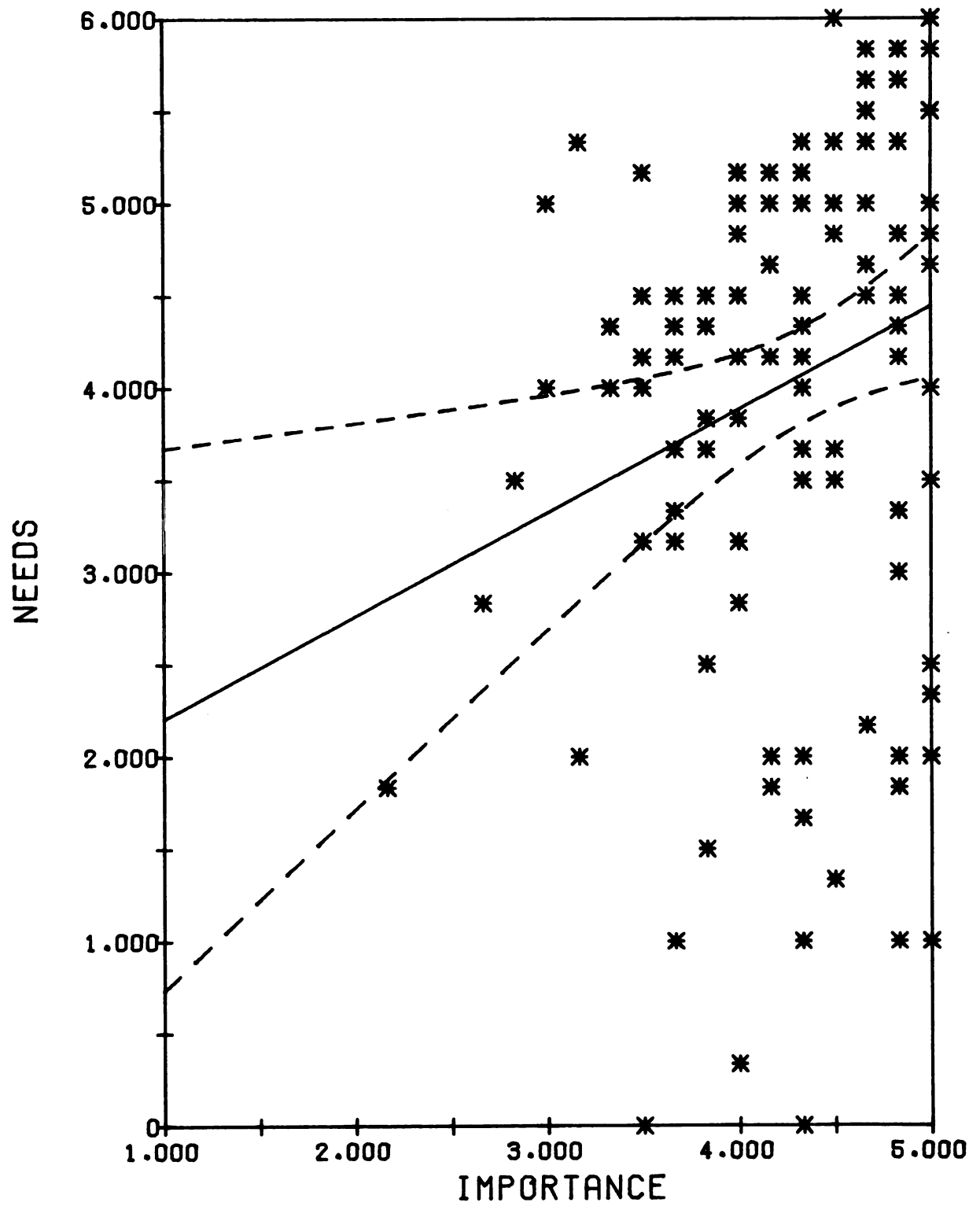
APPENDIX P

SCATTERGRAMS FOR THE 11 SCALES

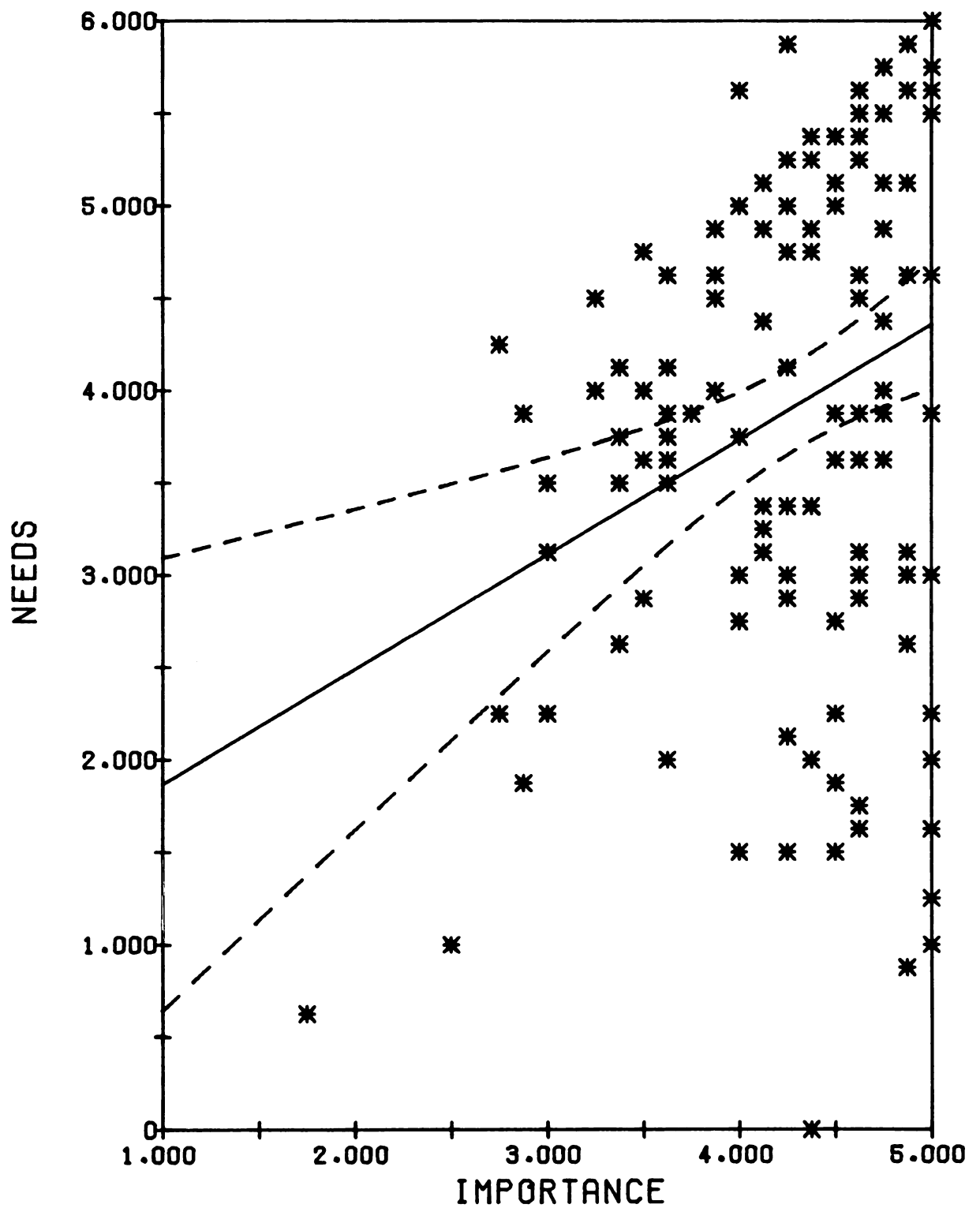
