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ABSTRACT

Specific objectives of the study were to: (1) determine the various methods and techniques currently being used to provide occupational updating by a review of research studies and literature; (2) sample the opinions of administrators and vocational education teachers as to the frequency of participation in, effectiveness of, and preferences for each of these methods and techniques; (3) identify the methods and techniques that should be used, based on these opinions; and (4) develop a model for facilitating occupational updating. Stratified random samples of vocational education teachers, school administrators, and chief State administrators of vocational-technical education were surveyed by mailed questionnaires. The schools were representative of postsecondary public institutions in the nation offering one and/or two-year accredited programs. A total of 265 questionnaires were returned for data analysis, and survey results are presented in both narrative and tabular form. Teachers and administrators rated both independent study activities and activities that bring the teacher in contact with industry as the most effective methods. Based on recommendations and conclusions, a general model is presented as a guide for developing programs for updating. Included in the report is a list of references. The appendix contains the questionnaires. (RG)

OCCUPATIONAL EDUCATION RESEARCH PROJECT FINAL REPORT

Vocational Education Amendments of 1968 (Public Law 90-576)

(Title I - Part C - Sec. 131 [b])

THE DEVELOPMENT OF A SUGGESTED MODEL FOR FACILITATING OCCUPATIONAL UPDATING OF POST SECONDARY VOCATIONAL AND TECHNICAL EDUCATION TEACHERS

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INTRODUCTION

Vocational-Technical Education at the post-secondary level has experienced rapid growth since the passage of the Vocational Education Act of 1963. In 1963 enrollment in federally reimbursable Vocational education programs at the post secondary level was 144,060 students (Evans and Terry 1971). By 1969 enrollment had grown to 706,085 students enrolled, a percentage change of 390.1 percent (Evans and Terry 1971). Foran and Kaufmann (Evans and Terry 1971) had projected an enrollment of 2,620,000 by 1975; however this projection is more than double the projection of the United States Office of Education figure of 1,250,000 students by 1975 (American Education March 1969). Regardless of the figure that proves to be correct the enrollment growth has been tremendous and with the increased enrollment has come an increased need for teachers. In 1965 there were 13,583 post secondary vocational teachers of which 6,963 or fifty-one percent were full time (Advisory Council on Vocational Education 1968). By 1969 this figure had increased to 36,607 of which 22,234 or approximately sixth-one percent were full time (American Education 1969). By 1975 an estimated 47,200 full and part time teachers will be required to meet the needs caused by the increasing enrollments (American Education March 1969).

Because of the increasing enrollments and demand for more and more teachers, administrators began recruiting teachers from many areas, business, industry, military service, or any area where people might be who possessed the necessary knowledge and/or skills. It was felt that

the necessary knowledge to enable them to teach could be provided by preservice and inservice programs if they possessed the manipulative skills and technical knowledge required.

Many of these persons have been successful in making the transition and have remained in teaching; others while often successful as teachers have gone back into business and industry; some have not been successful and have returned to business and industry. Those who have been successful and have remained in teaching are faced with the problem of keeping themselves occupationally competent and occupationally updated.

Dr. Richard S. Nelson (1971) in an article on the professional development of teachers wrote:

> "A decade ago the Panel of Consulants on Vocational Education made a number of recommendations concerning the selection, training, and retention of teachers.
>
> Vocational teachers, said the Panel, should be selected for the following qualities: competence in the occupation which they will teach; evidence of ability to influence the learner to be a skilled worker and good citizen; and evidence of ability to teach or the willingness to complete a program that will make them proficient as teachers.
>
> The inservice growth of vocational teachers should be provided for by (1) continuing the teacher training and supervisory activities of state departments of vocational education; (2) expanding the vocational teacher training activities in institutions of higher education; (3) providing for regular seminars and improvement workshops; and (4) requiring teachers to maintain and upgrade their occupational skills."

In the same article Dr. Nelson stated that the California State Plan for Vocational Education gives priority only to the improvement of teaching for the handicapped and the disadvantaged over updating occupational competence in their preservice and inservice plan for all

levels of personnel.

This research was concentrated on the problem of occupational updating of post-secondary vocational-technical education instructors.

Statement of the Problem

One of the most important characteristics that the teacher of vocational-technical education must possess is occupational competence. Many teachers of the skill subjects in vocational-technical education are employed from industry after various number of years of experience because they possess, among other necessary qualifications, the desired manipulative skill or technical knowledge that is to be taught. Hopefully he is chosen because he possesses other characteristics needed in an effective teacher and he is afforded opportunities, through formal university level courses and inservice programs, to acquire additional competencies to teach effectively. Often, it has been reported, too little attention is given to the preservation and updating of occupational competencies after employment.

This research focused on methods used and preferred, to provide for occupational updating and provided the basis upon which the model for occupational updating of vocational-technical education teachers was developed.

Significance of the Problem

A high percentage of vocational technical education teachers acquired their occupational competencies on the job. With the rapid changes in technology due to increased knowledge, experience gained

from work can quickly become outdated. Venn (Vivian and Hoffman 1967) points out the necessity of keeping teachers occupationally updated.

> "in technical fields and particularly in the specialized occupational areas the teacher on the job who simply continues to teach without some retraining and up grading both in his field of knowledge as well as in his teaching skills, is soon going to be decreasing or increasingly less productive."

Venn (1964), stated much the same thing and placed the responsibility for teacher updating in this quote "Ultimately, vocational and technical education will be as good as those who teach it, and the preparation and continual updating of teachers for it must become the responsibility of the colleges and universities with experience in teacher education and schools and departments in the relevant disciplines."

Walsh (1958) identified 107 competencies of trade and industrial teachers. These competencies were ranked in order of importance by teachers, state and local supervisors, and teacher educators. While the term "updating" is not mentioned among the various competencies several of the competencies identified infer the need for remaining updated; among them the competency rated number twenty-five which is "The ability to organize and develop a curriculum around useful and meaningful units of experience that relate the instructional program to improved industrial practices". The competency rated number seventy-two was "A knowledge and/or understanding of social, economic, and technological changes and their implication for trade and industrial education curriculum revision".

As indicated by the preceding paragraphs the necessity to remain occupationally updated is recognized by teachers of vocational-technical

education as well as administrators and leaders in the field.

This study reviewed methods that have been reported in the literature to help eliminate this problem and surveyed teachers and administrators in post-secondary institutions offering vocational-technical education to get information on methods and techniques that have been or could be used to facilitate updating among teachers. It also sought the opinions of the sample on the effectiviness of these methods in improving or updating instruction. Analysis of the data received revealed what is and is not being done to solve the problem of the need for teacher updating and provided the background information for suggested improvements and additions to the methods and techniques used to facilitate occupational updating.

Objectives of the Study

The objectives of this study were:

1. To determine the various methods and techniques currently being used to provide occupational updating for vocational-technical teachers.
2. To sample the opinions of administrators, and of teachers of vocational-technical education as to the effectiveness of each of the methods and techniques in use to provide for occupational updating.
3. To identify methods and/or techniques that should be used to provide for occupational updating, based upon opinions of administrators and teachers of vocational-technical education.

4. To develop a suggested model or models for facilitating occupational updating of teachers of vocational-technical education.

Limitations

1. The evaluation of the effectiveness of different means to achieve or provide for occupational updating was based on opinions of methods that the persons responding to the questionnaire have used or may have only read or heard about.
2. The study did not address itself to a specific category of vocational skill or technical knowledge but attempted to survey the entire field of vocational-technical education (not including related subject matter teachers).
3. The survey was limited to the expressed opinions of teachers and administrators who are concerned about how best to update teaching skills and content background.
4. The study was based on an analysis of data collected from the supply segment of the population (teachers and administrators) and while recognizing the importance of the demand segment of the population (employers and students) did not extend the survey to them.

Definition of Terms

Occupational Competency - The ability to perform the skills involved in the occupation and/or possession of the knowledge required to perform the necessary tasks.

Occupational Updating - The process by which the vocational-technical education teacher keeps abreast of changes in his field.

Vocational-Technical Education - Instruction to develop basic manipulative skills and technical knowledge to prepare persons for employment in the skilled trades, the technologies, office occupations, allied health occupation, vocational agriculture, or vocational home economics.

Vocational-Technical Education Teachers - For purposes of this study only the teachers whose subject matter is directly connected with the occupation concerned, the lab or shop teachers and the technical speciality teachers, is referred to in using this term and does not include the related subject teachers.

