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ABSTRACT

The purpose of this project was to aid vocational teacher education in preparing teachers to install and manage competency-based vocational programs. The project activities included a national workshop for leadership personnel from eleven selected institutions, a series of on-site training workshops for teacher education faculty at the participating institutions, and technical assistance to these institutions. Results of the project included the following products: a list of identified teacher competencies needed for installing and managing competency-based vocational programs; an annotated bibliography of competency-based vocational training materials (both the competency list and the annotated bibliography are appended to this document); and two prototype teacher education modules using the competency-based approach (included separately in the ERIC system, CE 013 794-795). During the national workshop and the on-site workshops approximately 225 vocational teacher educators and other leadership personnel received training. Special training packages were developed to assist in the delivery of this teacher educator training (CE 013 793). Response by the participants to the workshops, the products and materials, and the cooperative efforts of the project staff were very favorable. (Similar training activities and training packages presented as a part of the second phase of the National Institute for Performance Based Teacher Education are reported in ERIC documents CE 014 260, CE 014 160, and CE 014 161.) (Author/BM)

A PROGRAM OF TRAINING FOR INSTALLING COMPETENCY-BASED VOCATIONAL INSTRUCTION

Final Report
Project No. OH-V-N-M

Glen E. Fardig

Professional Development in Vocational Education
The Center for Vocational Education
The Ohio State University
Columbus, Ohio 43210

November 1977

THE CENTER MISSION STATEMENT

The Center for Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The Center fulfills its mission by:

- Generating knowledge through research
- Developing educational programs and products
- Evaluating individual program needs and outcomes
- Installing educational programs and products
- Operating information systems and services
- Conducting leadership development and training programs

A Program of Training for Installing Competency-Based Vocational Instruction was sponsored by The Center for Vocational Education in cooperation with the U.S. Office of Education under the provisions of EPDA Part F, Section 553, and The Ohio State Board for Vocational Education.

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FOREWORD

The need to prepare vocational teachers for competency-based instruction has been fully recognized by the U.S. Office of Education and the Center for Vocational Education. This report describes the activities and results of a joint effort to assist teacher education institutions to assume this responsibility. Through the work of this project, teacher competencies needed to install and manage competency-based programs have been identified, a bibliography of competency-based materials prepared, and prototype teacher education modules developed. In addition, vocational teacher educators in a number of institutions have become involved in planning for increased training of teachers for competency-based programs.

A considerable number of people have contributed to the success of the project. Glen E. Fardig was Project Director, and Joan Jones served as Program Assistant. As Program Director for Professional Development in Vocational Education, James B. Hamilton had overall responsibility for the project and made direct contributions as well. Other Center staff who participated in project activities were: Robert E. Norton, Senior Research and Development Specialist; Karen M. Quinn, Program Associate; Lois Harrington, Program Associate; and Barry Hobart, Graduate Research Associate.

Members of the National Planning Committee gave their advice and support in the planning stages of the project, and contributed their expertise in the work of identifying teacher competencies. Leadership teams from the 11 participating institutions organized and conducted project activities at their sites.

Support, guidance, and administrative assistance in planning and conducting the project were given by Darrell Parks, EPDA Coordinator, Ohio; Daryl Nichols, USOE Region V, EPDA Program Officer; and Duane Nielsen, Chief, Vocational Education Personnel Development, Bureau of Occupational and Adult Education, U.S. Office of Education.

Robert E. Taylor
Executive Director
The Center for Vocational Education

ABSTRACT

Project No.: OH-V-N-M

Title of Project: A Program of Training for Installing Competency-Based Vocational Instruction

Grantee Organization: The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

Project Director: Glen E. Fardig

Period Covered: July 1, 1976 to September 30, 1977

The purpose of this project was to aid vocational teacher education in general, and selected institutions in particular, to prepare teachers to install and manage competency-based vocational programs. The activities of the project included a national workshop for leadership personnel from 11 selected institutions, a series of on-site training workshops for teacher education faculty at the participating institutions, and technical assistance to these institutions.

