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AN EXPERIMENTAL PROJECT TO DETERMINE MORE EFFECTIVE VOCATIONAL TEACHER CERTIFICATION PROCEDURES IN MICHIGAN BY COMPETENCY EXAMINATIONS. FINAL REPORT OF PHASE I.

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DESCRIPTORS- \*TRADE AND INDUSTRIAL EDUCATION, TESTS, \*TEST CONSTRUCTION, QUESTIONNAIRES, ADMINISTRATOR ATTITUDES, TRADE AND INDUSTRIAL TEACHERS, \*TEACHER CERTIFICATION, LITERATURE REVIEWS, STATE PROGRAMS, NATIONAL SURVEYS, MICHIGAN,

THE PURPOSE OF THIS PROJECT WAS TO DETERMINE MORE EFFECTIVE VOCATIONAL TEACHER CERTIFICATION PROCEDURES IN MICHIGAN WITH PARTICULAR EMPHASIS ON THE DEVELOPMENT OF COMPETENCY EXAMINATIONS FOR USE IN CERTIFICATION OF TRADE AND INDUSTRIAL TEACHERS. STATE PLANS FROM 31 STATES WERE REVIEWED. QUESTIONNAIRES TO STATE DIRECTORS COLLECTED INFORMATION AND OPINIONS CONCERNING THE USE OF COMPETENCY EXAMINATIONS IN VARIOUS STATES AND TERRITORIES. ANALYSIS OF THIS DATA AIDED IN THE CONSTRUCTION OF WRITTEN, ORAL, AND PERFORMANCE EXAMINATIONS. SEVERAL TRADE ANALYSES WERE COMBINED FOR EACH TRADE AREA TO DERIVE A COMPREHENSIVE ANALYSIS WHICH WAS THEN REVIEWED BY THE RESEARCH STAFF AND AN APPROPRIATE TEACHER EDUCATOR. APPROXIMATELY 1,500 TEST ITEMS WERE PREPARED FOR EACH TRADE AREA. THESE WERE SCREENED, EVALUATED, AND DIVIDED INTO 3 FORMS FOR EACH TRADE AREA. EACH FORM CONTAINED ABOUT 300 ITEMS. THE COMMITTEES WHICH EVALUATED THE WRITTEN EXAMS ALSO MADE RECOMMENDATIONS CONCERNING PERFORMANCE TEST CONTENT, AND DEVELOPED A LIST OF EXPERIENCES. IT WAS CONCLUDED -- (1) WELL DESIGNED EXAMINATIONS HAVE VALUE IN TEACHER CERTIFICATION, (2) PHASE II WILL DECIDE THEIR USEFULNESS AND VALIDITY, (3) EXAMINATIONS CAN BE EFFECTIVE IN DETERMINING TECHNICAL KNOWLEDGE, INCREASING THE NUMBER OF TEACHERS, INDICATING WEAKNESSES IN THOSE PERSONS WHO FAIL, AND IMPROVING THE QUALITY OF TEACHERS. THE DATA-COLLECTING INSTRUMENT AND LETTERS ARE INCLUDED. (EM)

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Lansing, Michigan

August, 1966

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DEPARTMENT OF INDUSTRIAL EDUCATION

Final Report of Phase I

AN EXPERIMENTAL PROJECT TO DETERMINE MORE EFFECTIVE VOCATIONAL  
TEACHER CERTIFICATION PROCEDURES IN MICHIGAN  
BY COMPETENCY EXAMINATIONS

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## FORWARD

In Michigan, as in many other states, there is a critical shortage of vocational education teachers. This is especially true of trade and industrial teachers because of the many and unique problems involved in their preparation and certification. To help alleviate this problem, Eastern Michigan University conducted "Phase I" of a research study which was an experimental project to determine more effective vocational teacher certification procedures in Michigan. Special consideration was given to the approach in certification concerning the use of competency examinations.

Phase I of this study included: a review of the present State Plans of Vocational Education of the various states; a national survey of the present status of competency examinations; organization of materials, and development of testing instruments and testing procedures. Phase II of the project has been designed to develop norms and standards and to validate and refine the testing instruments and testing procedures. The basic trades for which competency tests have been or will be developed, are: automotive, carpentry-cabinet making, cooking, drafting, electrical-electronics, instrumentation, machine shop, pneumatics and hydraulics, plumbing, printing, refrigeration and air conditioning, and welding.

A special mention of appreciation should be made to all persons who have given assistance on this research project. Included are the members of the test evaluation committees and the State Directors of Vocational Education, or their representatives, who were most helpful and cooperative in providing technical information and personal opinions for the study.

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PART I INTRODUCTION

Need for the Study

Objectives of the Study

Scope and Limitations of the Study

Definitions of Terms

### Need for the Study

The shortage of well qualified vocational and technical education teachers is increasing to the point of becoming critical in many cities of the nation. In the Detroit Public School System, a number of school shops have had to be closed due to a lack of qualified vocational teachers. (Detroit Public Schools, 1965). Similarly, in New York City, several hundred vocational teachers are needed for newly developing and expanding programs in vocational education. (Shapiro, 1965). Similar situations exist in many other school systems throughout the United States. A recent study of this problem in Michigan (Department of Public Instruction, 1965) has revealed that there are 291 vocational and technical teachers needed for this year to fill the vacancies in the state. This study further points out that there will be a shortage of 634 teachers by 1966 and 1,862 teachers by 1970 due to the anticipated expansion of vocational and technical programs in the state.

At the very time when the need for more and better programs in vocational and technical education is essential, the programs cannot be developed or expanded because of this damaging shortage of qualified teachers.

It is a fact that the shortage will become even more critical in the coming few decades as more money becomes available for vocational and technical programs and as changes in the world of work increase at an accelerated rate. As Smith (1963:44) emphasized, "One of the most stubborn problems to be met in the expansion of vocational education is the limited supply of competent teachers."

To overcome such a critical and expanding problem, new horizons should be opened for the recruitment, selection, preparation, supply, and certification of well qualified vocational and technical education teachers.

Just as there is a need for a more comprehensive program for the preparation of individuals to enter the labor force, so it follows that the programs of preparation for vocational teachers must be more rigorous and often quite different from those now provided. (Swanson and Kramer, 1965:170).

The effectiveness of all vocational and technical programs depend upon the adequate preparation, supply, and certification of teachers. Vander Werf (1965:408) has stated:

. . . A major key to the effectiveness of learning in vocational programs in the next few decades will be the recruitment, selection, and preparation of teachers.

In the future, many thousands will be needed at the very stages when positions elsewhere requiring similar competencies will be more attractive financially. Recruitment programs will have to be imaginative and distinctive, backed up by programs of preparation worthy of the enticements.

It is clear, therefore, that "solutions to the teacher-training problem must be found, for the quality of vocational programs is determined in large measure by the quality of instruction." (Office of Education, 1963:11).

The problem of vocational and technical education teacher shortage has several logical explanations:

1. It appears to be related in part to the low salaries paid to teachers in comparison with the salaries paid to workers in other occupations, many of which require less post high school preparation for entrance into the occupation than that required for teachers.
2. Related to this is the fact that, on a national basis, teaching as a profession, is rated below a large number of other professions on prestige status scales. This becomes even more complicated for vocational and technical education teachers, due to the attitudes held by many groups in our society that "work" involving manual skills and direct involvement with tools and machinery is beneath the "dignity" of a person with a college education. (Smith 1963:44).

The problem of acquiring competent vocational teachers is aggravated by the traditions and standards that have developed in the teaching profession. Rank, prestige, status, salary scales, and certification requirements are geared to years of schooling, degrees obtained, and seniority. Furthermore, the salary scale for teachers may not compare favorably with journeyman's pay; and teachers' pay raises may be smaller and more infrequent. Why should any skilled journeyman shift to full-time teaching under these circumstances? These attitudes tend to dissuade those persons who might have an inclination toward vocational and technical teaching.

3. The present certification procedures and requirements of most states can be considered unrealistic. Most states require that the prospective vocational teacher have a Baccalaureate degree plus at least three years of occupational experience. This amounts to seven or eight years of preparation for vocational teaching. This tends to discourage many young and ambitious people from entering the profession.
4. The sources and methods of recruitment, selection, and certification have been inadequate. At present, most vocational teachers are recruited only from one source industry, without any attempt to find other favorable sources or methods of recruitment and certification. (Willis, 1963).

These and several other factors have created, and will continue to create, the critical shortage of vocational and technical education teachers unless new approaches are developed to alter the situation.

Colleges and universities have for years graduated teachers in vocational agriculture, home economics and distributive education who were certified by the state to teach these vocational subjects on the basis of college preparation. For trade and industrial education teachers, however, the situation has been quite different. It has been rather common practice to recruit trade and industrial teachers from industry and/or business. Journeymen, who were willing to teach, were provided a number of "professional education" courses and a special certificate and were sent out into the classroom to teach--with very little consideration accorded to whether they were "qualified" to teach on any other basis than vocational

experience. Such a plan for staffing vocational education programs has not kept pace with the demands placed on trade and industrial education. The preparation and the certification procedures must be reviewed and revised, or changed, in accordance with the new philosophy and practices of vocational education as it has been expressed in the new vocational legislation.

The new Michigan State Plan for Vocational Education indicates that the prospective trade and industrial education teacher shall possess a Baccalaureate Degree plus three years of occupational experience in the occupational areas concerned. Under certain circumstances, the candidate may be administered a competency examination. This last provision, although a potential source for teacher certification, has not been adequately explored in Michigan. There are many individuals in Michigan or elsewhere in the field of industrial education who are capable of teaching vocational-industrial subjects either because of their intensive formal education in vocational-technical and/or engineering programs, or because of their prolonged and varied teaching experience plus a limited amount of work experience. Though competent to teach vocational subjects, the present system of certification makes it most difficult for such persons to become instructors in reimbursible vocational programs. A new approach concerned with certification of trade and industrial teachers that will either replace or supplement the present situation, is needed if the quantity and quality of trade and industrial teachers are to meet vocational education demands.