Related Subject Teachers - For purposes of this study related subjects teachers are identified as all other teachers not included in the above definition.

Institutional Workshops - Programs conducted by the employing institution to update instructors.

Formal Education - Programs or courses included in the curriculum of a college or university.

Work Experience - Re-entry into the labor market for a period of time for the purpose of achieving occupational updating.

Independent Study - Reading, on one's own, the current literature of the field in order to keep abreast of changes in one's field.

Occupational Workshops - Workshops conducted by industry or business for teachers, for the purpose of keeping them abreast of changes.

Trade Fairs - Exhibits provided by industry that show changes in skills and technology in their trade, business, or industry.

REVIEW OF RELATED LITERATURE

A great deal of research and the resulting literature on teacher preparatory programs or pre-service programs discussed the need for vocational-technical teachers to be competent in the occupation they are to teach, and various tests have been constructed to test occupational competencies. Studies and journal articles almost all cite work experience as the one most important method of achieving occupational competency. Several articles have referred to the need for vocational-technical teachers to maintain and update their occupational competencies. The following sections of this chapter will briefly review the literature most directly related to the problem of maintaining the occupational competency of vocational-technical education teachers.

Henninger (1959) in a study of the technical education system states that:

> "To have had industrial experience in the past will not suffice for the technical institute instructor. He must keep abreast of the new developments of equipment, materials, and procedures within his chosen technologies. The survey did not include systematic efforts to collect detailed information on the in-service programs by which the technical institute instructor maintains contact with industry. It did confirm, however, the generally accepted fact that these programs vary widely in nature and scope.
>
> The faculty-industry exchange seems to be one of the more effective in-service programs for technical institute faculty. It is a program which the technical institute administrator undertakes with considerable trepidation in times of manpower shortages - and understandably, for he runs the risk of losing his instructor to a better paying job in industry. In principle, however, such programs are especially appropriate in technical institute education. They provide excellent sources of information for faculty on new industrial practices and equipment not only while instructors are on the job, but

afterward through the acquaintance he has made in industry. Likewise the exchange teacher from industry can bring to the classroom experience and attitudes that otherwise might be difficult to provide. He may, of course, need some help in learning how to teach effectively, and in public junior or community colleges he has to clear the barrier of the teaching credential."

"Vehicles for Occupational Updating" an article by Richard Aadland (1971) stressed the need for vocational teachers to keep abreast of the changes in their subject matter and identified methods and techniques that might be used to keep teachers updated. The methods or vehicles that he recommends to facilitate occupational updating are: (1) belonging to local and national vocational associations and reading and studying the articles and advertisements in those publications and studying the exhibits at state and national vocational conferences, (2) joining subject matter or occupational organizations and attending conferences of these organizations, (3) attending industrial trade fairs to view exhibits of equipment and new techniques, (4) attendance at industry training schools, and (5) participation in summer study tours of various occupational areas.

Gary Beasley (1971) in an article entitled "Occupational Experiences for Teachers" expressed concern about the problems that teachers of vocational agriculture are experiencing in their efforts to keep abreast of the advancements in agriculture. He discussed the methods that teachers and teacher educators can use to keep teachers occupationally updated in the following paragraphs.

"What Teachers Can Do

There are many ways in which teachers can upgrade their occupational competency. A meaningful work experience in agricultural business and industry can be obtained solely by the individual teacher. This work experience is more likely to be acquired during the summer.. Teachers can be granted a leave of absence to work in an industrial setting in which case the terms of the leave can specify the type of acceptable work experience. Teachers can enroll in in-service workshops, institutes, and summer programs designed to update occupational competency - these programs may include field trips and lectures by business and industrial personnel. Continuously teachers should strive to update themselves through professional reading and by attending prosessional conferences.

What Teacher Educators Can Do

Higher education institutions and industry could cooperatively bring about important break throughs in vocational and technical teaching. The most systematic program for improving the occupational competency of teachers could be a cooperative occupational experience program involving business and industry. Such preparation programs will of necessity involve some new relationships between educational institutions and business and industry."

Beasley (1971) states that programs developed to improve the occupational competency of vocational-technical teachers should formulate specific objectives within a framework of general objectives. General objectives should include the following points:

" (1) To improve the occupational competency of vocational teachers in preparing students for the world of work.

(2) To learn abbut new technologies and practice used by business and industry so as to further curriculum and program development.

(3) To promote school-business-industry cooperation in the education of vocational and technical teachers to maintain industrial relevancy."

Much of the remainder of Beasley's article is a summary of points made in "Occupational Experience for Vocational Education Teachers: A Handbook for Teacher Educators" (Beasley and Smiley 1971). A review of this work is given in the following paragraphs.

Beasley and Smiley (1971) present a review of the efforts being made to improve the occupational competency of vocational and technical teachers through the cooperative efforts of schools, businesses, and industries. They also suggest guidelines that teacher educators and supervisors could follow in developing preservice and inservice programs designed to improve the occupational competency of vocational and technical teachers through such cooperative arrangements. Much of their review of programs that have been developed to improve occupational competency covered in this handbook has been or will be covered in other section of this paper and thus will not be mentioned further here; however a brief summary of the guidelines given for program development are:

A. Program Objectives - In order to achieve maxinum benefit from a cooperative effort defined objectives must be formulated. These objectives can provide direction in program development and can be used as a basis for measurement in evaluation.

B. Program Strategy - A strategy should be formulated to develop, implement, and operate the program.

C. Program Staffing - Careful consideration should be given to selecting a program coordinator and a supporting staff who are efficient in planning and operating new programs.

D. Curriculum Development - The curriculum must be designed and developed in accordance with the objectives to be met.

E. Selection of Work Stations - The needs of each individual must be analyzed and a work station selected that will enable him to fulfill his needs and objectives.

F. Selection of Participants - Criteria for selecting teachers for participation in the program must be established and should take into consideration individual needs and potential contributions to the profession.

G. Program Costs and Financing - Careful planning must be done to determine budgetary needs and all possible sources of funds should be explored.

H. Advisory Committees - Advisory committees can and should be utilized in planning and implementing programs.

"Work Experience for Teachers" an article by Blomgren and Jurgenson (1972) is a report of a program conducted by the Agricultural Education Department at the University of California, Davis in the summer of 1971. The authors discuss the importance of agricultural teachers keeping abreast of the changes in agriculture and the effectiveness and values of participating in a work experience program.

The program was conducted by the University of California at Davis and participants received six units of college credit. The design of the program, its problems and values are outlined in the following steps:

1. The purpose of the program was to help teachers of vocational

education upgrade their occupational competency and acquire new competencies through on-the-job experience in a selected business or industry for a minimum of four weeks, while concurrently enrolled for related class work before, during, and after the work experience.

2. Twenty teachers and five teacher candidates in their graduate year of study were selected for the program. Four disciplines, agriculture, home economics, industrial education and business were represented.
3. A work experience coordinator was responsible for assisting teachers in finding a job station and to work with the teacher and employer to develop a program of work experiences relative to the occupational goals of the teacher.
4. With the approval of the coordinator, teachers were free to work for as many as three employers.
5. Teachers were required to go through all the procedures of employment including application, interviews, and in some cases physicals.
6. The University did not enter into any aspects of pay, this was left up to the teacher and the employer. Approximately 45 percent of the teachers did receive some pay; it was noted that those who were not involved with pay often had the benefit of exposure to a greater variety of skills since they did not necessarily have to be concerned with production.
7. Periodic day long class meeting were held on campus where

students discussed their work stations, made preliminary self evaluations of their strengths and weaknesses in relation to their job, discussed the training opportunities and growth potential for students, and generally shared experiences and problems.

8. Teachers were required to submit weekly reports which included hours worked, new skills learned and problems encountered. They were also required to survey their own programs and their community in relation to job training and job opportunities.

9. A final day long meeting was held and attended by the participating teacher, his admihistrator, and his employer(s) to evaluate the program. This meeting was held about two months after the teacher had gone back into the classroom.

William D. Wolansky (1969) cites the need for inservice education programs for the vocational-technical teacher and identifies some opportunities for satisfying this need in an article entitled "The Need and the Opportunity". Wolansky is critical of the life time certificate and discusses the urgent need for teachers to remain updated and the need for educational administrators to accept the responsibility and provide the opportunities for teachers to remain updated. He states:

> "that educational administrators, industry and the public are increasingly accepting the premise that technical training is an important and natural part of education. It is equally apparent that the ability of the schools to assume the responsibility for technical and vocational education rests to a large measure on the teacher's opportunity to maintain his technical and professional competence."