Several products resulted from the work of the project and those will be available to the teacher education profession. The products are (1) a list of identified teacher competencies needed for installing and managing competency-based vocational programs, (2) an annotated bibliography of competency-based vocational training materials, and (3) two prototype teacher education modules covering seven of the identified competencies.

Eleven institutions were selected to participate in the project. During the national workshop and the on-site workshops, approximately 225 persons received training relative to preparing vocational teachers for competency-based instruction. Teacher educators from all vocational service areas participated. Other participants included administrative personnel, curriculum specialists, and vocational instructors.

The competency-based approach was utilized in conducting the national workshop and the on-site workshops. Special training packages were developed to assist in the delivery of this teacher educator training. Response by the participants to the workshops, the products and materials developed, and the cooperative efforts of the project staff was very favorable.

All available evidence indicates that the project was successful in achieving its objectives. Activities have been set in motion which should result in more vocational teachers being prepared to install and manage competency-based instructional. Much work must yet be done, however, to ensure that all vocational teachers have the opportunity for this important training.

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INTRODUCTION

Competency-based instruction is being vigorously promoted throughout the field of vocational education as one of the most promising developments for making vocational education more effective. Many vocational training institutions are just now becoming aware of the idea, others are in various stages of program planning, and some are fully implementing the principles of competency-based instruction (CBI).

If the CBI approach and the supporting instructional materials now being developed in vocational education are to achieve their full effect, vocational teachers must be capable of installing and conducting competency-based programs. They need to learn new management techniques, and must be prepared to function in the roles of learning diagnostician, manager, and resource person rather than as lecturers and test administrators. In order to prepare vocational teachers to install and conduct CBI, teacher educators themselves must be knowledgeable and expert in the theory and practice of this approach. It is the responsibility of leaders in vocational teacher education programs to ensure that their programs are organized to incorporate the subject matter content of competency-based vocational instruction and to deliver the training to preservice and inservice teachers.

The project reported here was directed first at selected leaders in vocational teacher education, and then at teacher education faculty in the participating institutions. It was expected

that these individuals would, in turn, organize their teacher education courses and programs so as to train vocational teachers to install competency-based instruction in secondary and post-secondary schools.

As used throughout this report, "competency-based instruction" is an instructional approach that is based on the competencies (technical skills) identified as being needed to perform the duties of a specified occupation. Specifically, CBI is an approach in which competencies to be acquired and demonstrated by vocational students, and the criteria to be applied in assessing student performance, are made explicit, and the student is held accountable for meeting these criteria.

The sections that follow report on this project's planning procedures, major activities, and products. Some recommendations for future work in the field of CBI are also presented.

PROJECT ACTIVITIES AND EVENTS

While plans for achieving the objectives of this project had been drawn up in tentative form earlier, a national planning committee was needed to help refine the plans and give further direction to the work. It was important in the selection of members for this group that they have personal experience and expertise in competency-based education as well as being recognized educators in their particular fields. The committee members, representing the ten USOE Regions and a variety of backgrounds, met at The Center for Vocational Education on October 26 and 27, 1976. The members of the national planning committee were:

Dr. Donald E. McCreight
Chairman, Department of Agricultural Education
University of Rhode Island

Dr. Alan Edsall
Senior Research Specialist
Cornell Institute for R&D in Occupational Education

Dr. Fred W. Harrington
Coordinator of Curriculum Development
Bureau of Vocational, Technical and Adult Education
West Virginia State Department of Education

Dr. Bruce Carpenter
Director, Competency-Based Education Program
Curriculum Development Center for Kentucky
University of Kentucky

Dr. William C. Knaak
Superintendent
916 Area Vocational Technical Center
White Bear Lake, Minnesota

Mr. Arch Alexander
Associate Director, State Board for Vocational Education
Oklahoma State Department of Education

Mr. Latham Mortensen
Instructor, Vocational Education
Central Technical Community College
Hastings, Nebraska

Dr. Austin G. Loveless
Teacher Educator, Industrial Technical Education
Utah State University

Ms. Donna Kishi
Teacher, Distributive Education
Fremont Newark Regional Occupational Center
Fremont, California

Dr. Mary Hall
Director of Evaluation
Oregon State Department of Education

Ex Officio Members

Ms. Mary Marks
Program Specialist
Bureau of Occupational and Adult Education
Curriculum Development Branch
U.S. Office of Education
Washington, D.C.