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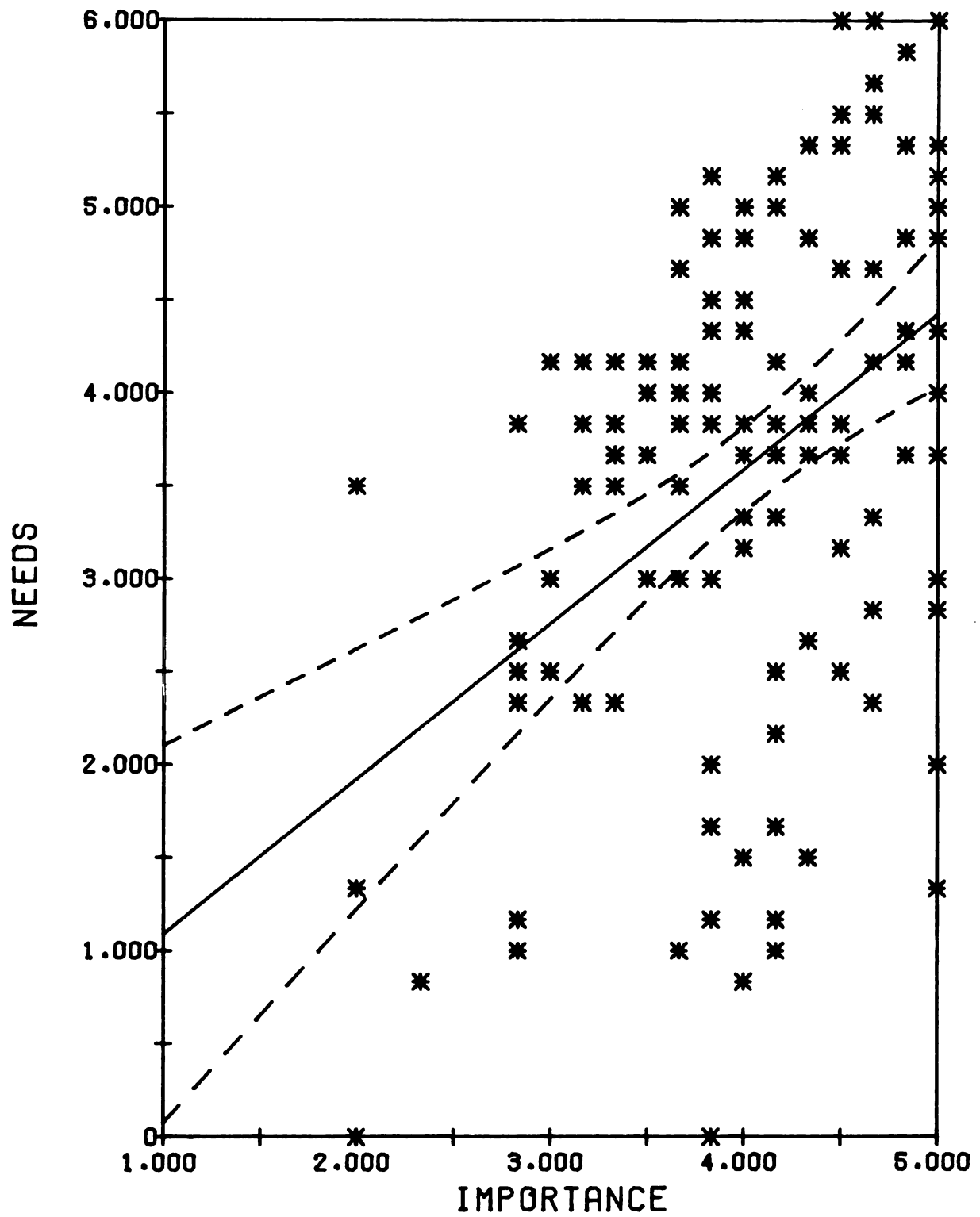