The approach that seems to be most promising at the present, is to organize, expand, and standardize the provision stated in the Michigan State Plan for Vocational Education: to certify trade and industrial teachers by competency examinations. This study was initiated to determine a basis for certifying teachers under this provision. The purpose of the study was to investigate this matter and to present some recommendations determined from presently used competency examinations in the United States; and to prepare the necessary competency examinations and testing procedures to be used in the state of Michigan.

## Objectives of the Study

The general hypothesis of this study has been that better results can be obtained in trade and industrial teacher certification in Michigan. This can be accomplished by developing and using well designed competency tests and testing procedures which will be accessible to more majors in industrial education who are interested in becoming vocational teachers, but who do not meet the existing state requirements. These tests will also be available to other individuals with various backgrounds who desire to but could not obtain vocational certification because of existing work experience requirements. This new approach can be carried out by initiating a cooperative short term project with the Michigan State Department of Education, Division of Vocational Education, and Eastern Michigan University to study, develop, and refine such competency tests and testing procedures.

The general objectives of the study are to:

1. Review the literature, particularly the new State Plans of Vocational Education of the various states and territories to determine the present practices and requirements in trade and industrial teacher certification.
2. Determine, develop, and refine the necessary testing trade and industry instruments and testing procedures to be used for teacher certification.
3. Provide the basis for a continual revision, reviewing, exploring, and evaluation of the certification procedures in Michigan.
4. Make the results available to all teacher education institutions in Michigan.
5. Evaluate whether such an approach is practical and will produce desired results.

## Scope and Limitations of the Study

This project was designed to investigate the present status of competency examinations and the related testing procedures of the various states and territories of the United States. The purpose of the investigation was to attain some "basic working knowledge" in order to develop better competency examinations for the state of Michigan. The study was divided in two phases:

Phase I Review of literature, study of the present status of competency examinations, development of the competency tests and testing procedures.

Phase II Validation and refinement of the testing instruments and testing procedures, development of norms and standards, and evaluation of the project.

The primary concern of the project was the study of competency examinations for trade and industrial areas only. The trade areas included in the study are automotive, carpentry-cabinet making, cooking, drafting, electricity-electronics, instrumentation, machine shop, pneumatics and hydraulics, plumbing, printing, refrigeration and air conditioning, and welding. Other basic trades will be included in the list in the future as the project develops and more knowledge of the subject is accumulated.

## Definition of Terms

### **COMPETENCY EXAMINATION (TRADE TEST)**

A test or examination including three parts: written, performance and oral; designed to determine a level of technical knowledge and skills of a teacher candidate in a particular trade and industrial area.

### **RECOGNIZED WORK EXPERIENCE**

Formal full-time and/or part-time employment undertaken by a teacher candidate for a specified length of time in a specific occupation considered by the State Board of Vocational Education as being necessary in obtaining technical trade knowledge and skills.

### **STATE PLAN**

An agreement between a state board for vocational education and the U.S. Office of Education describing (a) the vocational education program developed by the state to meet its own purposes and conditions, and (b) the conditions under which the state will use federal vocational education funds (such conditions must conform to the federal acts and the official policies of the U.S. Office of Education before programs may be reimbursed from federal funds. (American Vocational Association:17).

### **TEACHER CANDIDATE**

An individual who is planning to become vocationally certified to teach trade and industrial courses in specific trade areas.

### **TEACHER EDUCATOR**

A vocationally qualified professional person responsible for the preparation and in-service training of teachers. He assists teachers or prospective teachers in securing the professional knowledge, ability, understanding, and appreciation which will enable them to meet certification requirements or advance in teaching positions. (American Vocational Association:19).

### **TRADE AREAS**

A group of industrial occupations (usually apprenticeable) which require a high degree of skill, technical knowledge, and mechanical training and dexterity; usually in a wide range of related activities and secured through a combination of job instruction and work experience. This is exclusive of agriculture and business.

**TRADE ANALYSIS**

The procedure of breaking down a trade or occupation to determine the teachable content in terms of operations, tools, processes, and technical information to be organized into a course of study and arranged according to a sequence of difficulty.

**TRADE AND INDUSTRIAL TEACHER**

Any teacher that has been certified by the State Board of Vocational Education as being qualified to teach trade and industrial courses.

**VOCATIONAL AND TECHNICAL EDUCATION**

Training intended to prepare an individual to earn a living in an occupation in which success is dependent largely upon technical information and an understanding of laws of science and technology as applied to modern design, production, distribution and services. (American Vocational Association:22).

**TRADE AND INDUSTRIAL EDUCATION (VOCATIONAL EDUCATION)**

Instruction which is planned to develop basic manipulative skills, safety judgment, technical knowledge, and related occupational information for the purpose of fitting persons for initial employment in industrial occupations and upgrading or retraining workers employed in industry. (American Vocational Association:20).

**VOCATIONAL CERTIFICATION**

The approval action, based on minimum standards adopted in the state, taken by legally authorized school authorities on the professional and technical qualifications of teachers. (American Vocational Association:19).

## **PART II DEVELOPMENT OF THE STUDY**

**Steps in Conducting the Study**

**Review of Literature**

**Organization of Data**

**Development of the Instrument**

**Summary of Survey Data of Part I**

**Summary of Survey Data of Part II**

**Comments Made by State Directors**

**Summary of State Directors' Comments**

**Developing of Competency Examinations and**

**Testing Procedures**

## Steps in Conducting the Study

### Review of Literature

#### I. Review and Analysis of the State Plans for Vocational Education.

The first step in the review of literature was to obtain, review, and analyze all state plans for vocational education. A request was sent to all State Directors of vocational education and to Directors of the territories including Guam, Puerto Rico, District of Columbia, and the Virgin Islands. This request asked for a copy of that State's present plan for vocational education to be used for this research study. The review of the state plans was limited only to the section dealing with procedures and requirements for certification of trade and industrial teachers. Three factors were considered in the review and analysis of the state plans:

1. The state policy for competency examinations. Each plan was reviewed to determine if the plan provided in writing for the use of competency examinations.
2. The extent of certification requirements for trade and industrial teachers such as work experience, education, etc.
3. To identify any "new" trends in certification procedures and requirements of trade and industrial teachers that may have accrued due to the passage of the 1963 Vocational Education Act.

Following is a summary of vocational certification requirements for daytime trade and industrial teachers as shown in the State Plans for Vocational Education.

A reply was received from fifty-one states which included forty-seven state plans or certification information. Some state plans were not received because they were not available in print or because they did not show certification requirements. A follow-up letter was sent to those states which did not reply

to the first request and to those states whose plan did not give certification information. The states were asked for further information about certification requirements. After reviewing the State's educational and occupational requirements for trade and industrial teachers of full time preparatory vocational technical courses, several generalizations may be made.

1. In comparing length of time of recongized work experience required for trade and industrial teachers, the average (mean) length on the journeyman's level is 3.1 years.
2. Approximately one-third of the states require two years of work experience and approximately one-third of the states require three years.
3. More than one-half of the state plans allow education, (either a Baccalaureate degree in Industrial Education or attendance at a trade school), to partially substitute for required work experience. In some cases, a substitution of up to two-thirds of the required work experience may be made.
4. Approximately one-third of the state plans make some provisions for certification under special conditions. This may be done by having the applicant take oral, written, and practical competency examinations, or by having a state advisory committee for vocational education review his case.
5. Most state plans require only high school education or the equivalent to satisfy minimum education requirements.
6. Most plans require applicants to take a specified number of hours of professional or teaching courses before certification (varies from 6 to 18 semester hours), or to take a specified number of credit hours in professional education within a given length of

time after employment (varies among state plans from 12 semester credit hours in five years to 30 clock hours in three years).

7. In the plans reviewed, no requirement was made for specific personal qualities of the teacher candidate.

This information has been valuable to this research study because it shows what certification requirements are now being used by the various states. Although the state plan requirements vary a great deal, an analysis of the information helped to develop a better certification program for Michigan. For a complete analysis of the review of the State Plans for Vocational Education, see Tables I and II on the following page.

Note:

The following information was taken from the State Plans for Vocational Education. Since many of the state plans show several methods of certification and a variety of certification requirements, these states may be included more than once in the same table.

TABLE I

Results of the Initial Request to Obtain the State Plans.	
Requests Sent and Received	Number of States and Territories
Requests were sent to:	54
Replies were received from:	51
State Plans were received from:	39
State Plans which showed certification requirements for trade and industrial teachers:	34
Total number of states supplying certification information:	47

TABLE II

Education Requirements for Vocational Trade and Industrial Teachers.	
Written Requirements from state plans	Number of States and Territories
8th grade education required:	1
High school or equivalent education required:	26
College Baccalaureate Degree required:	8
State teaching certificate required:	6
Pre-employment professional education courses required:	20
Post-employment professional education courses required:	14
Educational requirements (a specific number of special courses) not mentioned in state plan:	9

TABLE III

Education (Baccalaureate degree, having attended trade school or Jr. College and having received credits in related fields) may substitute for part of work experience requirements.	
Education may substitute	Number of States and Territories
Yes:	17
Not mentioned in State Plan:	29

TABLE IV

Trade Competency tests are used to help certify vocational education teachers in the following states.	
	Number of States and Territories
Use trade tests:	11
Information is not available through state plan:	36

Competency exams were found to be used in: Colorado, Kansas, Louisiana, Massachusetts, Michigan, Oregon, Pennsylvania, and Wisconsin.