Dr. Daryl Nichols
EPDA Program Officer
USOE Region V
Chicago, Illinois

Dr. Darrell Parks
Personnel Development Coordinator
Division of Vocational Education
Ohio State Department of Education

Specifically, the national planning committee was asked to (1) review the project activities to date, (2) make recommendations for refining the plans, (3) suggest sources for competency-based instructional materials, and (4) review plans and

make recommendations for the national workshop. In addition to these planning duties, the national planning committee was given the important and demanding task of acting as a curriculum development committee to identify the teacher competencies for installing and managing CBI programs. Further details of this function of the committee, and the results of their deliberations, are given later in this report.

With the advice and approval of the national planning committee, selection of the 12 vocational teacher education institutions that were to participate in the project was begun. Nominations were sought from each state's EPDA coordinator, and the nominees were invited to submit applications. The application form is reproduced in Appendix A. Selection of the participating institutions (one from each of the 12 USOE Regions, and two at large) was made by project staff and reviewed by other Center staff according to the following criteria:

> The institution/agency accepts and supports the concepts involved in competency-based instruction (CBI).
>
> The institution/agency desires to work cooperatively with The Center to prepare vocational teachers to install and manage CBI.
>
> The state bureau of vocational education strongly supports teacher training for installing competency-based vocational instruction.
>
> There is a history of cooperation between the vocational teacher education faculty and professional personnel in the state department of education.
>
> The institution/agency has demonstrated leadership in the preparation of vocational teachers.

There is evidence of the ability of the teacher education institution/agency to commit resources (professional personnel, students, facilities) to preparing teachers to install CBI.

Preference will be given to institutions/agencies providing preservice and inservice teacher education in a number of occupational service areas.

The designated site leader at each of the selected institutions was notified and asked to make plans for attending the national workshop for site leaders scheduled to take place at The Center for Vocational Education in early February, 1977. Teacher education institutions were selected to represent each of the 12 regions. However, the institution selected to represent Region X accepted the invitation to participate, but later withdrew. At that date, it was not possible to replace it with another institution. The listing that follows gives the participating institutions, along with the names of the site leaders and associate site leaders.

Region I	Westfield State College, Westfield, Massachusetts John F. Nevins, Site Leader George Worle, Associate
Region II	Cornell University, Ithaca, New York William E. Drake, Site Leader Arthur L. Berkey, Associate
Region III	West Virginia Institute of Technology Montgomery, West Virginia George D. Culnon, Site Leader Fred Harrington, Associate
Region IV	Clemson University, Clemson, South Carolina John H. Rodgers, Site Leader Paul C. Caley, Associate
Region V	Kent State University, Kent, Ohio Wayne Asche, Site Leader Ray Jacobs, Associate

Region VI	University of Houston, Houston, Texas Kenneth W. Brown, Site Leader Nellie Carr Thorogood, Associate
Region VII	Kansas State University, Manhattan, Kansas Merton E. Powell, Site Leader Ellen Bowers, Associate
Region VIII	Utah State University, Logan, Utah John F. Van Derslice, Site Leader Charles Parker, Associate
Region IX	California State University, Fresno, California Gwen C. Cooke, Site Leader Maurine Van Griend, Associate
At Large	Indiana University, Bloomington, Indiana Marianne J. D'Onofrio, Site Leader Mary Lee Seibert, Associate
	University of Wyoming, Laramie, Wyoming James Zancanella, Site Leader James R. Durkee, Associate

NATIONAL WORKSHOP

The first opportunity for the selected participants to become directly involved in the work of the CBI Project was during the National Workshop on Preparing Teachers for Competency-Based Instruction. This was held at The Center, February 8-10, 1977. The broad purpose of the workshop was to prepare selected vocational teacher educators from the 11 participating institutions to incorporate into their teacher education programs the capability to train teachers to install and implement competency-based instruction.