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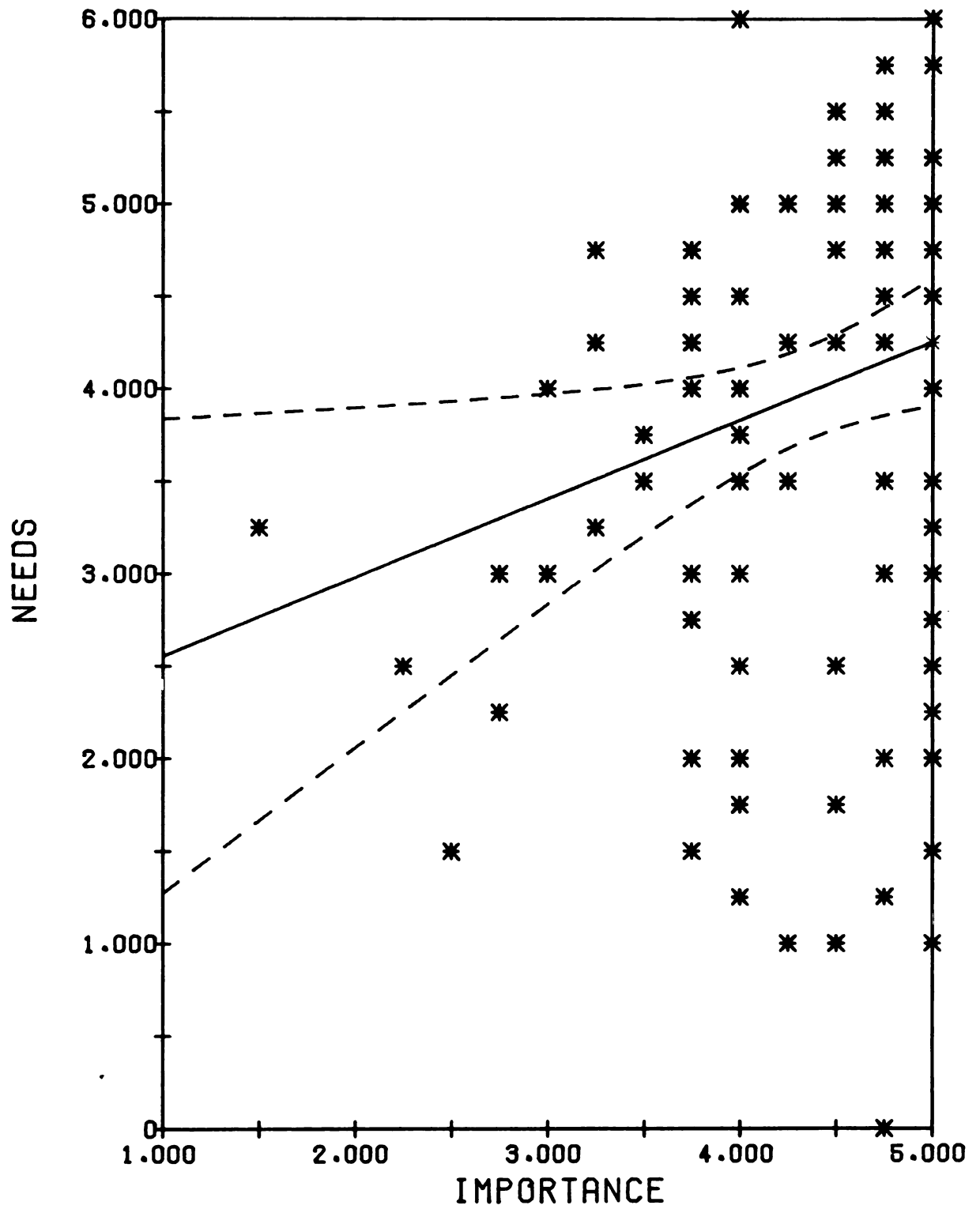
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