Wolansky cites several programs that have been developed to provide for occupational updating. Among those cited are National Defense Education Act institutes, intensive technical courses jointly offered by industrial plant schools and teacher-education departments, cooperative exchange programs with industry where teachers work in industry for a period of time and industrial personnel teach, summer workshops conducted in specialized areas by industrial personnel, workshops conducted by manufactures of equipment, university courses tailored to meet the needs of trade and industrial teachers, and workshops conducted by professional organizations. He concludes the article by stating the need for school administrators to continue to seek additional ways to provide useful learning experience for the teacher that will make him more effective with his students.

Dorothy Draper (1967) in an article on programs of education for business teachers in which she discussed the need for vocational competency quoted Dr. Gerold Porter as saying:

> "Preservice preparation cannot qualify a business teacher for a lifetime of service, Dr. Porter said, but he cited a variety of inservice opportunities avaliable to teachers - individual reading and study, specialized graduate study, workshops, institutes, and vicarious experiences gained through frequent visits to offices, other schools, and teacher education institutions. He added that the primary responsibilities for updating of teacher qualifications rests with the state supervisors and the teacher educators and that these responsibilities should be firmly identified and cooperatively approached."

In September of 1967 a seminar was held at Ohio State University to bring together national leaders and recognized experts in education and other related disciplines as resource people and vocational

teacher educators as participants. The purpose of this seminar was to share and analyze the results of recent research, experimental programs and new developments in education and to investigate their implications for vocational teacher education. They were also to explore the most viable, innovative and promising approaches in the preparation of vocational teachers. A review of those presentations reveals an urgency for teachers to maintain and update their occupational competencies and also suggests some methods for accomplishing this.

Grant Venn, (Vivian and Hoffman 1967) one of the speakers of this seminar, said that the updating of the present staff now teaching demands immediate attention. He also said that "in technical fields and particularly in the specialized occupational areas the teacher on the job who simply continues to teach without some retraining and up grading both in his field of knowledge as well as in his teaching skills, is soon going to be decreasing or increasingly less productive."

John A. Butler, (Vivian and Hoffman 1967) former Director of Dunwoody Industrial Institute in Minneapolis outlined the following program that Dunwoody used for staff improvement.

Dunwoody allows a period of four weeks for schooling or employment in industry for members of its staff each summer. Teachers can attend summer sessions at the University of Minneapolis with no tuition and Dunwoody will pay tuition for five credits during the school year. Full salary is continued and up to $50.00 per week may be paid for expenses for teachers going to school or working out of town. Teachers who

work in industry may be paid from school and by industry, administrators will help to arrange employment. Employment is intended to provide opportunities to learn new technical knowledge, work with new machines and processes or engage in activities different from previous occupational and trade experiences. The board has agreed that a budget to keep staff members from becoming obsolete is just as important as funds spent to repair and replace equipment.

Robert M. Knoebel (Vivian and Hoffman 1967) identified the teacher as the most important single element in a technical education program and lists knowledge and skill in the occupation being taught as one of the seven most important characteristic of technical education teachers. He stressed the importance of experience in the occupation to be taught and the necessity of remaining occupationally updated. He identified six techniques or methods to strengthen the occupational experience of teachers. They are:

1. Reading pertinent literature of the field.
2. Membership and active participating in professional organizations.
3. Summer or other full time employment every two or three years in the occupation being taught.
4. Planned visits to employers of technicians to observe current techniques.
5. Planned visits to institutes providing outstanding programs in subject areas.
6. Films and video tapes showing processes and procedures.

Knoebel (Vivian and Hoffman 1967) stated that greater use of business

and industry consultants is desirable if programs are to achieve the goal of making teachers occupationally competent.

Hanson (Vivian and Hoffman 1967) cited work experience as an important component of technical teacher preparatory programs and updating experiences for teachers. He noted that a number of states allow teachers to return to industry in the summer without loss of pay. Industry-school exchange programs are one means that might be used to allay the loss of faculty during work experience and to allow work experience at times other than summer. The work program should be planned so that the institute gets full benefit and care must be taken in the selection and orientation of the industry exchange person in the school.

Bohn (1967) describes a project conducted at San Jose State College, San Jose, California in the spring of 1967. The purpose of this project was to develop programs of inservice education that would upgrade teacher competency in understanding industrial materials, processes and mechanisms, and identify the methods whereby this new knowledge could be used to update current practices. Primary emphasis was on determining methods of providing inservice education on current information, as contrasted to providing background and supporting knowledge. The primary objectives of this project were to:

1. Develop model programs of industry-school cooperative education for the inservice education of teachers with special emphasis on:

   a. Industrial Study Trips.

b. Short work experience programs in different industrial divisions and plants.

c. Interaction of short term industrial schools with organized collegiate programs of teacher education.

2. Integration of organized instruction in the area of industrial materials, and cybernetics and automation in the four model programs (electricity-electronics, automotive and power, industrial drafting, and metals technology).

3. Evaluate the effectiveness and feasibility of industry-school cooperative programs and the integration of organized instruction in industrial material and cybernetics and automation in the four model programs.

4. Evaluate the effectiveness of concentrated inservice education of current knowledge in changing and improving curriculums and instructional methods.

5. Prepare and publish a complete report which will permit other colleges and school districts to duplicate the effective parts of the model program.

Study trips and short-term work experience provided industrial experience for the 96 participants. They were sent to industrial schools and staff and equipment were brought to the campus. A special industrial materials laboratory was used by each of the four instructional programs, automotive and power, electricity and electronics, industrial drafting, and metals technology. A follow up evaluation of the project showed it to be highly successful in meeting its objectives.

The University of Tennessee, Oak Ridge Associated Universities, and the Nuclear Division of Union Carbide Corporation cooperated in conducting a pre-service and in-service vocational teacher training program in the summer of 1966 and 1967 (Merrill 1968). Sixty teachers of drafting, machining, and electronics participated for nine weeks during the summer of 1966, and one-hundred teachers from the same three fields plus physical-testing welding attended a second institute during the summer of 1967.

The purposes of this project were to:

A. Establish ways to bring vocational shop, laboratory, and classroom instructors in selected industrial occupational areas as close as possible to current industrial practices and technology.

B. Develop vocational-technical teacher preparation programs in an industrially oriented atmosphere.

C. Simulate and assist in establishing similiar on-going programs.

The institutes basically consisted of a half day spent in class in courses such as Job Analysis, Methods of Teaching, History and Philosophy of Education, Shop Organization and Management and other courses of a pedagogical nature and a half day spent in observation and/or work in industry. Evaluation by professionals involved in planning and conducting the institute and a questionnaire sent to all participants approximately six months after completion of the institute were very favorable.

Syhlman (1971) reported on a program conducted by Eastern Washington

State College that provided for an exchange of personnel between schools and industry and business. The teachers worked in industry or business occupations related to their fields of teaching for a six week period while the representatives of business and industry team taught a group of disadvantaged persons. All teachers involved felt that the experience was very effective in updating them in new skills and techniques and also was very beneficial in improving relations and increasing the flow of information between the schools and business and industry.

Using both state and county funds, business education teachers in Bucks County and at Temple University developed the Directed Observation of Elementary Office Position Program (Beck 1967).

Identified objectives of this program were:

1. To establish a closer working liaison with local businessmen.
2. To gain insight into the job requirements for entry level office positions.
3. To gain information useful in updating business education curriculums and programs.
4. To gain information useful in counseling students interested in office occupations.

This in-service program was designed to last one week and to provide business education teachers with an opportunity to observe work procedures and office machines operations.

Beginning with an orientation session on Monday, Beck (1967) reports that the program provided teachers with an opportunity to evaluate their business education programs with the added perspectives

of businessmen and office workers. The teachers also obtained guidance information for students, established job placement contacts that should prove helpful in placing graduates, and examined various department of their host company. On Friday, sessions were held to evaluate and summarize the week's activities.

To determine how, when, and where teachers of agricultural occupations keep current their knowledge and skills in non-farm agricultural occupations, the teacher educator staff at the University of Illinois designed a four-week experimental cooperative education program (Mannebach, 1970) involving structured, on-the-job, occupational experiences in agribusiness plus related instruction in the classroom for teachers of agricultural occupations.