The twenty-seven persons attending the workshop included the site leader and associate site leader from each of the institutions, and a representative of the state department of education of the state in which each institution was located. In addition, members of the national and regional offices of the USOE attended for at least a part of the three-day session. Seven members of program staff of The Center were involved as presenters and small-group leaders, and seven consultants contributed significantly to the activities.

Since one of the objectives of the workshop was to further acquaint the teacher educators with the principles and practices of competency-based instruction, a modularized approach was chosen to direct the learning of the participants. The participants were being asked to use modularized materials for their students when they returned to their institutions. Consequently,

a workshop module was developed to use the same processes to help them learn about training teachers for competency-based instruction. Thus, the medium became part of the message.

The workshop module for the CBI workshop is similar to that used successfully by the program staff in previous teacher educator training programs. Its format and structure are based on that employed in The Center's PBTE curricula materials, with components of cognitive learning activities, practice activities, feedback, and assessment procedures. Obviously, the characteristic of time-free learning often associated with competency-based instruction had to be modified to suit a limited three-day workshop. A copy of the workshop module, designated CBI-101, and entitled, "Train Educators to Install Competency-Based Vocational Instruction," appears as a separate document attached to this report.

The terminal objective for the workshop module, and for the national workshop itself, was: within your own institution, train educators to install competency-based instruction. In order to more fully understand the implications for teacher training, participants were asked in the course of the activities to assume the roles of a student in a competency-based vocational program, a teacher in a CBI program, and a teacher educator preparing teachers to use CBI. Finally, the site leaders attending the workshop were asked to plan a program of teacher training for competency-based vocational instruction.

Specifically, the enabling objectives of the national work-

shop were:

1. Given an experience in role-playing a student in a CBI program, demonstrate knowledge of the principles which should underlie any competency-based instructional program.

2. Assuming the role of a teacher in a CBI program, demonstrate knowledge of how to orient students to CBI.

3. Assuming the role of a teacher in a CBI program, demonstrate knowledge of the activities involved in managing a CBI program.

4. In the role of a teacher educator, demonstrate knowledge of how to use PBTE materials to train teachers to use CBI.

5. In your own role as a leader in this training effort, plan how you will implement the CBI training program and orient the persons involved.

One of the most effective learning activities took place when participants, in the role of students, were given the opportunity to learn a specific, limited occupational skill in which instruction was presumed via the competency-based approach. Skills were selected from a Health Occupations program ("Take a patient's pulse and blood pressure reading."), a Cabinetmaking program ("Construct a dowel joint."), and a Bank Teller program ("Cope with a bank robbery."). Each of these learning sessions was conducted by a vocational instructor experienced in the use of competency-based instruction. A variety of instructional modes were employed, including information sheets, a videotape, slide/tape presentations, an audio tape, and tutoring. From this learning experience, participants were able to draw the basic principles, characteristics, and practices of the CBI approach.