The following states use competency tests, however, this information was not available through those states' plans for vocational education: California, District of Columbia, New York, South Carolina, and Texas.

TABLE V

Trade experience on journeyman's level required with a high school or higher minimum education.	
Requirements	Number of States and Territories
Less than two years required:	1
Two years required:	14
Three years required:	16
Four or five years required:	4
Six or seven years required:	3
Varying number of years required depending on education:	7
State Plan does not mention specific number of required years:	5

## II. Review of Professional Literature

The extensive research of the State Plans was accompanied by a review of all pertinent professional literature. Literature was considered to be important which dealt with past research studies involving certification methods and requirements of vocational teachers; articles expressing the viewpoints of vocational educators on vocational certification subjects; and information concerning the use of competency examinations as a means for certification.

From this review it was determined that competency examinations can be used in the certification of trade and industrial education teachers. Therefore, an extensive review was conducted of presently used competency examinations, various subject area tests, and testing methods and procedures. This involved obtaining tests, testing methods, and norms from other states and from national testing agencies who are presently using such tests and testing procedures.

### Organization of Data

After an extensive review of pertinent information had been made, the information was organized, analyzed, and evaluated to decide which parts would be useful to this study. The state plans of the various states and territories were analyzed to determine any new trends in certification procedures. Most of these State Plans had been revised since the passage of the Vocational Act of 1963. From the data, it was determined which states were using competency examinations; and the extent of requirements for trade and industrial teacher certification. The organization and evaluation of this data showed that before the testing instruments could be developed, further research would be necessary concerning the use and standardization of competency examinations in the various states and territories. Some attempts are being made by several states who are using competency examinations to standardize the instruments. Once the initial review of the pertinent sources was completed and the decision to develop competency examinations for Michigan had been made, the next step was to survey the various states' vocational offices for further information.

### Development of the Instrument

A survey questionnaire was sent to all State Directors of Vocational Education and to Directors of the territories including Guam, Puerto Rico, District of Columbia, and the Virgin Islands concerning the use of competency examinations in their respective states (see Appendix B for sample questionnaire). The questionnaire consisted of two parts. Part I was to be completed if the state was presently using competency examinations as a means of certifying or testing trade and industrial teachers. This part was designed to determine such aspects of competency examinations as: types of tests given, purposes of the test, length of tests, and problems involved in developing and administering the tests. Eleven states reported they were presently using competency exams.

Part II of the questionnaire was to be completed whether or not the state was using competency examinations. This part was designed to obtain valuable viewpoints of vocational educators as to the possibility of using competency examinations as a means of certifying vocational teachers. Many different viewpoints were expressed. These comments were made by State Directors of Vocational Education, or in some states, by State trade and industrial supervisors. Tables which show a summary of the answers and comments are presented in the following section.

Table VI shows a summation of the number of states completing the questionnaire. Many of the states are included in more than one entry.

TABLE VI

	Number of States
Number of questionnaires sent to state directors:	53
Number of completed questionnaires returned:	47
Number of states presently using competency tests:	11
Number of states presently planning to add competency tests as a means of certifying vocational teachers:	3
Number of states that may use competency tests in the near future:	19
Number of states not returning questionnaires:	7

### Summary of Survey Data - Part I

The following summary is part of the survey results from states which do use competency examinations. The tables are summaries of comments concerned with the questions of Part I of the questionnaire. A brief description of the question and resulting comments is provided preceding each of the tables. Each table includes the question as it was stated in the questionnaire and the summary of the results.

Table VII, is concerned with showing for each state, the trade areas covered by competency examinations. A list of trade areas was presented to the directors for selection, along with the opportunity to fill in the trade areas not included. Some of the directors were not specific in mentioning certain trade areas for which competency examinations were being used. The comments presented were: "70 different occupations included," "use all but a few," and "use all of these plus many others." Some of the trade areas mentioned by the directors were grouped under another closely related trade area. As an example, competency examinations in "auto-body" were included in the trade area of "automotive."

It has been found that many of these competency examinations were at various stages of development. Several of the states mentioned that their competency examinations had been developed and were in use, but had not been standardized.

The states which offer competency examinations are: California, District of Columbia, Kansas, Massachusetts, New York, Oregon, Pennsylvania, South Carolina, Texas, Wisconsin, and Michigan.

TABLE VII

Competency or trade tests are used as a means of certifying trade and industrial teachers in the program areas shown for the following states.	California	District of Columbia	Kansas	Massachusetts	New York	Oregon	Pennsylvania	South Carolina	Texas	Wisconsin	Michigan
	Automotive (Autobody)	X	X	X	X	X		X	X	X	X
Building trades*	X	X	X	X	X		X	X	X	X	X
Cabinet making	X	X	X	X	X		X	X	X	X	X
Communications	X		X				X				
Drafting	X	X	X	X			X	X	X	X	
Electrical	X	X	X	X			X	X	X	X	
Electronics (Radio, T.V.)	X	X	X	X	X		X	X	X	X	
Machinist	X	X	X	X	X		X	X	X	X	
Metalworking	X		X				X	X	X	X	
Printing	X	X	X	X	X		X	X	X		
Refrigeration and air conditioning (heating)	X	X	X	X	X		X				
Welding	X	X	X	X	X		X	X	X	X	
Cooking (baking)	X		X	X			X				
Diesel Mechanics				X			X				
Heavy equipment oper.							X				
Shop Repairs							X				
Needle trades							X				
Watch making							X				
Dress Making				X							
Cosmetology				X							
70 different occupations	X										

Note:

Though Michigan is presently developing, expanding, and refining competency tests some of these tests have been used for several years.

Table VIII, is a summary of data obtained from two different questions. It was necessary to determine from each state what type of tests were presently being used--performance, written and/or oral--and the time limit used for each test. Each of the states used performance and objective written tests and most of them used an oral test, sometimes in the form of an interview. An average time limit was determined for each type of test. One state had no time limit (NTL) on any of the tests.

TABLE VIII

3. <u>Types of Tests Used and Time Limit in Hours:</u>	California	District of Columbia	Kansas	Massachusetts	New York	Oregon	Pennsylvania	South Carolina	Texas	Wisconsin	Michigan	Average
	Performance	4	3	4	2	4-5	6	8	4	4	4	4
Written (Objective)	2½	3	4	2	3	2	4	4	2	3	3	3 hours
Oral		½	½	1		1	1		2	1	1	1 hour



One important consideration was to determine how competency examinations were presently being used in the various states. A list of possible uses for competency examinations was given each director to select from and also the opportunity to provide other uses not listed. Brief explanations concerning the use of competency examinations in each state are presented on the following page in Table IX.

Most of the examinations were given as a regular means for certification, although some were given only under special conditions, such as for determining occupational competency or for determining the number of semester hours credit to be given to a candidate for his work experience.

TABLE IX

4. <u>Competency tests are used:</u>	
California	As a regular means of certification, for determining occupational competency and to determine whether or not the teacher will be certified.
District of Columbia	"For probational appointment."
Kansas	As a regular means for certification. "The official Teacher Training Institution administers the examination to undergraduates majoring in T & I for 24 college credits. May be used to determine weaknesses."
Massachusetts	For determining occupational competency and "to be eligible for entrance to Pre-employment Teacher Training course."
New York	As a regular means for certification; for determining occupational competency only.
Oregon	Under special conditions, such as to determine whether or not the teacher will be certified and "granting college credit for occupational experience toward the Baccalaureate Degree in trade and industrial education.
Pennsylvania	As a regular means for certification.
South Carolina	"As one requirement for certification."
Texas	Only under special conditions such as for determining occupational competency only.
Wisconsin	As a regular means for certification "of trade instructors" "sometimes necessary to determine weaknesses if any so that they may be corrected."
Michigan	Only under special conditions such as for determining occupational competency only.

This question was designed to determine what personnel were responsible in developing the competency examinations presently being used in each of the states. Each director or his representative, was to select a response from the list presented of possible groups, or to add a specific group if it had not been included. Committees of qualified trade teachers and experts from industry had much to do with the preparation of tests in most of the states as indicated in Table X below.

TABLE X

<p>5. <u>These competency tests were prepared by:</u></p>	
<p>California</p>	<p>Qualified trade teachers and experts from industry.</p>
<p>District of Columbia</p>	<p>State trade and industrial staff.</p>
<p>Kansas</p>	<p>Committee of trade teachers.</p>
<p>Massachusetts</p>	<p>Qualified trade teachers and experts from industry.</p>
<p>New York</p>	<p>Committee of trade teachers and state officials.</p>
<p>Oregon</p>	<p>State department and teacher training institutions.</p>
<p>Pennsylvania</p>	<p>"Teacher trainers, qualified trade teachers, &amp; experts from the field involved."</p>
<p>South Carolina</p>	<p>State department and teacher training institutions.</p>
<p>Texas</p>	<p>Qualified trade teachers and experts from industry; committee of trade teachers and state officials.</p>
<p>Wisconsin</p>	<p>Qualified trade teachers and experts from industry; state department and teacher training institutions; state trade and industrial staff; "Joint Advisory Committees."</p>
<p>Michigan</p>	<p>Teacher trainers, qualified trade teachers and experts from the field involved.</p>

The purpose of this question was to determine when the individual took the competency examinations--either before or after employment. The data shown in Table XI below, are the selections made by the directors from a given list of possible answers. Opportunity was also given for comments. This data should be considered along with the data from Table IX because they may directly affect each other. The results showed that most of the examinations are given before employment, although several of them may be given either before or after and under special conditions.