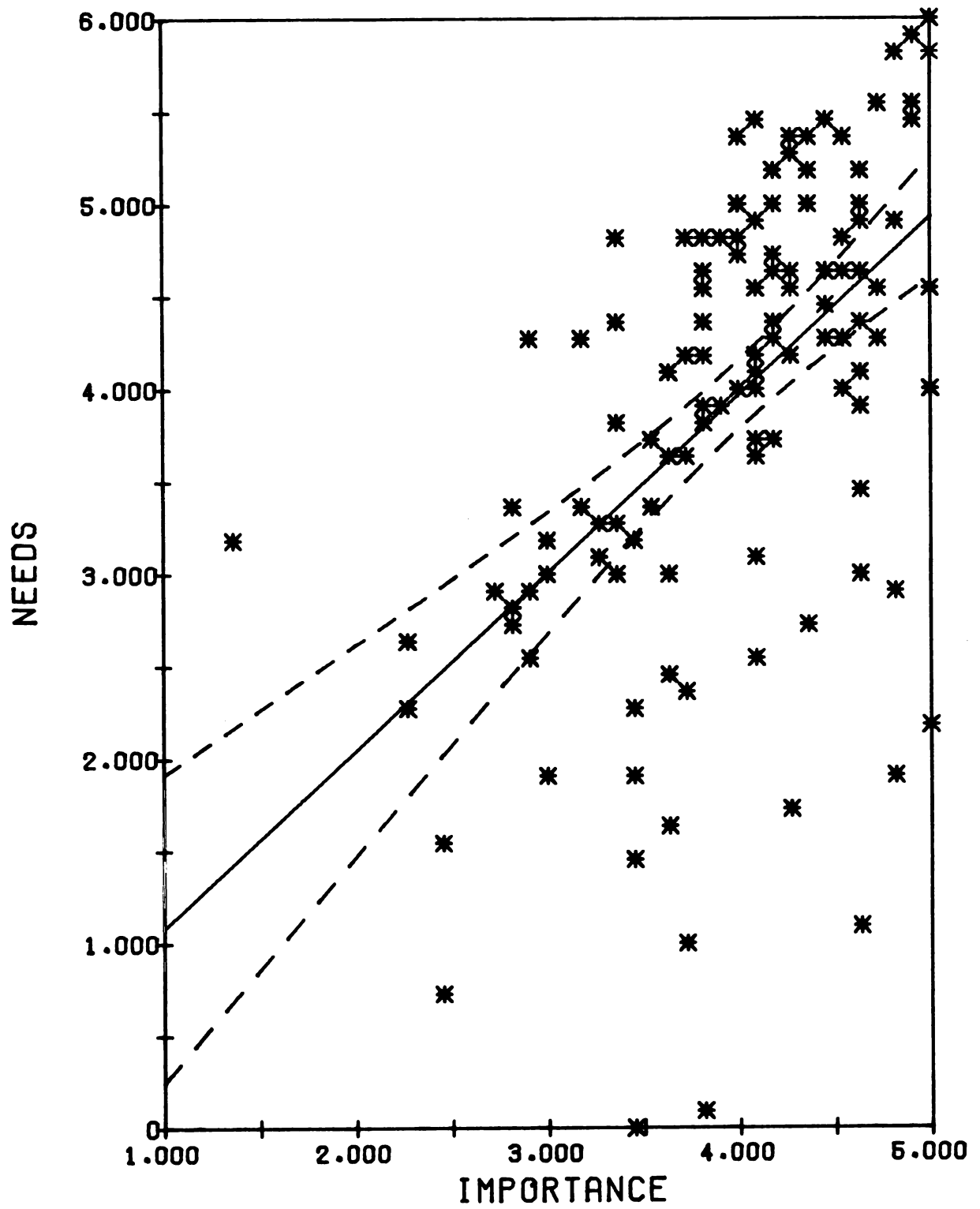
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