The teachers enrolled in the program spent Tuesday, Wednesday, Thursday, and Friday mornings participating in structured occupational experiences in agricultural firms. On these same days, the teachers received two hours of related classroom instruction at the University. On Saturdays and Mondays, the teachers obtained a variety of unstructured experiences of their own choice in agricultural firms in their local communities.

The informal experience served to supplement the structured occupational experience and provide experiences in other agricultural firms. The structured occupational experiences were planned to provide teachers with on-the-job training in agricultural firms and to help them become informed realistically regarding the factors involved in the movement of products from agricultural firms to customers. The

structured occupational experiences in the agricultural firms centered on completing selected activities and finding answers to prepared questions.

Instruction in the classroom during the four-week period was focused on analyzing the experiences of the teachers, intellectualizing these experiences in terms of educational objectives, and planning units of instruction for use in actual teaching situations. Primary emphasis in the classroom consisted of resolving how the teachers' experiences could be reflected most effectively in teaching plans and in teaching.

In summary, the literature seems to support the need for teachers to maintain their occupational competencies, and all studies indicate that some form of contact with industry is the preferred and most effective means of obtaining this objective.

STUDY PROCEDURE

Basically this research consisted of three steps. The first step was to determine the methods used and preferred to facilitate occupational updating; the second step consisted of an analysis of the data gathered, and the third step was the formulation of a suggested model for facilitating occupational updating.

Plan for Conducting the Study

The following procedures were used in conducting the study.

1. A survey and review of the research studies and literature that relate to occupational updating of vocational-technical education teachers.
2. Development of a list of objectives to be achieved by the study, such as:
   a. To determine the various methods and techniques currently being used to provide occupational updating for vocational-technical teachers.
   b. To sample the opinions of administrators, and of teachers of vocational-technical education as to the effectiveness of each of the methods and techniques in use to provide for occupational updating.
   c. To identify methods and/or techniques that should be used to provide for occupational updating, based upon opinions of administrators and teachers of vocational-technical education.

d. To develop a suggested model or models for facilitating occupational updating of teachers of vocational-technical education.

3. Development of the research design and sampling technique used in the study.

4. A random selection of states to be used in the study. Twenty-five percent (or as near as possible) of the states within each of the six regional accrediting divisions were selected.

5. A random selection of twenty percent of the schools within those states selected for use in the study. Schools selected met the following criteria:

   a. Public

   b. Post-Secondary

   c. Regionally Accredited

   d. Offers one and/or two year programs in Vocational-Technical Education

   e. Is not controlled by a four year institution or not under the aegis of a four year program.

6. Obtained a list of vocational-teohnical education teachers from the schools selected and randomly selected ten percent of the teachers for the survey.

7. Developed instruments for getting the research data. Basically the same instrument was used for teachers and administrators; however questions were stated differently where necessary.

8. Mailed research instrument (Questionnaire) with cover letter to:

a. Chief administrators of Vocational-Technical Education in each state selected

b. Chief administrator of each school selected

c. Teachers selected from each school

9. Analyzed data and developed suggested model for facilitating occupational updating.

Population

The population for the study consisted of all public post-secondary institutions that offer one and/or two year programs in vocational-technical education and are accredited by the appropriate regional accrediting association, in the continental Unites States. Institutions that offer baccalaureate programs were excluded from this population.

Sample

Since it was not feasible to survey the entire population, a stratified random sample was selected. The population consisted of all fifty states and each of the six regional accrediting areas constituted one strata. Stratification of the population and a random selection from each strata consituted a sample that is assumed to be representative of the population. Further, selection of a constant percentage of the population within each strata created a sample that contains the same proportion from each strata as the proportion each strata contains of the population. Accepting these premises, tha sample was selected as follows and is assumed to be representative of the population.

State - Twenty-five percent of the states or the nearest percentage

possible above twenty-five percent were selected from each of the six regional accrediting associations.

Schools - Twenty percent of the schools that met the criteria previously indicated were selected from each of the states selected.

Teachers - Ten percent of the teachers of vocational-technical education in each of the schools selected were selected.

Administrators - The chief state administrator of vocational-technical education for each state selected and the chief administrator for vocational-technical education of each school selected were selected.

States, schools, and teachers were randomly selected by assigning numbers to the states within each region, the schools within the states selected and the teachers within the schools selected, and selecting numbers from a table of random numbers.

The reason for selecting this population is, to get nationwide representation from schools that have been judged, by virtue of accreditation, as having quality programs of post-secondary vocational-technical education.

Once the sample was selected a questionnaire was developed and mailed to each teacher and administrator selected. This questionnaire was designed to gather the information needed for the study. A copy of the questionnaire is included as Appendix I.

Questionnaire

The questionnaire was composed of questions about methods and techniques identified in the literature as being used to facilitate occupational updating. The methods that have been most frequently mentioned in the literature to facilitate occupational updating are work experience, independent study, university courses, conventions, exhibits, seminars, and workshops. Items in the questionnaire identified various activities relating to these methods and techniques.

The format of the questionnaire was primarily closed asking for checks, "yes" and "no", ranks of pre-selected items, and short answers to most questions. Opportunities existed for comments at various points throughout the questionnaire.

Validation of Questionnaire

A jury of experts in vocational-technical education were drawn, to review the questionnaire. This jury consisted of persons from state and national levels and persons involved in technical education from the state and local levels as well as from university departments of vocational-technical education. The questionnaire was sent to them with the request that they review it to determine its validity with regard to the items involved. They were asked to judge the quality of the questionnaire with respect to the ability of the items included to reveal the necessary data; that is data about the methods and techniques used to facilitate occupational updating and their effectiveness. Also they were requested to comment on the format of the

questionnaire and the clarity or lack of clarity of items within it and to suggest modifications.

Suggested modifications were considered and the questionnaire was revised in accordance with these suggestions. After the suggested modifications had been reviewed and the appropriate modifications made, a test was made to test the clarity of the statements contained in it. To do this several teachers and administrators from one of the schools included in the population but not drawn in the sample were asked to complete the questionnaire and comment on the clarity or ambiguity of items in it. They were asked to comment on the time necessary to complete the questionnaire, and the ease or difficulty in completing it. There comments were considered in composing the final questionnaire.

Collection of Data

A sample consisting of four hundred and seven teachers and administrators was selected from fifteen states and sixty schools. Questionnaires were mailed direct to each member of the sample. Two hundred and eighty-five questionnaires were returned (70%), of these two hundred and sixty-five (65%) were involved in the data analysis. The remaining responses were returned after the data analysis was begun, were returned but not completed; or could not be delivered.

PRESENTATION OF DATA

The study was primarily concerned with the types of activities that teachers participated in to keep themselves updated, the frequency of their participation in these activities, the effectiveness of these activities in facilitating occupational updating, and what types of activities teachers preferred to participate in to keep them updated.

Participation

The questionnaire (Appendix.1) asked teachers and administrators to rate the frequency of participation in the activities examined as: F - Frequent, O - Occasional, R - Rare, N - Never. A value of one was assigned to a response of F, two to O, three to R, and four to N. Mean scores were then computed for the total responses to each question by the total sample and for teachers and administrators as sub samples. Because of the method of assigning values to the responses the highest frequencies of participation are indicated by the lowest means.

Table 1 illustrates the reported participation frequencies of the twenty-six activities examined. The total sample indicates a high level of participation in activities that can be identified as independent study activities (items 12, 13, 21, and 22). Participation in Advisory Committee activities also was rated as very high in frequency of participation. This may be attributable to the fact that Advisory Committees are very often required by accrediting agencies and school administrators.

Participation, with the exception of in-state professional

TABLE I.