TABLE XI

6. <u>Competency or trade tests are given:</u>	
California	Before employment "with few exceptions (written only)."
District of Columbia	Either before or after employment.
Kansas	Either before or after employment; "all teachers must pass the examination before the start of their 2nd year of teaching."
Massachusetts	Before employment.
New York	Before employment.
Oregon	Either before or after employment.
Pennsylvania	"Teachers teach on a temporary certificate, & take the test as soon as possible."
South Carolina	Either before or after employment mentioned.
Texas	Before employment.
Wisconsin	After employment.
Michigan	Before employment.

The purpose of this question was to determine who was responsible in each state for administering the competency examinations. The results presented in this table may be compared with the results presented in Table X and Table XIII to determine if competency examinations are developed, administered, and graded by the same group of individuals. Data listed in Table XII show that the state teacher trainers or teacher training institutions are primarily responsible for administering the competency examinations.

TABLE XII

8. <u>Official responsibility for administering these competency or trade tests in given state:</u>	
California	"Supervisor of Testing."
District of Columbia	"Board of examiners."
Kansas	"Teacher training institutions."
Massachusetts	"Teacher training staff under Asst. State Director."
New York	"Either authorized unit of state university or State Education Department."
Oregon	"State teacher training institution (Oregon State)."
Pennsylvania	"3 universities - Vocational Teacher Ed. Dept."
South Carolina	"Any one of the state teacher trainers."
Texas	- - - - -
Wisconsin	"State T & I staff delegated by State Director."
Michigan	Vocational approved teacher training institution.

This question was designed to determine who was responsible for grading competency examinations. The data, in Table XIII below, shows that most of the competency tests were graded by the same personnel that prepared the tests or by teacher trainers. In some cases this was the same person. In some cases, various parts of each test were graded by different individuals.

TABLE XIII

9. <u>Competency tests are graded by:</u>	
California	Teacher trainers "(objective tests; Secretary to Supervisor)."
District of Columbia	State trade and industrial staff.
Kansas	"Teacher who administered the examinations."
Massachusetts	Same personnel that prepared the trade tests.
New York	"Examiners who are teachers of the subject and selected and appointed by one of the agencies.
Oregon	Craft committees; teacher trainers.
Pennsylvania	Teacher trainers.
South Carolina	Same personnel who prepared the trade tests.
Texas	Same personnel who prepared the trade tests.
Wisconsin	State trade and industrial staff "written and performance"; craft committees "(oral)."
Michigan	Vocationally approved teacher educator.

The purpose of this question was to determine what effect a "failure to pass a competency examination" would have on the applicant being tested. Results from Table XIV below should be compared with the results from Table IX because they are both related to the purpose and use of competency examinations. Although many answers are presented in this table, the basic outcome of a person not passing a competency examination is that he will not be presently certified to teach trade and industrial courses and must take some kind of additional preparation.

TABLE XIV

10. <u>"Failure to pass a competency exam" may affect the person being tested because:</u>	
California	He does not receive a teaching certificate "unless certificate release requested by school administrator."
District of Columbia	He is not given a permanent appointment.
Kansas	He must withdraw from teacher training courses "if undergraduate." He will not be certified to teach trade and industry; he does not receive a teaching certificate.
Massachusetts	"Not eligible for entrance to pre-employment Teacher Training course."
New York	He will not be certified to teach trade and industry.
Oregon	"Does not receive certificate if the examination is the critical factor."
Pennsylvania	He will not be certified to teach trade and industry; he is not given a permanent appointment.
South Carolina	He is not given a permanent appointment "Emergency permit is given until he can make better preparation and the test re-given!"
Texas	He will not be certified to teach trade and industry.
Wisconsin	Additional work will be assigned to him. "Selection Prior to exam is important."
Michigan	He is not certified.

This question is closely related to the data presented in Table XIV. Its purpose is to determine if an applicant may be retested after he has once failed the examination and what procedures are necessary before he may be retested after he has once failed the examination. Most of the directors reported that an applicant could be retested after waiting a specific length of time or upon the completion of further study.

TABLE XV

11. <u>If the applicant fails the competency exam once, he may be retested again; but under the conditions of:</u>		
California	Yes	"waiting a period of 6 months."
District of Columbia	Yes	"waiting one year."
Kansas	Yes	"taking the test at a later date after deficiency is made up."
Massachusetts	Yes	"same, except following year."
New York	Yes	"if his score is not under 60 (passing grade 75)."
Oregon	No	- - - - -
Pennsylvania	Yes	"must wait at least 1 semester, and show evidence of further work."
South Carolina	Yes	"further study."
Texas	Yes	"if requested."
Wisconsin	No	"refer to question 10."
Michigan	Yes	"if requested."

This question was designed to determine the length of time that competency examinations have been used by each state. It is expected that competency examinations would be better developed and better evaluated after a number of years of usage. Most of the directors reported that competency examinations had been in use for more than fifteen years in their state. It is expected that the tests themselves and their usage have greatly changed during the period of time they have been employed. Table XVI below, shows the approximate number of years that competency examinations have been used in each state.

TABLE XVI

12. <u>Competency tests have been used:</u>	
California	"Since 1925."
District of Columbia	"30 years."
Kansas	"At least 10 years."
Massachusetts	"Written tests 50 years - Performance tests 15 years."
New York	"At least 20 years."
Oregon	"Five years for credit for occupational experience; newly instituted for certification."
Pennsylvania	"Uncertain. At least 30 years."
South Carolina	"Approximately 25 years."
Texas	"20 years."
Wisconsin	"15 years (since 1950)."
Michigan	"Several years."

Although these states may have developed competency examinations, there may be no data concerning their validity or reliability. The purpose of this question was to determine if the competency examinations used by each state had been standardized and if so, under what conditions. Table XVII below, provides the answers and comments made by each director.

TABLE XVII

13. <u>Have these competency tests been standardized?</u> <u>The condition of this standardization is:</u>	Yes	"Rating criteria under development. Distribution curves constant attention to internal validity."
California	No	
District of Columbia	No	
Kansas	Yes	"To some extent."
Massachusetts	No	
New York	No	
Oregon	No	
Pennsylvania	No	"More or Less."
South Carolina	Yes	
Texas	No	
Wisconsin	No	"Only to the extent that they are state office standards."
Michigan	No	

A competency examination that was developed thirty years ago may be of little use today. Each examination must be constantly revised to keep up with changing technology in each of the trade areas. The purpose of this question was to determine when these examinations were last revised, or how often they are being revised. Table XVIII below, shows each state director's comments concerning the revision of competency examinations.

TABLE XVIII

14. <u>These competency tests are revised:</u>	
California	Depending upon changes in industry; "item analysis by candidates i.e. ambiguities and other errors commented on, in writing; reviewed by test writers; revised."
District of Columbia	Each time used.
Kansas	Each time used "minor changes." "We are making plans to completely revise all the examinations in June, 1966 at the T & I workshop."
Massachusetts	Each time used.
New York	"No specific time period."
Oregon	"No set time."
Pennsylvania	Depending upon changes in industry.
South Carolina	"As the need arises and on advice of various advisory councils."
Wisconsin	Depending upon changes in industry.
Michigan	"No set time."

If a fee is involved in the administration of the competency examination, there may be some affect on the applicant taking the examination. The purpose of this question was to determine if any fee was required, what type of fee was required, and who paid the fee. In Table XIX below, the responses and comments of the directors concerning this question are presented.

TABLE XIX

15. Fees involved in the administration of competency tests are shown below.

STATE	Is any fee involved?	What kind of fee?	Who pays this fee? (Remarks)
California	Yes		Written - "None" "Manipulative - \$20.
District of Columbia	No fee		
Kansas	Yes	\$25 to instructor administering the examination	Paid by "State Board for Vocational Education"
Massachusetts	No fee		
New York	Yes	"Examination fee"	Paid by "Candidate"
Oregon	Yes	"College exam fee"	Paid by "Teacher"
Pennsylvania	Yes		Paid by "Examinee"
South Carolina	No fee		
Texas	No fee		
Wisconsin	No fee		
Michigan	Fee	\$50 fee	Paid by "Examinee"

It is expected that certain problems will exist concerning the development of competency examinations. These problems may have some bearing as to the use of competency examinations. It is hoped that with the development of future competency examinations some of the problems identified may be avoided. Presented in Table XX are some of the problems encountered by the states in the development of these examinations.

TABLE XX

16. <u>Problems encountered in preparing these tests include:</u>	
California	"Finding capable and willing test writers."
District of Columbia	"None"
Kansas	"Not enough time to coordinate administrative and make-up of examinations. Lack of budget to utilize advisory committees from industry teachers, etc., to develop a good examination."
Massachusetts	"No problems."
New York	"Staff time to revise examinations and to distribute them. Defining the fields."
Oregon	"Insufficient use to warrant preparing in most occupational areas. Lack of qualified personnel with time to develop examinations."
Pennsylvania	"Keeping them up to date. Preparing new tests for new occupations. Establishing norms."
South Carolina	"No specific ones."
Texas	"None."
Wisconsin	"Finding qualified people to assist in preparing adequate question material."
Michigan	"Finding capable test writers."

This question is closely related to question #16. It is also expected that certain problems will exist with regard to the administration of competency examinations. It is hoped that by having a knowledge of some of these problems, they will be avoided in the future. Table XXI presents some of the problems encountered by the states in the administration of these examinations.

TABLE XXI

17. <u>Problems encountered in administering these tests include:</u>	
California	"After 22 years of experience, I can't recall any persistence of insurmountable problems. Occasional annoyance i.e. test cancellations (Manipulative)."
District of Columbia	"None."
Kansas	"We need more than 1 instructor evaluating the skill phase of the examination. Plans are being made to correct this."
Massachusetts	"Obtaining sufficient number of live cars for performance tests."
New York	"Facilities and finding highly competent examiner."
Oregon	"Availability of qualified personnel to evaluate performance."
Pennsylvania	"Relatively few, really."
South Carolina	"None."
Texas	"Securing shop facilities & scheduling test to suit convenience of all concerned."
Wisconsin	"(1) Bringing together examining committee (2) Finding an adequate time for scheduling examinee due to teaching schedule."
Michigan	"None."