The use of consultants with personal knowledge of CBI, and experience in its application gave the workshop a degree of credibility and relevance it might not have had otherwise. The five outside consultants on competency-based vocational instruction were:

Ms. Melissa Briscoe
Coordinator, Competency-Based Vocational Education
Kentucky State Department of Education

Mrs. Kris Sitler
Instructor, Allied Health
Boone County (West Virginia) Career Center

Mr. Elmore Johnson
Instructor, Modern Wood Technology
Suburban Hennepin County (Minneapolis) Technical Center

Mr. Darrell Heitzman
Program Coordinator
Suburban Hennepin County (Minneapolis) Technical Center

Mr. Lawrence Coffin
Director, Program and Staff Development
Holland College, Prince Edward Island, Canada

In addition, two educators experienced in performance-based teacher education (PBTE) helped the group understand the relation of PBTE to the preparation of teachers for CBI. These consultants were:

Dr. Ruth Lungstrom
Vocational Teacher Educator
University of Pittsburgh

Dr. Charles Parker
Vocational Teacher Educator
Utah State University, Logan

Evaluation of the national workshop took two forms. At the close of each day's session, participants were requested to complete a daily program survey, and at the end of the workshop

they completed a final evaluation form. The daily survey was used to obtain immediate feedback from participants. Changes in workshop procedures were made on the basis of participant reaction when this was appropriate. A copy of one of the daily survey forms appears in Appendix B.

The final evaluation form was used to obtain overall ratings of the workshop. These ratings were used to gauge the general success of the workshop and to better plan for the on-site workshops that were to follow. A copy of the final evaluation form appears in Appendix C.

A summary of the results of the final evaluation appears in the table below. It can be seen that the participants' ratings of the entire workshop were very positive. The highest ratings were given to items related to workshop staff. Somewhat lower ratings were given to the opportunity for interaction, and the comfort of the accommodations (It should be noted that the workshop took place during a difficult period of the winter of '77). The overall mean rating was 4.37 on a five-point scale.

The participants' responses to the rated items, as well as their comments on the open-ended evaluation items, indicate that they perceived the national workshop as being well planned and conducted. The group gave every indication that they were well pleased, and that they benefitted greatly from attending. It can be concluded that the objectives of the workshop were achieved and that the groundwork was laid for successful on-site activities.

Table I

EVALUATION OF THE NATIONAL WORKSHOP
IN TERMS OF PARTICIPANT RATINGS OF
EVALUATION FORM ITEMS

	5	4	3	2	1	Mean Rating
The Workshop in General						
Stimulating	10	7	3	-	- Dull	4.35
Informative	10	7	3	-	- Informative	4.35
Well Organized	8	10	1	1	- Disorganized, chaotic	4.25
Appropriate Activities	5	13	1	1	- Inappropriate activities	4.10
Efficient Use of Time	4	12	4	-	- Much waste of time	4.00
Ample Opportunity for Interaction	8	5	5	2	- Little or no interaction	3.95
Met My Needs as a Participant	11	4	5	-	- Failed to meet my needs as a participant	4.30
Workshop Material						
Well Written	13	5	2	-	- Poorly written	4.55
Valuable Content	14	5	1	-	- Poor content	4.65
Workshop Staff						
Knowledgeable	14	5	1	-	- Uninformed	4.65
Helpful	16	4	-	-	- Unhelpful	4.80
Congenial, friendly	18	2	-	-	- Disagreeable, unfriendly	4.90
Accommodations and Facilities						
Comfortable, pleasant	6	8	3	2	- Uncomfortable, unpleasant	3.95

TECHNICAL ASSISTANCE TO PARTICIPATING INSTITUTIONS

Following the national workshop, the project entered the phase of providing technical assistance to the participating institutions. A major activity of this phase was to conduct an on-site workshop at each institution. The workshop participants included vocational teacher educators and administrative personnel from the institution and other local educators directly concerned with teacher training.

Among the goals of the on-site workshops were to (1) inform the participating teacher educators of the concepts, characteristics, and instructional procedures of competency-based vocational instruction, (2) create awareness of national trends in CBE, and the implications for teacher training, and (3) encourage education personnel to review their teacher training programs with a view to the inclusion of specific preparation for installing and managing competency-based vocational programs.