MEAN FREQUENCY OF PARTICIPATION IN ACTIVITIES

Item Number	Item	Mean Administrators	Teachers	Both
1.	Attend national professional conventions.	2.344	2.870	2.673
2.	Attend in-state professional conventions.	1.583	2.155	1.942
3.	Attend out of state professional conventions.	2.583	3.199	2.969
4.	Attend national trade or technology conventions.	2.649	2.937	2.830
5.	Attend state or interstate trade or technology conventions.	2.189	2.560	2.421
6.	Observe classes outside your school.	2.698	2.908	2.830
7.	Complete general education courses not directly related to your profession.	2.186	2.348	2.287
8.	Complete professional education courses, methods of teaching, course organization educational psychology etc.	1.969	2.149	2.081
9.	Complete courses directly related to your trade or technology.	1.747	2.189	2.024
10.	Complete requirements for a professional degree - B. S., Masters, etc.	1.768	2.200	2.026

TABLE 1 CONTINUED

Item Number	Item	Administrators	Teachers	Both
11.	Participate in occupational workshops.	1.832	2.228	2.082
12.	Read trade or technology magazines and journals.	1.337	1.241	1.276
13.	Read trade or technology books.	1.579	1.429	1.484
14.	Planned observation of workers who are preforming the skills or processes that you teach.	2.274	2.129	2.182
15.	Observe workers in the occupation you teach on the job.	2.221	1.982	2.039
16.	Attend local trade or technology conventions.	2.147	2.466	2.348
17.	Attend trade fairs - exhibits by industry or business.	2.284	2.394	2.353
18.	Work part time for wages at your occupation.	2.594	2.747	2.690
19.	Work part time without wages at your occupation.	3.385	3.321	3.345
20.	Work full time for a school term at your occupation for wages paid by either your school or the agency you work for.	3.305	3.160	3.215
21.	Read specifications of new equipment or tools used in your occupation.	1.691	1.544	1.598

TABLE 1 CONTINUED

Item Number	Item	Administrators	Teachers	Both
22.	Read about new procedures and techniques in your trade or technology.	1.479	1.288	1.358
23.	Discuss your trade or technology with persons currently employed in it.	1.453	1.417	1.430
24.	Participate in seminars with persons in your trade or technology.	2.031	2.043	2.039
25.	Have an active advisory committee for your trade or technology.	1.280	1.703	1.546
26.	Have institutional workshops at your school that deal specifically with your trade or technology.	2.591	2.926	2.804

conventions and Advisory Committees, appeared to be much higher in activities that were not dependent on any complex organization or preparation. Participation in work experience activities was very infrequent.

Effectiveness

Discussing the trade or technology with persons currently employed in it was rated as the single most effective activity to facilitate occupational updating. This activity also was rated as the third most frequently participated in activity.

Independent study activities, those activities that consisted of reading magazines, books, and other literature concerning the trade or technology, also were rated as highly effective in facilitating occupational updating.

Work experience rated very low in frequency of participation, received a substantially higher effectiveness rating. There was very little difference in the rating given to part time and full time work experience. The literature points out one disadvantage of work experience as production being the primary emphasis and learning secondary. This possible limitation may account for a higher reported level of effectiveness given to observation of workers than to actual work experience.

In summary the activities that appear to be most effective in facilitating occupational updating are those activities that bring the teacher into direct contact with persons employed in the trade, and

reading current literature about the trade.

Table 2 gives the reported level of effectiveness rating given to each activity by teachers and administrators as sub samples and by the total sample. Means were computed by assigning a value of one to a response of E - Excellent, two to G - Good, three to F - Fair, and four to P - Poor. As in table 1 the highest levels of effectiveness are indicated by the lowest means.

Preference

Teachers and administrators did not agree on the activities that teachers prefer to participate in to facilitate occupational updating. Administrators placed a high preference rating on convention type activities while teachers reported a very low preference rating for conventions (Table 3).

There appeared to be a definite preference by teachers to participate in activities that would bring them into direct contact with persons employed in the trade or technology. Work experience and participation in workshops and seminars were rated very high in preference.

Table 3 shows the preference ranking given to each of the twenty-six activities examined by teachers and administrators.

Conclusions

1. Except for participation in Advisory Committee activities, there appears to be little participation in activities that bring the teachers into contact with persons who are engaged in the trade or technology being taught. This is evidenced by

TABLE 2

MEAN LEVEL OF EFFECTIVENESS OF ACTIVITIES

Item Number	Item	Mean Administrators	Mean Teachers	Mean Both
1.	Attend national professional conventions.	2.531	2.554	2.545
2.	Attend in-state professional conventions.	2.094	2.439	2.307
3.	Attend out of state professional conventions.	2.516	2.611	2.570
4.	Attend national trade or technology conventions.	2.255	2.323	2.295
5.	Attend state or interstate trade or technology conventions.	2.131	2.261	2.228
6.	Observe classes outside your school.	2.128	2.448	2.316
7.	Complete general education courses not directly related to your profession.	2.625	2.767	2.711
8.	Complete professional education courses, methods of teaching, course organization, educational psychology etc.	2.196	2.366	2.300
9.	Complete courses directly related to your trade or technology.	1.463	1.804	1.671
10.	Complete requirements for a professional degree - B. S., Masters, etc.	2.189	2.098	2.138

TABLE 2 CONTINUED

Item Number	Item	Administrators	Teachers	Both
11.	Participate in occupational workshops.	1.515	1.960	1.789
12.	Read trade or technology magazines and journals.	1.667	1.562	1.601
13.	Read trade or technology books.	1.760	1.652	1.693
14.	Planned observation of workers who are preforming the skills or processes that you teach.	1.766	1.896	1.847
15.	Observe workers in the occupation you teach on the job.	1.710	1.806	1.770
16.	Attend local trade or technology conventions.	2.084	2.331	2.235
17.	Attend trade fairs - exhibits by industry or business.	2.226	2.306	2.275
18.	Work part time for wages at your occupation.	1.853	1.774	1.808
19.	Work part time without wages at your occupation.	2.440	2.324	2.376
20.	Work full time for a school term at your occupation for wages paid by either your school or the agency you work for.	1.813	2.095	1.971
21.	Read specifications of new equipment or tools used in your occupation.	1.968	1.899	1.925

TABLE 2 CONTINUED

Item Number	Item	Administrators	Teachers	Both
22.	Read about new procedures and techniques in your trade or technology.	1.638	1.646	1.643
23.	Discuss your trade or technology with persons currently employed in it.	1.510	1.586	1.558
24.	Participate in seminars with persons in your trade or technology.	1.635	1.761	1.713
25.	Have an active advisory committe for your trade or technology.	1.362	1.848	1.661
26.	Have institutional workshops at your school that deal specifically with your trade or technology.	1.791	2.135	1.996

TABLE 3

CORRELATION BETWEEN PREFERENCE FOR ACTIVITIES AS REPORTED BY TEACHERS AND BY ADMINISTRATORS

Item	Rank		D	D^2
	Teachers	Administrators		
1	17.5	1	16.5	272.25
2	12	2	10	100
3	17.5	6.5	11	121
4	7	12	5	25
5	21	14	7	49
6	16	25	9	81
7	26	11	15	225
8	12	22	10	100
9	3	8.5	5.5	30.25
10	12	15	3	9
11	2	3	1	1
12	8.5	8.5	0	0
13	23	19.5	3.5	12.25
14	8.5	21	12.5	156.25
15	14	18	4	16
16	21	10	11	121
17	24	13	11	121
18	4	4.5	.5	.25
19	21	19.5	1.5	2.25
20	1	6.5	5.5	30.25
21	25	16.5	8.5	72.25

TABLE 3 CONTINUED

Item	Rank: Teachers	Rank: Administrators	D	D^2
22	15	16.5	1.5	2.25
23	6	4.5	1.5	2.25
24	5	24	19	361
25	10	23	13	169
26	19	26	7	49

N = 26 P = .27 ΣD^2 = 2128.50

the participation rating given to such activities as work experience, observation activities and workshops.

2. There is a lack of communication between teachers and administrators regarding teachers preference for participation in activities, as evidenced by the correlation coefficient of .27 between teachers and administrators response to the question regarding the activities in which teachers would prefer to participate.

3. The activities that teachers most prefer to participate in are not necessarily the activities that they consider most effective in facilitating occupational updating. This is evidenced by a review of the data on preference of activities and effectiveness of activities. Of the five most preferred activities only one was ranked in the top five for effectiveness.

4. There is wide disagreement between teachers and administrators over both the frequency of participation of teachers in advisory committees activities and on the level of effectiveness of advisory committees. This is evidenced by the fact that administrators ranked them as number one in frequency of participation and level of effectiveness while teachers ranked them as number six and number nine respectively.

5. Work experience, while highly advocated in the literature, was not rated as highly effective by either teachers or administrators. Both groups rated observation of workers as more effective than actual work experience.

6. Conventions are of very little value in facilitating occupational

updating.