It is important to determine how well competency examinations have been accepted in those states that are presently using them. Each director was to estimate how well the use of these examinations had been accepted in his state by selecting a response of "VERY WELL," "SATISFACTORY," or "POORLY." Most of the state directors reported that these examinations had been accepted "VERY WELL," as indicated in Table XXII below.

TABLE XXII

18. <u>Vocational educators have accepted these tests:</u>	
California	Very well
District of Columbia	Very well
Kansas	Satisfactory
Massachusetts	Very well
New York	Very well
Oregon	Satisfactory
Pennsylvania	Very well
South Carolina	Very well
Texas	Very well
Wisconsin	Very well
Michigan	Very well

Table XXIII below, presents some additional information and comments which the directors felt to be pertinent concerning competency examinations.

TABLE XXIII

19. <u>Pertinent additional information concerning competency tests includes:</u>	
California	- - - - -
District of Columbia	- - - - -
Kansas	"We are making plans to administer the exam <u>before</u> the craftsman begins teaching, not after he has taught one year. A charge is being planned for all taking the exam."
Massachusetts	- - - - -
New York	- - - - -
Oregon	"State certification regulations for vocational trade & industrial and technical teachers provide for 48 quarter hours of subject matter preparation, all or part of this credit may be granted by the graduating institution on the basis of formal evaluation of practical occupational experience. It is planned to use competency examinations extensively for this purpose."
Pennsylvania	- - - - -
South Carolina	- - - - -
Texas	"Such tests are used only when an applicant does not have quite the amount of trade experience required for approval."
Wisconsin	- - - - -
Michigan	- - - - -

## Summary of Survey Data - Part II

Part I<sup>7</sup> of the survey questionnaire was designed to determine what professional opinions were held by the State Directors of Vocational Education concerning the use of competency examinations. These opinions and viewpoints were expected to greatly influence the decision to develop competency examinations by this research project. If most of the state directors had expressed opinions which opposed the use of competency examinations, then their development and usage would have been seriously hindered and perhaps terminated. However, the comments made by the state directors were favorable toward the use of these examinations and supported their development and use.

Although there was general agreement among the state directors that competency examinations can be used in vocational teacher certification, there is a great controversy concerning how these examinations may be used. Essentially, this controversy exists in determining if competency examinations can substitute for any of the recognized work experience (on journeyman's level in the trade area) that is required by most states. Disagreement also existed among state directors as to how much recognized work experience can be substituted by successful scores on competency examinations or by education in related areas.

Expressed in Table XXIV is the summary of comments concerning the questions on Part II of the questionnaire. Each question is stated as it was on the survey instrument and the number of state directors responding to each choice is also included.

The purpose of the first question was to determine the immediate future trends of the use of the state's competency examinations. The results showed that presently more than one-half of the states may plan to add competency examinations as a means of certifying vocational teachers.

TABLE XXIV

1. Is your state presently planning to add competency exams as a means to certify vocational education teachers?
- 3 State Directors indicated: "YES"  
 17 State Directors indicated: "NO"  
 19 State Directors indicated: "MAYBE IN NEAR FUTURE"
2. Competency or trade tests may be used as a possible means of certifying trade and industrial education teachers.
- 8 State Directors indicated: "STRONGLY AGREE"  
 27 State Directors indicated: "AGREE"  
 7 State Directors indicated: "DISAGREE"  
 0 State Director indicated: "STRONGLY DISAGREE"
3. A successful score on a competency or trade test can serve as a substitute for the required work experience necessary for certification of trade and industrial teachers.
- 0 State Director indicated: "STRONGLY AGREE"  
 16 State Directors indicated: "AGREE"  
 18 State Directors indicated: "DISAGREE"  
 5 State Directors indicated: "STRONGLY DISAGREE"
5. A successful score on a competency or trade test plus a Baccalaureate Degree in Industrial Education may be used as a substitute for recognized work experience for certifying trade and industrial education teachers.
- 1 State Directors indicated: "STRONGLY AGREE"  
 14 State Directors indicated: "AGREE"  
 16 State Directors indicated: "DISAGREE"  
 5 State Directors indicated: "STRONGLY DISAGREE"
6. A successful score on a competency or trade test plus a Baccalaureate Degree in Industrial Education plus at least three years of teaching experience in the same or related industrial education field may be used as a substitute for recognized work experience for certifying trade and industrial teachers.
- 0 State Director indicated: "STRONGLY AGREE"  
 19 State Directors indicated: "AGREE"  
 14 State Directors indicated: "DISAGREE"  
 6 State Directors indicated: "STRONGLY DISAGREE"

The last four questions were designed to determine the reactions of the directors concerning the use of competency exams as a possible means of certifying trade and industrial education teachers. An additional purpose was to determine if a successful score on a competency exam, plus varying degrees of education and teaching experience, may substitute for recognized work experience. The results showed that most of the directors agreed that competency tests may be used as a possible means of certifying trade and industrial education teachers. Concerning the use of competency examinations, education, and teaching experience as a partial substitute for recognized work experience, the number of directors agreeing and disagreeing was about equal.

Also, expressed by most of the respondents were comments made clarifying some of their responses. All comments made concerning any disagreement as to the use of competency examinations, are presented in the following pages. An opportunity was given to the state directors to make any additional comments concerning the use of competency examinations which might be pertinent. A brief summary concerning these additional comments is presented at the end of this section.

### Comments Made by State Directors

If the state director disagreed as to the present use of competency examinations, he was asked how competency or trade examinations might be used as a means of certifying trade and industrial education teachers. Following are their individual comments.

"Competency or trade tests may be used to partially substitute for work experience in cases where the applicant may have some work experience deficiency. Also, the competency or trade test can be valuable in determining knowledge acquired through work experience."

"As one of the factors to consider in the prospective teacher's competency. If skills and knowledge alone were all that are taught, the answer would be yes. However, the person must be accepted in the field as a competent craftsman before the students will be accepted by the industry.

Competency exams can be used to verify occupational experience and knowledge but cannot substitute since the instructor must be accepted by the industry before students are accepted by that industry."

"Never the sole means of certification."

"Combination of occupational experience and professional education."

"The test would show that the persons had some knowledge of the occupation."

"Competency tests may be used to validate the effects of specialized training programs. This is a no good substitute for experience and proper training."

"To determine occupational skills proficiency."

"Some means is needed to determine trade competency even after work experience."

"If the applicant lacks a year of the required 5 years work experience required of trade and industrial teachers who do not have a B.S. degree. Also as a means of earning credits in a program leading to a B.S. in industrial education."

"As a check."

"To help determine breadth of experience and competency as a partial evaluative instrument."

"May be beneficial in partially determining the applicant's knowledge of the trade. In my opinion, there is no substitute for experience. Trade competency tests may be used to determine knowledge and skill in a particular trade. They should be used at the discretion of the person in charge of the training program. The main objections to the tests are: (1) Time consuming for the

administrators and the applicants. (2) Expensive-- loss of time, cost of travel. (3) Many discourage prospective candidates from filing applications."

"Competency tests may be used in conjunction with educational training and work experience."

"Competency or trade tests could serve as a substitute for part of the required work experience. I sincerely feel that instructors of trade and industrial preparatory programs must have some successful work experience which will provide a knowledge of the occupational practices, equipment and processes."

"As a partial substitute for work experience. Actual experience gives more than work competency."

"Not all who have wage-earning experience are necessarily as competent in the trade as they should be to teach it to others. By using trade tests we could shorten and vary the amount of work experience."

"Only as a means of determining if they are competent to be approved to work toward certification."

"To furnish additional information for evaluation."

"To confirm strengths or show weaknesses of trade competencies in the field for which trained. Training would have been earned over a six-year period of full-time employment."

"To verify depth and breadth of work experience."

Those state directors who did not consider competency or trade examinations as a means of certifying trade and industrial education teachers were asked to state their point of view. Following are their individual comments.

"Our code requires 3 years of journeymans, or comparable, experience beyond the learning period, a total of 7 years in most occupations. (Printing 8 years) Don't know why the number "7" is sacred. A manipulative test would tell the story. Internal validity of tests--standard procedures of administration--reliability checks."

"I feel that trade experience can be accelerated, but seriously doubt that it can be eliminated. It is difficult if not impossible to appreciate the tradesmen's outlook without actual trade experience."

"Competency or trade tests can possibly serve as one of the factors in certifying trade and industrial education teachers."

"Must successfully complete required 260 clock hours teacher training course."

"Competency or trade tests should be used to supplement the information on application and as a measure to insure trade knowledge and skills."

"No competency test can evaluate judgments attained on the job. These are important in Vocational Education for student placement and success."

"A Baccalaureate degree plus 2 or more years of work experience would be highly desirable."

"There are far too many different occupations and occupational areas to make this practical. I doubt that occupational competency can be evaluated by testing since it involves a complex understanding as well as special skills and knowledge."

"The real purpose of trade or occupational training is to help the student become employable. One who has 'gone through the mill,' so-to-speak, is best equipped to teach students to avoid many of the pitfalls of employment. I can see a distinct value of properly designed and constructed trade tests being used along with wage earning experience."

"We issue certificates only after a person has been approved as trade competent and has completed 12 semester hours of teacher-training courses."

Opportunity was given to the state directors to provide any additional comments which they considered important in the use of competency examinations as a means for certifying trade and industrial teachers. Following are their additional comments.

"Not for certification, but rather for selection to determine occupational competency and before employment."