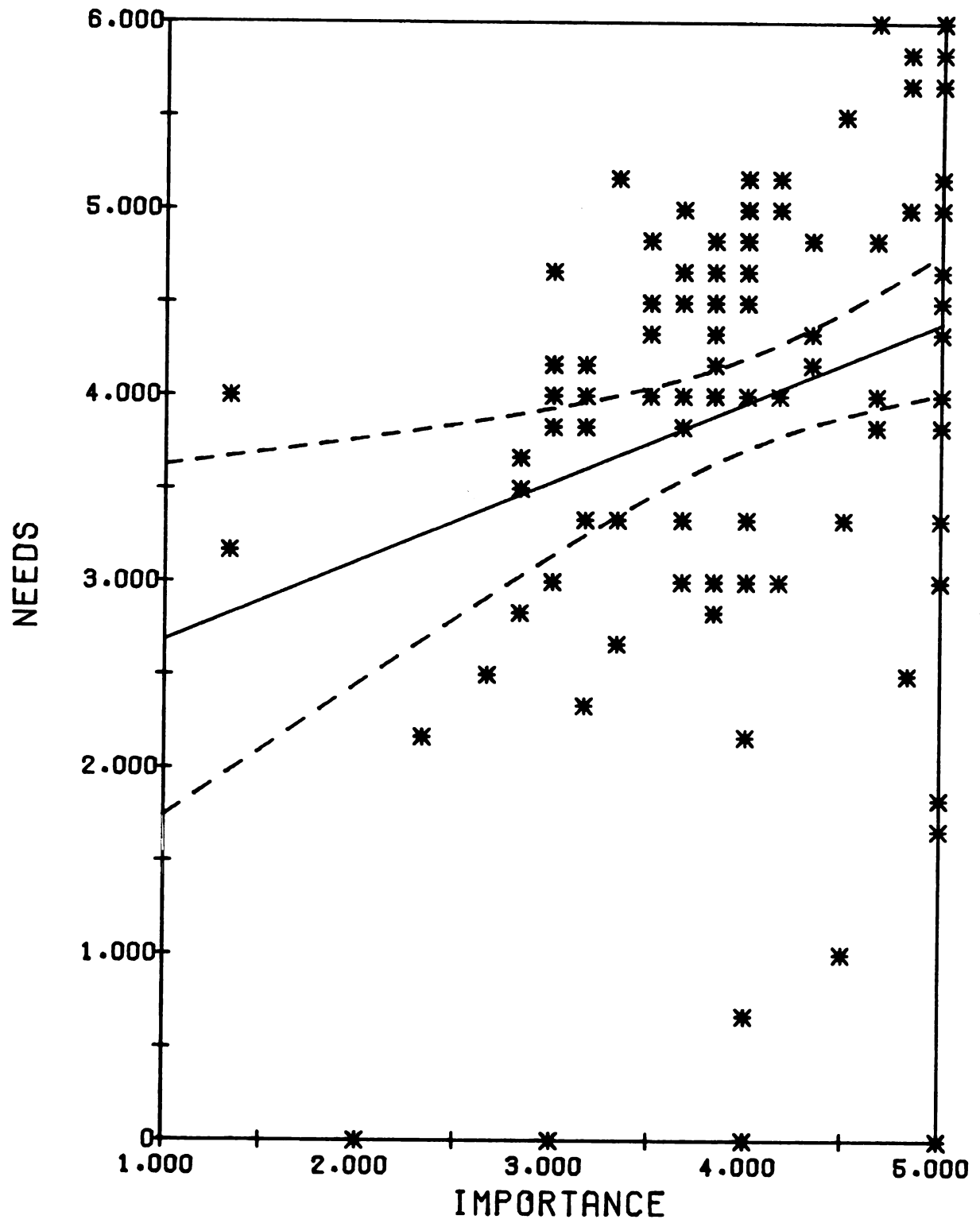
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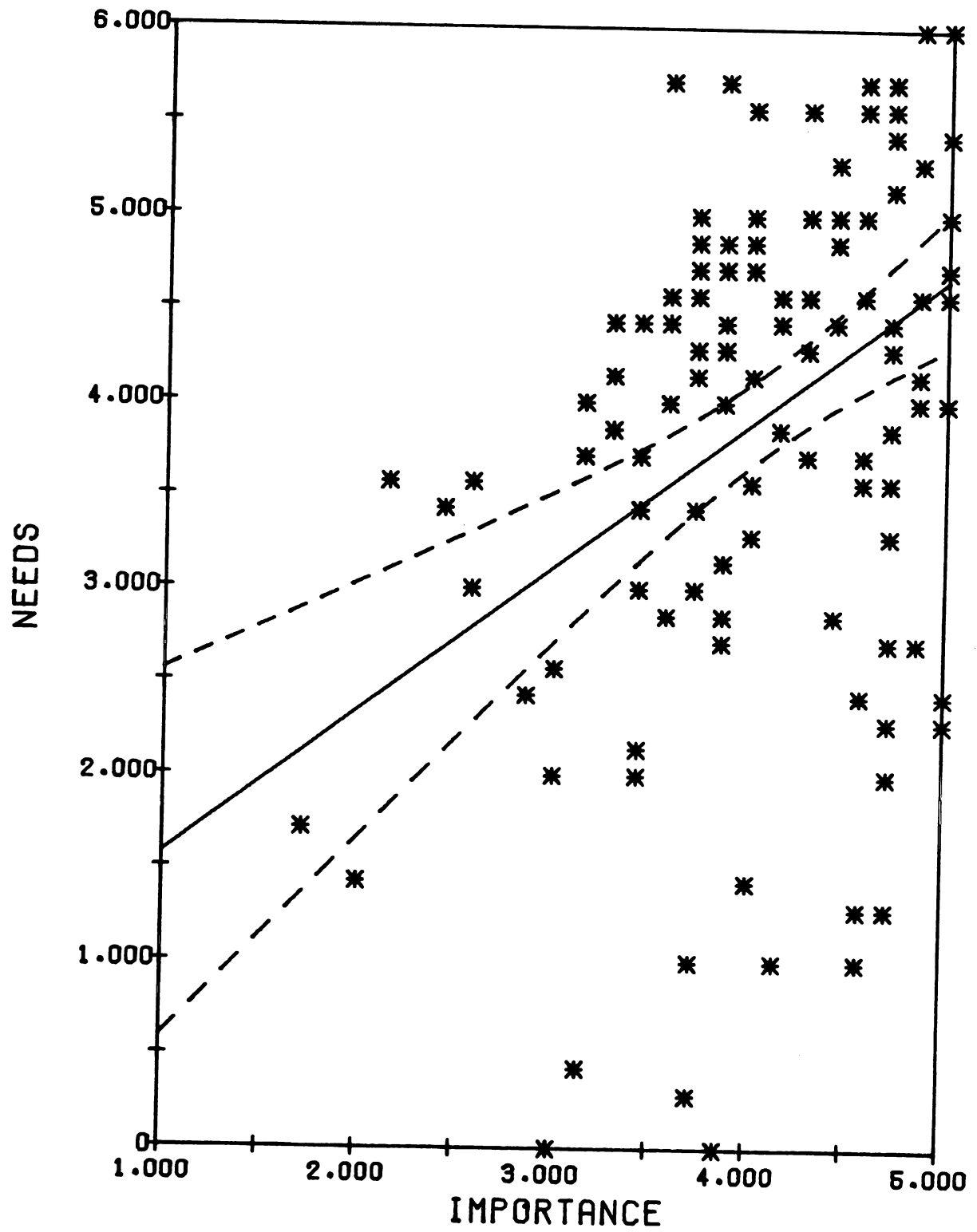