7. Independent study activities, especially the reading of current publications, are a highly effective method of facilitating occupational updating.
8. Formal education, except for courses directly related to the trade or technology being taught, is of little value in facilitating occupational updating.

Recommendations

Based on the analysis of the data collected and presented here it appears that both teachers and administrators rate independent study activities and activities that bring the teacher in contact with industry as the most effective methods of facilitating occupational updating. The recommendations that follow are postulated on an acceptance of the above statement.

1. Teachers should have access to and time to read up to date periodicals, books, and other literature relating to the trade or technology they are teaching.
2. Advisory committees should be established for all trade and technical programs and teachers should become actively involved in working with these committee both for curriculum review and modification and to aid them in maintaining and improving their occupational competency.
3. There should be more contact by teachers with persons who are employed in the trade or technology they are teaching.

This could be accomplished by: A. Organizing seminars and/or workshops for teachers of a common trade or technology on a regional or statewide basis that are conducted by persons employed in the trade or technology and who are knowledgeable of the changes occuring in it; B. Providing opportunities and time for teachers to visit job sites to observe workers who are preforming the skills or processes they are teaching; C. Providing opportunities, time, and incentive for teachers to return as workers to their former occupation either on a part time basis or full time for a school term.

4. Administrators should consider incorporating some financial consideration for participation in activities that are designed to keep the teacher updated, into salary schedules.
5. Universities that are concerned with vocational and technical teacher training should explore the possibility of awarding degree credits at the Baccalaureate and Masters level for independent study and work experience activities by practicing teachers.

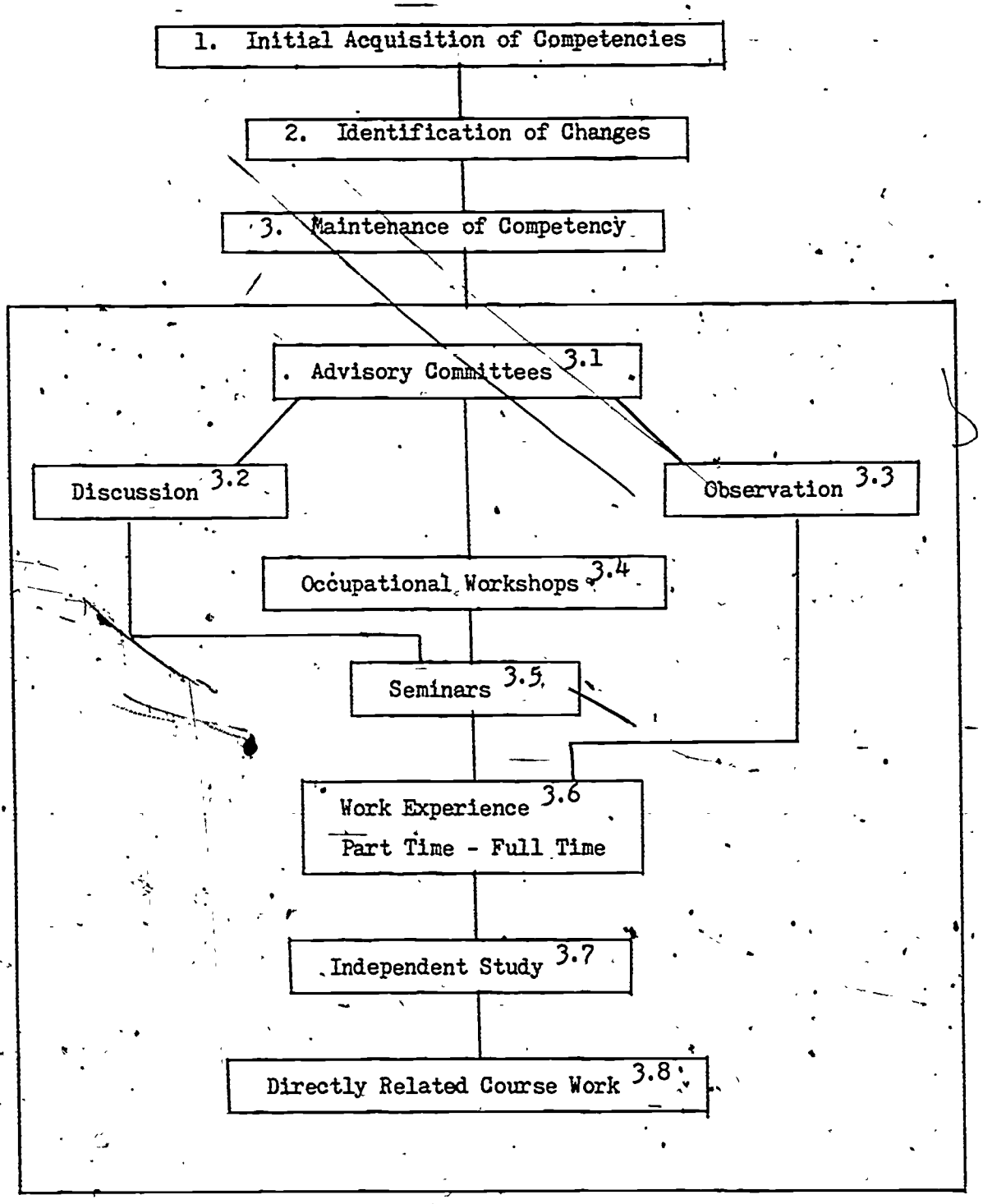
GENERAL MODEL

No attempt is made here to develop a specific program for updating vocational and technical teachers. The reason for this is evident in the design of the study. To develop a specific program it would have been necessary to limit the study to teachers of a specific trade or technology. What the model does is to present general guideline for developing a program or programs that teachers might participate in to update themselves. No single activity of the model can be utilized as the sole updating activity but participation in a combination of these activities should certainly help the teacher to maintain and improve his or her competencies.

Just as no specific activity can be identified as the activity to facilitate updating nor can any definite conclusion be drawn as to the frequency that updating activities are necessary. Most respondents (62.3%) felt that it was necessary to participate in some type of updating activity at least once a year. Obviously it would be difficult to participate in some of the activities examined this frequently, while others could be participated in much more frequently than this.

Based on the preceding recommendations, conclusions, and discussion the following general model is suggested as a guide for developing programs designed to update vocational and technical education teachers.

GENERAL MODEL FLOW CHART



Model Analysis

1. Initial Acquisition of Occupational Competency - The model is based on the assumption that the teacher enters the teaching profession possessing the occupational competencies that he is to teach. These competencies might have been obtained through: A. attendance at a secondary school, B. attendance at a one or two year post-secondary business, trade, or technical school, C. attendance at a four year college or university, D. work experience in business or industry in the occupation to be taught, E. military work experience, education or a combination of both, F. work experience in organizations other than business or industry, for example the Allied Health fields, G. or any combination of these.

2. Identification of Occupational Changes - It is essential that administrators and teachers recognize the need for maintaining and improving these competencies. Changes must be identified. Teachers and administrators can identify changes through:

   A. Interaction with advisory committee members. One of the major reasons for using advisory committees is to gain information for use in curriculum modification and revisions. Advisory committee members should be selected partially on the basis of their knowledge of a particular trade or technology in which they are participating. Interaction by teachers with these committee members should result in them being kept aware of changes as

they occur.

B. Teachers also may become aware of changes in the trade or technology they are teaching through independent study - the reading of books, periodicals, trade journals, and other literature printed by business and industry describing new methods, techniques, or equipment.

C. Teachers may become aware of changes in the trade or technology they are teaching by observing workers on the job.

D. Teachers may discuss the trade or technology they are teaching with persons currently employed in it and become aware of changes.

3. Maintenance and Improvement of Trade and Technical Competency - Once changes have been identified, teachers must be provided oportunities and time to participate in activities that will allow them to become knowledgeable enough of these changes to incorporate them into their programs. The most appropriate activity to facilitate this increase in knowledge will vary depending on the nature of the changes. Competencies may be updated through participation in any of the following activities.

3.1 Advisory Committee Activities - Used as a method of identifying changes, advisory committees might also provide sufficient information to facilitate occupational updating.

3.2 Discussion - Used also as a method of identifying changes; may be sufficient in some cases to facilitate minor phases

of occupational updating.

3.3 Observation - Used also as a method of identifying changes, observation activities may be used as an effective activity to facilitate occupational updating. Observation activities may be superior to work experience in that the observer is free to move to various activities and can concentrate on acquiring knowledge with no concern for production.