"In evaluating answers to Part II, it should be understood that a successful score on the competency tests used requires verification of at least some work experience or occupational training."

"I am assuming that 'competency' examinations would include written examinations, and most important, practical examinations to some extended length--given by a highly competent craft committee."

"Competency or trade tests can be a part of a balanced certification program; however, it is doubtful if a competency examination can fully determine competencies which can usually only be acquired through actual work experience in the specific occupation. There are many actual work experiences that cannot be predicted and consequently it would be difficult to realistically test. Often vocational education programs are in reality pseudo training situations and represent a wide gap between training and what the occupation demands. Competency or trade tests should be utilized in a manner to close the gap rather than to widen it."

"Competency examinations do have value. One individual could work at a trade for ten years and not know as much about it as another individual with two or three years experience. Experience is important and necessary as one factor in teaching."

"The ability to teach is more important than having competency in a skill. Some fundamentals, yes--but not a journeyman."

6\* "With reservation, that such, teaching experience should be in trade oriented instruction not industrial arts and must be the same, not related only. I believe that competency tests may be used to evaluate the effect of experience which may be less than current or freshly up-to-date. Satisfactory on-the-job performance over an extended period is evidence of performance ability. Teaching methods may still be needed, etc."

"Some work experience should be required. Number of years required could be based on performance on competency tests."

"A competency exam is one more assurance that the candidate is apt to succeed."

6\* Pertains to Question 6.

"It is not possible to acquire the industrial oriented judgments and intelligence needed by trade and industrial teachers with actual experience in industry. The teaching of 'judgments' and provision of opportunities for students to develop 'intelligence' have always been important requirements in occupational teaching."

"The use of trade tests should be encouraged. The cost and time for administration must be considered as a factor in determining usage."

"We feel that not only should competency tests be given, but should be given for college credit for non-degree teachers (in certification plan). Some non-degree teachers would steadily strive for a degree if credits were allowed."

"In my opinion, any person who is to teach a trade or industrial subject which is designed to prepare students for employment in industry should have had considerable industrial work experience. There is no substitute for a personal knowledge of industrial processes, procedures and production methods which is vital to the teaching of any trade."

"Competency or trade tests could be used to assist in determining the extent and quality of trade knowledge in both theory and practice."

"Still must have professional teacher training. Must have some practical work experience."

"Competency or trade tests could serve partially as a means of certifying trade and industrial teachers. A person might be able to do a job and not teach it."

"Although I agree that competency or trade tests should be used as a criteria for selecting T & I teachers, I honestly believe that experience should be given serious thought. The individual that has had experience has a better understanding and different outlook about the world of work. Through this knowledge his teaching can be very rewarding to the student."

"I don't believe you can equate trade experience with a trade competency examination."

"Competency tests might be valuable in evaluating trade and industrial teachers; however, other factors such as work experience and formal training should be included in certifying trade and industrial teachers."

"Competency or trade tests should be given to those applicants who have the required work experience and that work experience is not always indicative of occupational competency."

6\* "No provision for actual industrial experience to support education and teaching. This would imply that industrial arts teachers could qualify upon successful completion of competency tests."

"I consider actual work experience in the related industry as an absolute necessity along with academic training plus testing plus refresher work periods in industry for which we allow credit toward upgrading his certificate."

### Summary of State Directors' Comments

Those state directors who disagreed that competency exams could serve as a substitute for required work experience presented their comments as to how competency exams could be used. Essentially, they believed that competency examinations should never be used as the sole means of certification but rather they should be used to verify occupational experiences, knowledge, and proficiency skills; to act as a partial substitute for work experience; and to furnish additional information for evaluation. Actual work experience was considered to be very important in the preparation and certification of vocational teachers.

Several state directors felt that there was no possibility of using competency examinations as a means for certification. If these exams were used at all, it would be only in a manner where the results of the examination supplemented the entire requirements established by the state. These viewpoints expressed doubt that competency exams could ever be developed and they would be able to effectively evaluate judgments, occupational competency, complete understandings and special skills which are obtained by actual work experience.

Additional comments brought about a variety of viewpoints. One comment which expressed the view of many of the state directors is that "Competency or trade tests can be a part of a balanced certification program and may be used to assist in determining the extent and quality of trade knowledge in both theory and practice." However, some work experience is still considered important to gain the necessary trade knowledge and skills. No other specific procedures were mentioned where such knowledge and experience might be obtained.

Development of Competency Examinations and Testing Procedures for the State of Michigan

It was determined from the evaluation of the survey questionnaire, that it was necessary to develop three types of tests. These were oral, written (objective), and performance tests for each subject area. The written portion of the instrument was found to be the most difficult and time consuming part to develop. The step-by-step procedures taken in the development of the written portion of the testing instruments are as follows:

1. An analysis of the trade area was first developed. Several different analyses for each trade area were assembled, analyzed, and evaluated to provide information concerning the trade area. A comprehensive analysis of the trade area was then derived from the several different analyses and reviewed by the research staff and by an Eastern Michigan University vocational teacher educator concerned with that particular trade area.

2. A large number of multiple choice and "True and False" questions were developed and organized into groups coinciding with the various parts of the trade area analysis. These questions were selected either from presently used tests or were developed from subject matter in that trade area. The number of questions selected for each group approximated the percentage of emphasis that was given each part of the trade analysis. After a sufficient number of questions had been selected (approximately 1500 questions for each trade area), an initial screening of these questions was made by the research personnel and the Eastern Michigan University Vocational teacher educator concerned with that particular trade area. The questions were then typed in a rough draft.

3. A committee for each trade area was selected to evaluate the trade analysis and the rough draft of the trade examination. The committee consisted of two members representing industry in the particular area involved; two members representing vocational education, the Eastern Michigan University vocational teacher educator acting as chairman, and the

research staff of this study. The purpose of each committee was to evaluate the trade analysis as to its completeness in trade area coverage and to the degree of importance that each area of the trade analysis was given on the tests. Next, the committee evaluated the first draft of the tests; not their design or length, but the technical content of the tests. Certain areas were given too much emphasis by way of the number of questions involved, while other areas needed more emphasis. Certain questions needed to be revised for clarity and correctness. After the committee members individually reviewed the trade analysis and the tests, they assembled at Eastern Michigan University campus to discuss the tests and present their comments and recommendations. The committee also presented recommendations concerning the most common experiences which vocational trade teachers should be capable of performing in the area concerned. From these recommendations a suitable list of experiences was developed for use in the performance test for that area.

The semi-final revision was then completed on the written tests. The tests were then broken down into forms A, B, and C, depending on the number of available questions to complete each form. Each form consisted of about three hundred questions. Several questions (those considered to be basic) were included on more than one form. The purpose of developing more than one form of the test was to insure re-usage of the test. If a teacher candidate took form A and failed, he could retake the test later, but the second time, he would be given form B, and a third time, form C. Each trade examination has a sufficient number of questions available to replace any questions which prove invalid while the test is being refined and validated during phase II of this research project.

PART III SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Phase I

Conclusions of Phase I

Recommendations for Further Research (Phase II)

## Summary of Phase I

The purpose of this experimental project was to determine more effective vocational teacher certification procedures in Michigan through the use of competency examinations. Of particular interest was the development of competency examinations for use in certification of trade and industrial teachers.

An extensive review of literature was completed including: a review of the new State Plans of Vocational Education for the various States and Territories; a questioning instrument completed by the State Directors of Vocational Education of the various states; and other professional literature. From these sources much valuable information was obtained concerning the present status of competency examinations in the United States.

The testing instruments and procedures were then developed. This involved analyzing the various trade areas and deriving the necessary content to be included in the testing instruments. To test the teacher candidate's technical knowledge and skills, and competency, oral, written (objective type), and performance tests were developed, including the necessary testing procedures.

The written portion was developed by: assembling a large number of questions for each trade area; making an initial selection of appropriate questions corresponding to the emphasis put on each part of the trade area analysis; having a committee consisting of tradesmen from industry and vocational teachers evaluate the questions; and a final revision. Each test was then divided into various forms (forms A, B, and C) each consisting of three hundred questions. The oral and performance tests were developed from recommendations presented by the committee members who were instrumental in reviewing the trade analysis and the content of the tests.

### Conclusions of Phase I

The general hypothesis of this experimental project was that better results can be obtained in vocational teacher certification in Michigan by establishing well designed competency tests and testing procedures which will be accessible to more majors in industrial education. After making an extensive review of literature and developing these tests and testing procedures, this hypothesis has proven to be even more truthful. Many states are already using competency examinations with great success and several more will soon begin using them. A majority of vocational educators express opinions that competency examinations have real value in the certification of vocational teachers.

Michigan has already made stipulations for the use of competency examinations under special conditions. However, the vocational teacher educators at the designated state institutions have had no universal means of determining a teacher candidate's knowledge and skills. It is then a matter to develop these examinations so that they may be used effectively as a means of certifying teacher candidates in trade and industrial education.

These competency examinations are now being developed. Some vocational educators may still believe that competency examinations can not be used effectively for certification. However, the usefulness and validity of these examinations are expected to be shown in Phase II of this experimental project which will deal with the refinement and validation of the testing instruments and procedures.

If competency examinations are put to maximum use, they will be very effective in: (1) determining the technical

knowledge and skills of vocational teacher candidates; (2) increasing the number of vocational teachers; (3) indicating the areas of weakness of those who failed the examination; (4) improving the quality of the teachers.

## Recommendations for Further Research

Although the testing instrument and procedures are being developed and will be ready for use soon, the tests will require further research and development to increase their validity and reliability. Phase II is suggested as a separate but essential extension of this whole project to determine validity and reliability of these competency examinations: to develop norms and standards; and to evaluate the project. Even after phase II, constant evaluation and revision of these tests and testing procedures will be necessary because of the changing conditions in each trade area. Tests and testing procedures should also be developed for other trade areas not covered by this research project.