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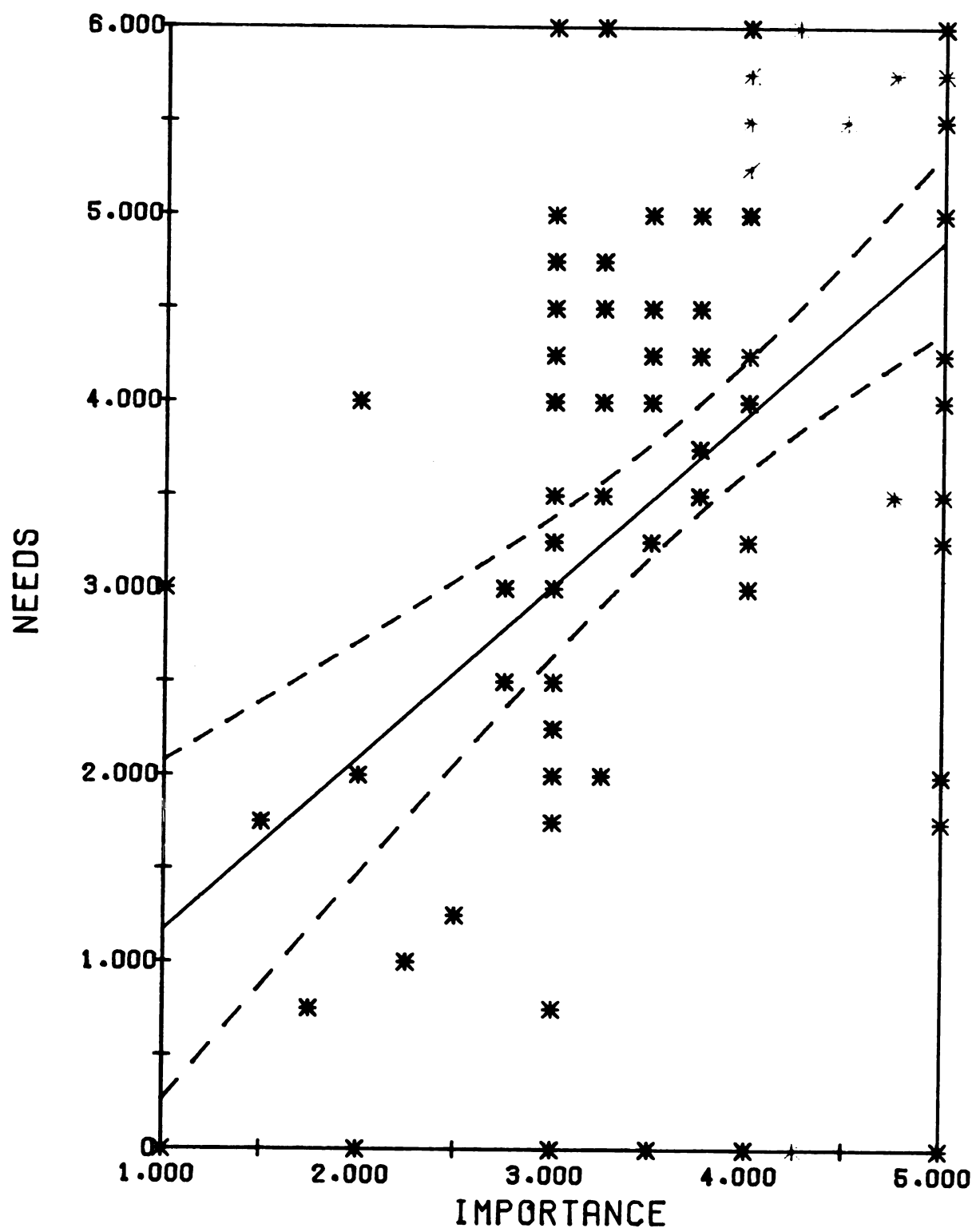
DATA PROCESSING