3.4 Occupational Workshops - Highly effective byt perhaps difficult to organize. Perhaps best done on a state or regional level so that more teachers could participate. Could be concentrated over a short span of time (3 to 5 days).

3.5 Seminars - An effective interchange of knowledge among teachers on a local, regional, or statewide basis who teach the same trade or technology. Effective in facilitating occupational updating only if some members possess updating competencies. Easy to arrange.

3.6 Work Experience (Full Time) - An effective activity but rarely used. Could be used in conjunction as a school and industry personnel exchange activity, with someone employed as a practitioner in the field coming in to teach while the teacher replaces him on the job. This could be an excellent way to establish or improve relationships between the school and the employing agencies. Care should be taken to assure that the instruction does not suffer in the process. This activity could be a

disadvantage to the teacher if an emphasis on production was detrimental to learning.

3.7 Independent Study - Used also as a method of identifying changes, independent study activities can be utilized as an activity to facilitate occupational updating. The most effective literature for study is trade and technical journals. Since currency is the issue, books may be ineffective due to the time lag between writing, publishing and appearance on the market.

3.8 Direct related formal education courses - Effective for facilitating some phases of occupational updating.

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APPENDIX 1

QUESTIONNAIRE

I. Personal Data:

Name: (Optional) _____

1. Years of administrative experience:
   a. ____ 1-4
   b. ____ 5-9
   c. ____ 10-14
   d. ____ 15-19
   e. ____ 20-24
   f. ____ 25 or more

2. Years of teaching experience:
   a. ____ 1-4
   b. ____ 5-9
   c. ____ 10-14
   d. ____ 15-19
   e. ____ 20-24
   f. ____ 25 or more

3. Degree(s) held:

   Specify major area of study for each degree.

   a. ____ Less than High School Diploma _____
   b. ____ High School Diploma _____
   c. ____ Associate Degree _____
   d. ____ Baccalaureate Degree _____
   e. ____ Master's Degree _____
   f. ____ Doctorate _____
   g. ____ Other (Please specify) _____

4. Age:
   a. ____ 21-25
   b. ____ 26-30
   c. ____ 31-35
   d. ____ 35-40
   e. ____ 41-45
   f. ____ 46-50
   g. ____ 51 or over

II. Definitions of terms as used in questionnaire. Please read the definitions and respond to the items in the questionnaire according to the definitions given here.

Occupational Updating - Maintenance of occupational competency; keeping abreast of the new developments in an occupation.

Inservice Education - For purposes of this study Inservice Education is defined as any activity that you participate in, or have the opportunity to participate in that is designed to update your knowledge of your trade or technology.

Inservice Activity - For purposes of this study any activity that is designed to update the knowledge of a faculty member in his trade or technology.

Professional Conventions - Conventions of professional organizations composed of persons in vocational and technical education such as the American Vocational Convention.

Trade or Technology Conventions - Conventions composed of persons who are employed in some phase of the trade or technology that you teach.

General Education Course - A course at the college level that is not directly related to education or the trade or technology that you teach, such as English, history, sociology, etc.

Trade Fairs - Exhibits provided by industry that show changes in skills and technology in their trade, business, or technology.

Seminar - For purposes of this study a seminar is defined as an organized conference or discussion among persons teaching the same trade or technology.

Workshop - A workshop is defined for purposes of this study as an inservice activity that gives the participants the opportunity to learn, perform, and practice some new methods, operations, or techniques that are required or desirable in their trade or technology.

Occupational Workshop - Workshop conducted by industry or business for teachers, for the purpose of keeping them abreast of changes.

Institutional Workshops - Workshops conducted by the employing institution to update instructors.

1. How often do you think inservice activities are necessary to keep teachers in your school or system abreast of the new developments in their trade or technology?
   a. _____ Every year
   b. _____ Every two years
   c. _____ Every three years
   d. _____ Every five years
   e. _____ Other (Please specify) _____

2. Which is the most effective way for teachers in your school or system to keep abreast of the changes in their trade or technology? (Please check only one)
   a. _____ Listening
   b. _____ Doing
   c. _____ Observing
   d. _____ Reading
   e. _____ Other (Please specify) _____

3. Do you feel that the present inservice activities available to teachers in your school or system are adequate for them to remain occupationally updated?
   a. _____ Yes
   b. _____ No
   If no what changes would you recommend? _____
   _____
   _____

4. Following is a list of activities that might be used to keep vocational-technical education teachers abreast of changes in their trade or technology. Please indicate under:

   a. Column A - The degree of participation in this activity by teachers in your school or system by circling:
      F-Frequent participation
      O-Occasional participation
      R-Rarely participate
      N-Never participate

   b. Column B - Rate the effectiveness of each activity in helping to keep teachers occupationally updated by circling:
      E-Excellent
      G-Good
      F-Fair
      P-Poor

Column A			Column B
F O R N	1.	Attend national professional conventions?	E G F P
F O R N	2.	Attend in-state professional conventions?	E G F P
F O R N	3.	Attend out of state professional conventions?	E G F P
F O R N	4.	Attend national trade or technology conventions?	E G F P
F O R N	5.	Attend state or interstate trade or technology conventions?	E G F P
F O R N	6.	Observe classes outside your school?	E G F P

F-Frequent participation
O-Occasional participation
R-Rarely participate
N-Never participate

E-Excellent
G-Good
F-Fair
P-Poor

Column A			Column B
F O R N	7.	Complete general education courses not directly related to their profession?	E G F P
F O R N	8.	Complete professional education courses, methods of teaching, course organization, educational psychology, etc.?	E G F P
F O R N	9.	Complete courses directly related to their trade or technology?	E G F P
F O R N	10.	Complete requirements for a professional degree - B. S. Masters, etc.?	E G F P
F O R N	11.	Participate in occupational workshops?	E G F P
F O R N	12.	Read trade or technology magazines and journals?	E G F P
F O R N	13.	Read trade or technology books?	E G F P
F O R N	14.	Planned observation of workers who are performing the skills or processes that they teach?	E G F P
F O R N	15.	Observe workers in the occupation they teach on the job?	E G F P
F O R N	16.	Attend local trade or technology conventions?	E G F P
F O R N	17.	Attend trade fairs - exhibits by industry or business?	E G F P
F O R N	18.	Work part time for wages at their occupation?	E G F R
F O R N	19.	Work part time without wages at their occupation?	E G F P
F O R N	20.	Work full time for a school term at their occupation for wages paid by either the school or the agency they work for?	E G F P
F O R N	21.	Read specifications of new equipment or tools used in their occupation?	E G F P
F O R N	22.	Read about new procedures and techniques in their trade or technology?	E G F P

F-Frequent participation
O-Occasional participation
R-Rarely participate
N-Never participate

E-Excellent
G-Good
F-Fair
P-Poor

Column A			Column B
F O R N	23.	Discuss their trade or technology with persons currently employed in it?	E G F P
F O R N	24.	Participate in seminars with persons in their trade or technology?	E G F P
F O R N	25.	Have an active advisory committee for their trade or technology?	E G F P
F O R N	26.	Have institutional workshops at their school that deal specifically with their trade or technology?	E G F P
	27.	Please list other activities which teachers in your school or system have participated in to keep them abreast of changes in their trade or technology and indicate the frequency of participation in column A. In column B rate the effectiveness of each activity.	
F O R N		_____	E G F P
F O R N		_____	E G F P
F O R N		_____	E G F P
F O R N		_____	E G F P

5. Please circle the number of each of the twenty-six activities listed above that your school or system provides for teachers or provides opportunities for teachers to participate. In the blank beside each number that you circle indicate by placing the appropriate letter if the opportunity is provided:
F-Frequently
O-Occasionally
R-Rarely

1. ____	7. ____	12. ____	17. ____	22. ____
2. ____	8. ____	13. ____	18. ____	23. ____
3. ____	9. ____	14. ____	19. ____	24. ____
4. ____	10. ____	15. ____	20. ____	25. ____
5. ____	11. ____	16. ____	21. ____	26. ____
6. ____				

III. 1. Which four items in the above list of activities, items 1-27, do you feel are most effective in keeping teachers occupationally updated? List them in order of importance.
Item numbers: ____ ____ ____ ____

2. Which four items in the above list of activities, items 1-27, do you feel are least effective in keeping teachers occupationally updated:
Item numbers: ____ ____ ____ ____