On-site workshops were held at the 11 participating institutions over a period of several months following the national workshop. Organization of the workshop was the responsibility of the site leadership team who made local arrangements; finalized the agenda; and took part in the presentations, small-group work, and other activities. With two exceptions, a two-person team from The Center travelled to the site to take an active role in presenting selected topics, giving demonstra-

tions of CBI techniques, serving as small-group leaders, and acting as resource persons.

Depending on the situations, the workshops were scheduled for either one or two days' duration. The site leaders are to be commended for the way in which the workshops were planned and organized; this contributed greatly to the success of the technical assistance phase of the project.

Following is a schedule of the on-site workshops:

Indiana University	April 12-13, 1977
Kent State University	April 20
University of Wyoming	April 21-22
University of Houston	April 28-29
California State University, Fresno	May 2-3
Clemson University	May 3-4
Cornell University	May 16-17
Westfield State College	May 18
Utah State University	June 9
West Virginia Institute of Technology	August 18
Kansas State University, Manhattan	September 23

Approximately 225 persons were involved in the on-site workshops; a majority of these were vocational teacher educators, but also included were college deans, curriculum specialists, supervisors, and practicing vocational teachers. This range of education personnel provided a variety of interest and expertise, and added to the liveliness of group interaction.

As in the national workshop, the on-site activities were based on a workshop module, CBI-102, a somewhat shortened version of Module CBI-101 used with the national group. As an example of a competency-based learning experience, the participants at most of the on-site workshops were given an opportunity to learn the skill of basic proofreading via an instructional module developed in the West Virginia schools. This learning experience proved to be extremely effective in helping teacher educators understand the concepts of competency-based instruction from a student's point of view. Other workshop activities selected to meet the amount of time available, were much the same as those of the national workshop.

Participant evaluation of the on-site workshops employed an instrument consisting of 13 items, similar to that used in the national workshop. The overall evaluations were very high, with a relatively small range among the various sites. On a five-point scale, with a high score of 5, the mean rating of all items over all sites was 4.51. The workshop with the lowest rating had a mean of 4.04, with the highest being 4.74.

From the rated items as well as the open-ended item responses, it was apparent that the most highly rated aspects of the workshops were the quality of the prepared materials, the organization, the use of the competency-based approach, and the knowledgeability and enthusiasm of the staff. Some negative comments indicated that perhaps too much was being attempted in too short a time.

It is difficult to know the exact nature and extent of the effects of these on-site workshops. Evaluation results do permit it to be stated unequivocally that teacher educators' awareness of CBI and its implications for teacher education have been dramatically increased. Positive attitudes toward CBI have been developed, and motivation established to revise teacher training procedures. A beneficial side effect, reported by several site leaders, was that members of various education groups had gotten together and talked to each other on a matter of common interest and concern in an atomosphere of congeniality and cooperation.

In addition to the on-site workshop, other forms of technical assistance were available to the sites. This assistance was provided at the specific request of the sites, and took a variety of forms. Every institution was furnished 30 copies each of the teacher education modules K-1 and K-2 (described in a later section of this report) for use in their classrooms. Some site leaders also requested additional copies of the workshop module, CBI-102, and other materials. Discussions were held with several site leaders about setting up projects in conjunction with the local school system for the training of teachers for competency-based instruction. All requests for technical assistance were filled to the best ability of the staff and within the resources of the project.

BIBLIOGRAPHY OF COMPETENCY-BASED VOCATIONAL INSTRUCTIONAL MATERIALS

Teacher educators concerned with a particular occupational area should be able to recommend suitable high-quality competency-based instructional materials in that area. Therefore, it is vitally important that teacher educators become familiar with the kinds of competency-based vocational instructional materials that are available, examine their contents, compare their formats, and understand the conceptual models on which they are based. A careful review will also help teacher educators understand the role of vocational teachers who will utilize these materials, and the training required for utilization.

For these purposes, and for the use of the project staff in planning the workshops and preparing instructional modules, a bibliography of competency-based vocational instructional materials was prepared. A preliminary version was developed at an early stage of the CBI Project, and a final revised version was produced as one of the last project tasks. The final bibliography is included in this report as Appendix E.