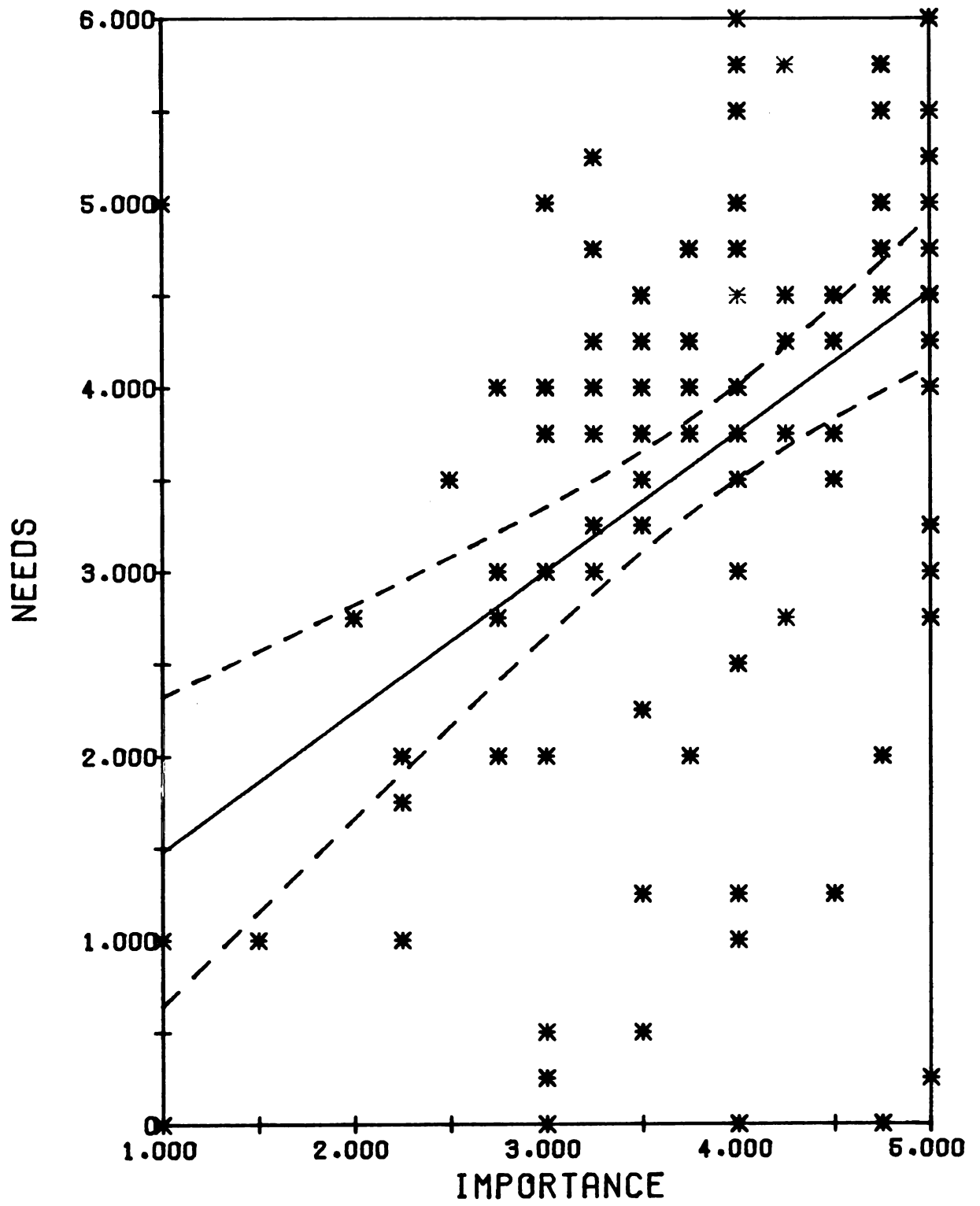
WORD PROCESSING



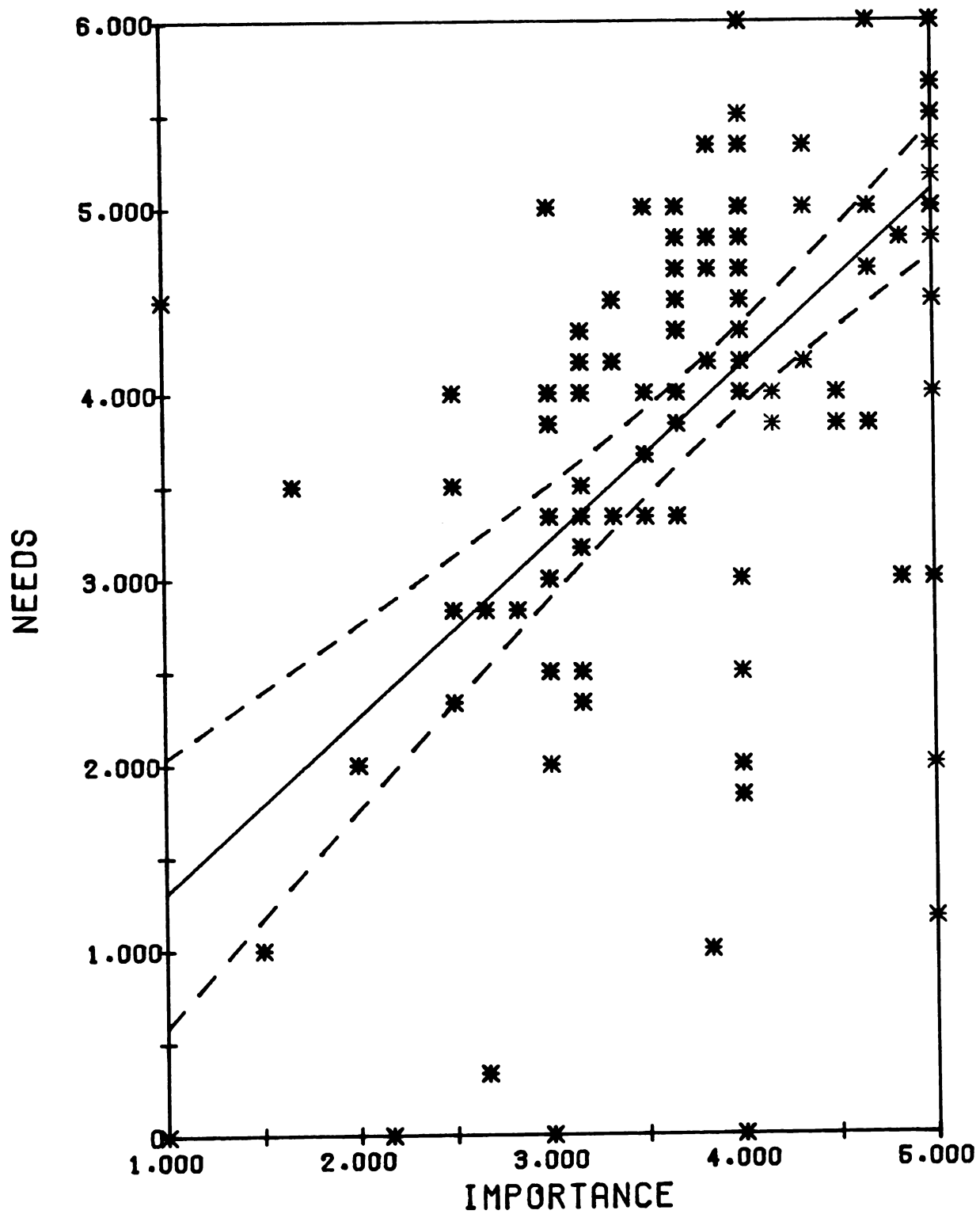
MICROGRAPHICS



181
REPROGRAPHICS



TELECOMMUNICATIONS



APPENDIX Q

ADDITIONAL STATISTICAL COMPUTATIONS

APPENDIX

Table

ANALYSES OF VARIANCE RESULTS ON NUMBER OF YEARS OF TEACHING EXPERIENCE WITH FOUR INDEPENDENT VARIABLES RELATED TO INFORMATION PROCESSING

Independent Variables	Between Groups	Within Groups	F-Ratio	p-value
Interest in participating in in-service activities	183.3608	44.4047	4.1293	.0442*
Need to acquire skills and/or knowledges	4.2614	45.7824	.0931	.7608
Desirability of on-the-job experience	22.4649	45.6423	.4922	.4842
Obtained formal preparation	137.6039	44.7567	3.0745	.0819

Degrees of freedom 1, 130

*significant at alpha less than .05

APPENDIX

Table

MEAN NUMBER OF YEARS OF TEACHING EXPERIENCE BASED ON
FOUR VARIABLES RELATED TO INFORMATION PROCESSING

Independent Variables	<u>Means (Standard Deviation)</u>			
	Group 1 No ^a		Group 2 Yes ^b	
Interest in participating in in-service activities.	18.6250	(7.5012)	13.6855	(6.6128)
Need to acquire skills and/or knowledges.	13.4167	(8.3933)	14.0417	(6.5956)
Desirability of on-the-job experience.	13.3810	(5.2123)	14.2667	(7.3589)
Obtained formal preparation.	14.3504	(6.8372)	11.1333	(5.3166)

^aTeachers who responded negatively (no)

^bTeachers who responded positively (yes)

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