### 1. Development of Norms and Standards, and Validation of the Tests and Testing Procedures

The population to be used for validation purposes should be randomly selected from presently active vocationally certified teachers in Michigan. Also a randomly selected population from industry should be used. These two groups will be given the same tests. After the test, each individual who took the test should be given a few minutes to react by writing appropriate comments concerning the test in general. Statistical analyses and correlations will then be made and the necessary norms and standards developed.

### 2. Evaluation of the Project

This experimental research project will be considered successful if in its evaluation two indications are found to be evident from the data. First, if the number of certified vocational teachers is increased beyond those certified by the present system. This can easily be done with statistical

analysis considering that all the data will be available in the files of the project.

Second, the quality of the newly certified teachers should be improved. This part of the evaluation is somewhat difficult to measure or quantify. However, a follow-up procedure will be used involving all teachers certified by this system. The data collected from these follow-up questionnaires will be used for the final evaluation to determine the quality of the newly certified teachers as well as to make changes on the project before transferring it entirely to the State Division of Vocational Education.

**APPENDIXES**

Data-Collecting Instrument  
Correspondence Used in the Study  
Bibliography  
Names of Committee Members

**CERTIFICATION OF TRADE AND INDUSTRIAL TEACHERS  
BY COMPETENCY EXAMINATIONS**

**PART I**

1. Does your state use any competency or trade tests in the certification of trade and industrial education teachers?

YES

NO

If you have checked "NO" on question No. 1, please turn to PART II, page 5.

2. In which of the following programs are competency or trade tests used in your state as a means of certifying trade and industrial teachers? Please check the program listed below, adding those not listed.

- |  |  |                                |
|--|--|--------------------------------|
| <input type="checkbox"/> <u>Automotive</u>       | <input type="checkbox"/> <u>Machinist</u>                              | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Building Trades*</u> | <input type="checkbox"/> <u>Metalworking</u>                           | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Cabinet Making</u>   | <input type="checkbox"/> <u>Printing</u>                               | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Communications</u>   | <input type="checkbox"/> <u>Refrigeration and<br/>Air Conditioning</u> | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Drafting</u>         | <input type="checkbox"/> <u>Welding</u>                                | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Electrical</u>       | <input type="checkbox"/> <u>Cooking</u>                                | <input type="checkbox"/> _____ |
| <input type="checkbox"/> <u>Electronics</u>      | <input type="checkbox"/> _____   | <input type="checkbox"/> _____ |

\*Building Trades includes Carpentry, Plumbing, and Masonry.

3. Which of the following types of competency tests are used in your state?

- |   |   |
|---|---|
| a. <input type="checkbox"/> Performance         | d. <input type="checkbox"/> Oral                        |
| b. <input type="checkbox"/> Written (objective) | e. <input type="checkbox"/> Other, please specify _____ |
| c. <input type="checkbox"/> Written (essay)     | _____   |

4. These competency or trade tests in your state are used - - -

- a.  as a regular means for certification.
- b.  only under special conditions, such as - - -
- for determining occupational competency only.
  - to determine weaknesses, if any, so that they may be corrected.
  - to determine whether or not the teacher will be certified.
  - Other, please specify \_\_\_\_\_

5. These competency tests were prepared by - - -
- qualified trade teachers and experts from industry.
  - state department and teacher training institutions.
  - committee of trade teachers and state officials.
  - state trade and industrial staff.
  - Other, please specify \_\_\_\_\_  
\_\_\_\_\_
6. Competency or trade tests are given - - -
- before employment.
  - after employment.
  - either before or after employment.
  - Other, please specify \_\_\_\_\_  
\_\_\_\_\_
7. What is the length of the test period for the competency exams?
- Performance tests - \_\_\_\_\_ hours allowed to complete tests
  - Written tests - \_\_\_\_\_ hours allowed to complete tests
  - Oral tests - \_\_\_\_\_ hours allowed to complete tests
  - Other \_\_\_ \_\_\_\_\_ hours allowed to complete tests
8. Who is officially responsible for administering these competency or trade tests in your state? \_\_\_\_\_  
\_\_\_\_\_
9. These competency tests are graded by - - -
- same personnel that prepared the trade tests.
  - state trade and industrial staff.
  - craft committees.
  - teacher trainers.
  - other, please specify \_\_\_\_\_  
\_\_\_\_\_

10. How does "failure to pass a competency exam" affect the person being tested?
- a.  He must withdraw from teacher training courses.
  - b.  He will not be certified to teach trade and industry.
  - c.  Additional work will be assigned to him.
  - d.  He does not receive a teaching certificate.
  - e.  He is not given a permanent appointment.
  - f.  Other, please specify \_\_\_\_\_  
\_\_\_\_\_
11. If the applicant fails the competency exam once, may he be retested again?
- YES  NO
- If "YES", under what conditions? \_\_\_\_\_  
\_\_\_\_\_
12. How long have competency tests been used in your state? \_\_\_\_\_  
\_\_\_\_\_
13. Have these competency tests been standardized?
- YES  NO
- If so, under what conditions? \_\_\_\_\_  
\_\_\_\_\_
14. How often are these competency tests revised?
- a.  Haven't been revised yet.
  - b.  Each time used
  - c.  Depends upon changes in industry
  - d.  Every \_\_\_\_\_ years
  - e.  Other, please specify \_\_\_\_\_

15. Is there any fee involved in the administration of these tests?

YES

NO

If so, what kind of fee? \_\_\_\_\_

Who pays this fee? \_\_\_\_\_

16. What are some of the problems that you have encountered in preparing these tests? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17. What are some of the problems that you have encountered in administering these tests? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

18. How well have these tests been accepted by vocational educators in your state?

VERY WELL

SATISFACTORY

POORLY

\*\*\* Would you please attach a copy of these competency or trade tests to this questionnaire. If these tests are not available to you, please indicate how a copy may be obtained. \_\_\_\_\_

\_\_\_\_\_

19. Please add any additional information below concerning competency tests in your state which you feel is pertinent. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

PART II

Whether or not your state uses competency or trade tests as a means of certifying trade and industrial teachers, your professional opinion would be of great assistance to this research study.

Place an "X" in the appropriate box to indicate agreement or disagreement with the statement.

- 
1. Is your state presently planning to add competency exams as a means to certify vocational education teachers?
- YES                       NO                       MAYBE IN NEAR FUTURE
2. Competency or trade tests may be used as a possible means of certifying trade and industrial education teachers.
- STRONGLY AGREE       AGREE       DISAGREE       STRONGLY DISAGREE

<p>If you agree with the above statement, please answer questions 3, 4, 5, and 6; If you disagree, please answer question 7 only.</p>
---

3. A successful score on a competency or trade test can serve as a substitute for the required work experience necessary for certification of trade and industrial teachers.
- STRONGLY AGREE       AGREE       DISAGREE       STRONGLY DISAGREE
4. If you disagree, how may competency or trade tests be used as a means of certifying trade and industrial education teachers?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

5. A successful score on a competency or trade test plus a Baccalaureate Degree in Industrial Education may be used as a substitute for recognized work experience for certifying trade and industrial education teachers.
- STRONGLY AGREE       AGREE       DISAGREE       STRONGLY DISAGREE

A successful score on a competency or trade test plus a Baccalaureate Degree in Industrial Education plus at least three years of teaching experience in the same or related industrial education field may be used as a substitute for recognized work experience for certifying trade and industrial teachers.

STRONGLY AGREE       AGREE       DISAGREE       STRONGLY DISAGREE

\* \* \* \* \*

Since you do not consider competency or trade tests as a means of certifying trade and industrial education teachers, would you please state your point of view below:

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The space below has been left for any additional comments concerning competency examinations. Please feel free to add anything that you consider important in the use of competency examinations as a means for certifying trade and industrial teachers.

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### Correspondence Used in this Study

The following letters were used in correspondence with the State Directors of Vocational Education (to obtain a copy of the State Plans for Vocational Education and the completed questionnaire), and to the individuals serving as committee members to evaluate the trade analysis and the testing instrument. At the top of each letter is a brief explanation as to the purpose of the letter. Other correspondence used for this research project is not presented.

In the table below, the letters are listed in chronological order.

TABLE XXV

LETTERS	PURPOSE
Letter 1	A request to the State Directors for State Plan
Letter 2	A request to Directors to complete questionnaire
Letter 3	A request to Certain Directors for further certification information and to complete questionnaire
Letter 4	A request to certain Directors to complete questionnaire
Letter 5	A request to certain Directors to send State Plans and complete the questionnaire
Letter 6	A follow-up letter to Directors to complete questionnaire
Letter 7	A request to obtain presently used competency examinations for review purposes
Letter 8	A request to obtain presently used competency examinations for review purposes
Letter 9	A request to certain individuals asking that they serve on the evaluation committee
Letter 10	A letter of explanation to each committee member explaining the evaluation process.

This letter was sent to all State Directors of Vocational Education of the various states and territories asking that a copy of their State Plan for Vocational Education be sent for use in this research project.

## LETTER 1

Dear Sir:

Eastern Michigan University has been delegated the responsibility by the State of Michigan to investigate the present procedures and requirements for certification of trade and industrial teachers in the various states and territories. This research study will serve as the background information to the State Board for Control of Vocational Education to make possible changes and adjustments to their present procedures and requirements for certification of trade and industrial teachers.

The first step in this research study involves a review of the state plans of all states and territories to determine what other states are doing in regard to this problem. Therefore, I would kindly appreciate your mailing me a copy of your presently approved state plan for vocational education. If your state plan is being revised at this time, and copies cannot be released yet, please send me a copy of your previous approved state plan.