Initially, a thorough search of the professional literature was made to locate competency-based instructional materials. Searches were made of such sources as ERIC, Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM), and The Ohio State University's Mechanized Information Center (MIC). In addition, professional contacts made by Center staff, and the input of the national

planning committee were drawn on to locate current projects. A great number of suggestions and leads were pursued in the search for exemplary instructional materials.

Rather than relying on written descriptions of the materials, samples of actual modules, learning packages, and other material forms were collected for examination and review. Each one of the programmatic materials was examined by an experienced reviewer for its relevance to vocational education, suitability for competency-based instruction, quality of content, and availability to the teaching profession. Only those judged to be particularly appropriate to the purposes of teacher educators in the context of preparing teachers for CBI were selected for inclusion in the bibliography.

During the period between the preliminary version (February, 1977) and the final version (September, 1977), additional information and materials were gathered for inclusion in the bibliography in an effort to keep it as current as possible. The field of competency-based instructional materials is moving so rapidly, however, that any collection of information about it is likely to be somewhat out-of-date almost as soon as it is disseminated.

There is a great deal of activity in vocational materials development, with a large number of institutions and agencies becoming involved in the effort. Individual vocational/technical centers, school systems, state agencies, R&D centers, universities, and commercial concerns are all actively produc-

ing various forms of learning packages. Some efforts are as limited as that of a single teacher laboring with minimal support; others involve impressive numbers of curriculum specialists working in well-funded, long-term projects. Surprisingly enough, it appears that there is no one pattern of organization that is inherently better in terms of producing usable materials. Good quality (or mediocre) CBI materials can be found to come from most any type of source.

The nature and quality of the collected materials varied widely. Many items purporting to use the competency-based approach did not meet the predetermined criteria set by the reviewers. Sometimes competencies were listed, but without evidence of verification; learning activities were presented that might only vaguely deliver on stated competencies; the essential CBI element of observed performance assessment was often missing entirely.

On the other hand, it is encouraging to note that it is possible to find in almost every occupational service area some competency-based instructional materials that are thoroughly conceptualized, well written, and clearly organized, and that through field testing are known to be effective in helping students achieve occupational competence. Of late, there appears to be a definite trend toward improved CBI materials as developers get a better grasp of the nature of competency-based instruction and gain experience in creating materials that meet the potential of this approach.

All this points up the idea that teacher educators at all levels need to be informed, discerning, and careful as they select examples of competency-based materials for use with vocational teachers. It is very helpful to have available a set of criteria which can be applied to the materials under review. It is more than usually important for educators to make a conscious effort to keep up with developments in this field. The annotated bibliography prepared as a phase of the present project is one attempt to assist educators to this end.

An examination of the works listed in Part II and Part III of the bibliography will reveal that, while a beginning has been made, there is much work to be done by the profession in preparing vocational teachers and curriculum specialists for the competency-based approach. Programs and instructional materials must be developed to help people in these positions to write and test CBI learning packages, organize vocational programs to utilize CBI principles, and manage the day-to-day instructional process. This aspect of the competency-based movement should not be mistakenly assumed to be a simple task, or one unworthy of special attention. Only if vocational teachers are thoroughly prepared and programs properly organized can competency-based instructional materials, no matter how well conceived or created, achieve their full potential for improving the training of vocational students.

TEACHER COMPETENCIES FOR CBI

One of the difficulties in preparing vocational teachers for their new role and responsibilities in using the competency-based approach is that the unique skills needed to install and conduct competency-based instruction have not until now been clearly identified. Such has been the pace of events that even well-known and fairly recent studies of teacher training needs do not include these competencies. It is essential to have a verified list of competencies in order to plan teacher training programs, to develop appropriate teacher education instructional materials, and to assess the effectiveness of teachers and programs. It was one of the important tasks of this project to take the first steps in identifying such a list of teacher competencies.