3. Which four items in the above list of activities, items 1-27, do you feel are the most effective in improving teacher prefermance? List in order of importance.
Item numbers: ____ ____ ____ ____

4. Which four items in the above list of activities items, 1-27, do you feel are the least effective in improving teacher preformance?
Item numbers: ____ ____ ____ ____

5. Which four items in the above list of activities, items 1-27, do teachers most prefer to participate? List in order of preference.
Item numbers: ____ ____ ____ ____

6. Which four items in the above list of activities, items 1-27, do teachers least prefer to participate?
Item numbers: ____ ____ ____ ____

QUESTIONNAIRE

I. Personal Data:

Name: (Optional) _____

1. Subjects teaching at present:

_____

_____

_____

2. Years of teaching experience:

a. _____ 1-4
b. _____ 5-9
c. _____ 10-14
d. _____ 15-19
e. _____ 20-24
f. _____ 25 or more

3. Degree(s) held:

Specify major area of study for each degree.

a. _____ Less than High School Diploma
b. _____ High School Diploma
c. _____ Associate Degree
d. _____ Baccalaureate Degree
e. _____ Master's Degree
f. _____ Doctorate
g. _____ Other (Please specify)

4. Age:

a. _____ 21-25
b. _____ 26-30
c. _____ 31-35
d. _____ 36-40
e. _____ 41-45
f. _____ 46-50
g. _____ 51 or over

5. Years of work experience (other than teaching) in your trade or technology?

a. _____ 1-2
b. _____ 3-4
c. _____ 5-6
d. _____ 7-8
e. _____ 9-10
f. _____ 11-15
g. _____ 16-20
h. _____ 21-25
i. _____ 26 or more

6. When did you last work at your trade or technology as a wage earner?

a. _____ Less than a year ago
b. _____ 1-3 years ago
c. _____ 4-6 years ago
d. _____ 7-9 years ago
e. _____ 10-15 years ago
f. _____ 16-20 years ago
g. _____ Over 20 years ago

II. Definitions of terms as used in questionnaire. Please read the definitions and respond to the items in the questionnaire according to the definitions given here.

Occupational Updating - Maintenance of occupational competency; keeping abreast of the new developments in an occupation.

Inservice Education - For purposes of this study inservice education is defined as any activity that you participate in, or have the opportunity to participate in that is designed to update your knowledge of your trade or technology.

Inservice Activity - For purposes of this study any activity that is designed to update the knowledge of a faculty member in his trade or technology.

Professional Conventions - Conventions of professional organizations composed of persons in vocational and technical education such as the American Vocational Convehtion.

Trade or Technology Conventions - Conventions composed of persons who are employed in some phase of the trade or technology that you teach.

General Education Course - A course at the college level that is not directly related to education or the trade or technology that you teach, such as English, history, sociology, etc.

Trade Fairs - Exhibits provided by industry that show changes in skills and technology in their trade, business, or technology.

Seminar - For purposes of this study a seminar is defined as an organized conference or discussion among persons teaching the same trade or technology.

Workshop - A workshop is defined for purposes of this study as an inservice activity that gives the participants the opportunity to learn, perform, and practice some new methods, operations, or techniques that are required or desirable in their trade or technology.

Occupational Workshop - Workshop conducted by industry or business for teachers, for the purpose of keeping them abreast of changes.

Institutional Workshops - Workshops conducted by the employing institution to update instructors.

1. Do you feel that the present inservice activities available to you are adequate to enable you to maintain your occupational competency?
   a. _____ Yes
   b. _____ No
   If no what changes would you recommend? _____

2. How often do you think inservice activities are necessary to keep you abreast of the new developments in your trade or technology?
   a. _____ Every year
   b. _____ Every two years
   c. _____ Every three years
   d. _____ Every five years
   e. _____ Other (Please specify) _____

3. Which is the most effective way for you to keep abreast of the changes in your trade or technology? (Please check only one)
   a. _____ Listening
   b. _____ Doing
   c. _____ Observing
   d. _____ Reading
   e. _____ Other (Please specify) _____

4. Following is a list of activities that might be used to keep you abreast of changes in your trade or technology.
   Please indicate under:

   a. Column A - The degree of your participation in this activity by circling:
      F-Frequently participate
      O-Occasionally participate
      R-Rarely participate
      N-Never participate

   b. Column B - Rate the effectiveness of these activities in keeping you abreast of changes in your trade or technology by circling:
      E-Excellent
      G-Good
      F-Fair
      P-Poor

Column A		Column B
F O R N	1. Attend national professional conventions?	E G F P
F O R N	2. Attend in-state professional conventions?	E G F P
F O R N	3. Attend out of state professional conventions?	E G F P

F-Frequently participate
O-Occasionally participate
R-Rarely participate
N-Never participate

E-Excellent
G-Good
F-Fair
P-Poor

Column A			Column B
F O R N	4.	Attend national trade or technology conventions?	E G F P
F O R N	5.	Attend state or interstate trade or technology conventions?	E G F P
F O R N	6.	Observe classes outside your school?	E G F P
F O R N	7.	Complete general education courses not directly related to your profession?	E G F P
F O R N	8.	Complete professional education courses, methods of teaching, course organization, educational psychology etc.?	E G F P
F O R N	9.	Complete courses directly related to your trade or technology?	E G F P
F O R N	10.	Complete requirements for a professional degree - B. S. Masters, etc.?	E G F P
F O R N	11.	Participate in occupational workshops?	E G F P
F O R N	12.	Read trade or technology magazines and journals?	E G F P
F O R N	13.	Read trade or technology books?	E G F P
F O R N	14.	Planned observation of workers who are performing the skills or processes that you teach?	E G F P
F O R N	15.	Observe workers in the occupation you teach on the job?	E G F P
F O R N	16.	Attend local trade or technology conventions?	E G F P
F O R N	17.	Attend trade fairs - exhibits by industry or business?	E G F P
F O R N	18.	Work part time for wages at your occupation?	E G F P
F O R N	19.	Work part time without wages at your occupation?	E G F P
F O R N	20.	Work full time for a school term at your occupation for wages paid by either your school or the agency you work for?	E G F P

F-Frequently participate
O-Occasionally participate
R-Rarely participate
N-Never participate

E-Excellent
G-Good
F-Fair
P-Poor

Column A		Column B
F O R N	21. Read specifications of new equipment or tools used in your occupation?	E G F P
F O R N	22. Read about new procedures and techniques in your trade or technology?	E G F P
F O R N	23. Discuss your trade or technology with persons currently employed in it?	E G F P
F O R N	24. Participate in seminars with persons in your trade or technology?	E G F P
F O R N	25. Have an active advisory committee for your trade or technology?	E G F P
F O R N	26. Have institutional workshops at your school that deal specifically with your trade or technology?	E G F P
	27. Please list other activities in which you have participated or would participate in if they were available to keep you abreast of changes in your trade or technology. Indicate the frequency of your participation in these activities and rate their effectiveness in keeping you abreast of changes.	
F O R N	_____	E G F P
F O R N	_____	E G F P
F O R N	_____	E G F P
F O R N	_____	E G F P

5. How long has it been since you participated in an inservice training activity designed to update your knowledge and the manipulative skills of your trade or technology?

a. _____ Less than 1 year
b. _____ 1-2 years
c. _____ 3-4 years
d. _____ 5-6 years
e. _____ 7-8 years
f. _____ 9-10 years
g. _____ Over 10 years

III. 1. Which four items in the above list of activities, items 1-27, do you feel are most effective in keeping you occupationally updated? List them in order of importance.
Item numbers: ____, ____ ____ ____

2. Which four items in the above list of activities, items 1-27, do you feel are least effective in keeping you occupationally updated?
Item numbers: ____ ____ ____ ____

3. Which four items in the above list of activities, items 1-27, do you feel are the most effective in improving your performance (in your opinion) as an instructor? List in order of importance.
Item numbers: ____ ____ ____ ____

4. Which four items in the above list of activities, items 1-27, do you feel are the least effective in improving your performance (in your opinion) as an instructor?
Item numbers: ____ ____ ____ ____

5. In which four items of the above list of activities, items 1-27, would you most prefer to participate? List in order of preference.
Item numbers: ____ ____ ____ ____

6. In which four items of the above list of activities, items 1-27, would you least prefer to participate.
Item numbers: ____ ____ ____ ____