Your cooperation will be greatly appreciated. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to all State Directors of Vocational Education of the various States and Territories who sent State Plans for Vocational Education (showing certification requirements) to this research project. This letter asked each director that he give his assistance by completing and returning the attached questionnaire.

## LETTER 2

Dear Sir:

In August, a request was sent to you asking for a copy of your present state plan for vocational education. I have received that plan and it will be vital to our research study. I want to thank you for your immediate response and cooperation.

I again wish to ask for your help and cooperation by having you complete the attached questionnaire and return it at your earliest convenience.

Some states have been using competency (or trade) examinations as a means of certifying trade and industrial education teachers. Eastern Michigan University is conducting a research study to determine if this method of certification might be effectively used in Michigan to help decrease the critical shortage of trade and industrial teachers. Before a competency examination can be developed, we must know what other states are doing in regard to this method. As a vocational educator, your opinions and answers are greatly needed for consideration in establishing some basis for judging the value and possible use of competency examinations. All replies will be treated in a professional manner and will be used only for research purposes.

Your thoughtful consideration in this important professional matter will be sincerely appreciated. We will be pleased to supply you with the results of our project at your request. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to those State Directors who furnished State Plans to this research study, but the information did not show the certification requirements for Trade and Industrial teachers. This letter also asked each director to give his assistance by completing and returning the attached questionnaire.

### LETTER 3

Dear Sir:

In August, a request was sent to you asking for a copy of your present state plan for vocational education. I have received your state plan and I would like to thank you for your immediate response and cooperation. I find, however, that your state plan does not include information concerning certification of trade and industrial teachers. If your state has any written information concerning procedures and requirements for certifying trade and industrial teachers, I would greatly appreciate your sending me this information.

I also wish to ask for your help and cooperation by having you complete the attached questionnaire and return it at your earliest convenience.

Some states have been using competency (or trade) examinations as a means of certifying trade and industrial education teachers. Eastern Michigan University is conducting a research study to determine if this method of certification might be effectively used in Michigan to help decrease the critical shortage of trade and industrial teachers. Before a competency examination can be developed, we must know what other states are doing in regard to this method. As a vocational educator, your opinions and answers are greatly needed for consideration in establishing some basis for judging the value and possible use of competency examinations. All replies will be treated in a professional manner and will be used only for research purposes.

Your thoughtful consideration in this important professional manner will be sincerely appreciated. We will be pleased to supply you with the results of our project at your request. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was used to communicate with those State Directors who replied to this research project that their State Plans for Vocational Education were presently not available. This letter also asked each director to give his assistance by completing and returning the attached questionnaire.

#### LETTER 4

Dear Sir:

In August, a request was sent to you asking for a copy of your present state plan for vocational education. I have received your reply and I would like to thank you for your immediate response and cooperation. I am sorry your state plan is not available. However, if your state has any written information concerning procedures and requirements for certifying trade and industrial teachers, I would greatly appreciate your sending me this information.

I also wish to ask for your help and cooperation by having you complete the attached questionnaire and returning it at your earliest convenience.

Some states have been using competency (or trade) examinations as a means of certifying trade and industrial education teachers. Eastern Michigan University is conducting a research study to determine if this method of certification might be effectively used in Michigan to help decrease the critical shortage of trade and industrial teachers. Before a competency examination can be developed, we must know what other states are doing in regard to this method. As a vocational educator, your opinions and answers are greatly needed for consideration in establishing some basis for judging the value and possible use of competency examinations. All replies will be treated in a professional manner and will be used only for research purposes.

Your thoughtful consideration in this important professional matter will be sincerely appreciated. We will be pleased to supply you with the results of our project at your request. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to those State Directors who did not reply to the original letter requesting a copy of the State Plan for Vocational Education. This letter also asked each director to give his assistance by completing and returning the attached questionnaire.

## LETTER 5

Dear Sir:

In August, a request was sent to you asking for a copy of your present state plan for vocational education. I have not received this state plan and find that I am in urgent need of your assistance in obtaining it. The content of this plan, particularly the section dealing with the procedures and requirements of certification of trade and industrial teachers, is vital to this research study.

I also wish to ask for your help and cooperation by having you complete the attached questionnaire and return it at your earliest convenience.

Some states have been using competency (or trade) examinations as a means of certifying trade and industrial education teachers. Eastern Michigan University is conducting a research study to determine if this method of certification might be effectively used in Michigan to help decrease the critical shortage of trade and industrial teachers. Before a competency examination can be developed, we must know what other states are doing in regard to this method. As a vocational educator, your opinions and answers are greatly needed for consideration in establishing some basis for judging the value and possible use of competency examinations. All replies will be treated in a professional manner and will be used only for research purposes.

Your thoughtful consideration in this important professional matter will be sincerely appreciated. We will be pleased to supply you with the results of our project at your request. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to those State Directors who did not return the completed questionnaire.

LETTER 6

Dear Sir:

Last month, a questionnaire was sent to you asking for information concerning the use of competency examinations in your state. Your opinions concerning the use of competency examinations were also desired. This questionnaire was sent to all State Directors of Vocational Education.

I have not received this information from you and urgently request your assistance in obtaining it. Your thoughtful consideration will be sincerely appreciated. If you have recently completed and returned the questionnaire, please disregard this request.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to those State Directors who did return the completed questionnaire and did indicate that their state used competency examinations, but that they had not been standardized. This letter was a request to determine how a copy of these examinations might be obtained to review for this study.

## LETTER 7

Dear Sir:

I have received from you the completed questionnaire concerning competency examinations and want to thank you for your assistance and responses. However, I must ask for your assistance once again.

Your responses in the questionnaire showed that your state uses competency tests, but that they have not been standardized. However, even though they have not been standardized, their design and content will be very valuable to our research study. I would greatly appreciate your sending me a copy of the competency tests presently being used in your state in the areas of automotive trade, construction trades, cooking, drafting, electricity, electronics, machine trades, printing, welding and refrigeration and air conditioning.

If these examinations are not available to you, please indicate how a copy may be obtained. I will accept full responsibility to see that these tests are treated in a confidential professional manner, kept secure, and used for research purposes only. The tests will be returned when you so desire.

Thank you for any assistance you are able to give, and I again stress the importance of obtaining a copy of these competency examinations.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to those State Directors who did return the completed questionnaire and did indicate that their state used competency examinations, but that the rating criteria were still under development.

LETTER 8

Dear Sir:

I have received from you the completed questionnaire concerning competency examinations and want to thank you for your assistance and responses. However, I must ask for your assistance once again.

Your response in the questionnaire showed that your state has standardized competency tests with rating criteria under development. Whether or not the internal validity of these tests has been determined, their content and design will be very valuable to our research study. I would greatly appreciate your sending me a copy of the competency examinations presently being used in your state in the areas of automotive trades, construction trades, cooking, drafting, electricity, electronics, machine trades, printing, welding, and refrigeration and air conditioning.

If these examinations are not available to you please indicate how a copy may be obtained. I will accept full responsibility to see that these tests are treated in a confidential professional manner, kept secure, and used for research purposes only. The examination will be returned when you so desire.

Thank you for any assistance you are able to give, and I again stress the importance of obtaining a copy of these competency tests.

Sincerely,

H. C. Kazanas  
Assistant Professor

This letter was sent to two Vocational educators and two industrialists asking that they serve on an evaluation committee to evaluate the trade analysis and trade examination for a specific area.

## LETTER 9

Dear Sir:

Eastern Michigan University requested and was delegated the responsibility from the State of Michigan to develop an experimental project to determine more effective vocational teacher certification procedures in Michigan. Special emphasis is being placed on a new approach in certification concerning the use of competency examinations.

Machine trades is one vocational area in which competency examinations (both written and performance) are now being developed. However, before these examinations may actually be used, they must be evaluated by several individuals who are experts in this area. You have been selected as an expert to serve on an advisory committee which will evaluate the items on this examination. The evaluation will consist of reviewing the examinations at your convenience, and then assembling as an advisory group to debate, discard or add various questions in these examinations.

The names of the members of this advisory committee will be included in the final report to the Michigan State Board of Control for Vocational Education. Your thoughtful consideration in this matter is of utmost importance to our profession. I sincerely hope you will be one of the individuals accepting this advisory responsibility.

Enclosed you will find a self-addressed reply card. I would greatly appreciate it if you would check your answer and mail this card as soon as possible. Thank you.

Sincerely,

H. C. Kazanas  
Assistant Professor

The letter below was used to correspond with the members of the evaluating committee for each trade area. Enclosed was a copy of the trade analysis and of the written examination questions to be evaluated.

## LETTER 10

Dear Sir:

Your answer card was received and I am pleased to hear that you are willing to serve as a member of this advisory committee.

The automotive test has now been tentatively developed and a copy is enclosed with this letter. It is important that this test be kept secure and confidential. Also enclosed is an analysis of the automotive trade which includes an approximate percentage of questions for each major area.

It will be first necessary for each committee member to evaluate the automotive area analysis, deciding if the proper emphasis has been put on each major area. Next, all questions on the test should be evaluated as to their content and depth. It is not necessary to evaluate the design or length of the test.

Also to be included is the performance test which will be limited to four hours. When the committee meets, it will be necessary for each committee member to make recommendations concerning the most common experiences which vocational automotive teachers should be capable of performing.

After each member has evaluated the test questions and the analysis, the committee will assemble and decide upon necessary changes to be made. It is hoped that a convenient time may be arranged for all committee members to meet on Eastern Michigan University's campus about one week after they have received the test. The members will be notified as to the time and exact place of the meeting.

Please indicate on the enclosed card the times that you are usually available and the time(s) that you would prefer to have this meeting. Thank you.

Sincerely,

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