The first part of the task involved a thorough search of the professional literature to determine what had been done relative to identifying teacher competencies for CBI. Searches were made of the ERIC system and AIM/ARM. A manual search of sources in the university library, including recent doctoral studies, was also done. The results of these searches revealed that the competencies had not been specifically identified, though many sources agreed that there were unique teaching skills inherent in the CBI approach.

From a reading of the literature on teacher roles and responsibilities in CBI, it was possible to draw inferences

about teacher competencies. Thus, a series of 22 tentative competency statements were developed and refined.

The second step in the identification process utilized the expertise of the project's national planning committee as a DACUM committee to develop a separate list of competencies. The DACUM (Developing A Curriculum) process utilizes a modified small-group brainstorming technique to generate competencies within a period of one or two days, and under the guidance of a neutral coordinator. The group identifies main categories and specific skills, then organizes these into a chart of competencies. An overview of the DACUM approach is presented in Appendix D.

The DACUM committee identified a series of 64 competencies needed by teachers in installing and managing CBI vocational programs. The DACUM committee list and the list derived from the literature differed principally in the broadness of the competency statements. Statements in the two lists were compared, reorganized, and merged to form a single list. Teacher educators and others on the staff reviewed the statements, eliminated redundancies, resolved inconsistencies, strengthened any incomplete areas, and in general refined the wording. The statements were grouped for topical relationships and organized into an approximate instructional sequence. The resulting list of 45 teacher competencies is presented in Appendix F.

It should be noted that the identified competencies are either unique to the installation and management of competency-

based instruction, or are general teacher competencies that have special application to CBI. An example of a unique competency is No. 34, "Establish a daily CBI progress reporting system for students." On the other hand, competency No. 15, "Conduct student performance assessments," while common to many vocational training programs, has special implications and problems for the teacher utilizing competency-based instructional modules.

There is a further step in the competency-identification process that is yet to be done, but unfortunately this was beyond the resources of the present project. The statements as they now stand should be verified by submitting them to the review of randomly selected education personnel experienced in competency-based instruction. This national panel would be invited to revise, delete, or add to the statements, and the resulting recommendations would be utilized in a final refinement of the list. For some curriculum development purposes, it would also be helpful to develop performance criteria for each of the competencies.

Even though the list of teacher competencies presented in this report lacks final verification, it can be utilized for a variety of purposes. Present teacher education programs can be reexamined to ensure that teachers are given instruction to help them achieve the required competencies, inservice courses or workshops can be organized on the basis of the competencies, instructional materials can be developed to deliver

on the competencies, and teachers presently involved in competency-based instruction can be assessed on the basis of the competencies to determine need for further assistance or training.

TEACHER EDUCATION MODULES FOR COMPETENCY-BASED INSTRUCTION

If vocational teachers are to be trained to install and manage competency-based vocational education programs, it will be important to have specially developed training materials available for this purpose. That a search of the literature reveals there is very little now available is hardly surprising. The CBI approach has been so recently accepted, and materials developers have been so occupied with other urgent matters, that the problem has not been properly addressed up to this time. One of the objectives of this project was to make a beginning on solving this problem.

It is logical that vocational teachers who are going to have the responsibility for operating competency-based programs should experience this same approach in their own training. They will learn how to use CBI not only cognitively, but also experientially, and will be more likely to have positive attitudes about it as they themselves experience success. Thus, in training teachers for CBI, teacher educators should use the methods and materials of performance-based teacher education (PBTE). The concepts and practices are basically similar; only the target groups (teachers rather than vocational students), and the subject matter content (pedagogical skills rather than technical skills) are different.

As products of this CBI project, two individualized teacher education modules were developed. The two completed

modules serve as prototypes for an entire series of training materials planned as a future effort. The contemplated series of modules are designed to provide training for each of the 45 teacher competencies identified in an earlier phase of this project as being important to vocational teachers installing and managing CBI programs.

Because only two modules could be completed within the scope of this project, the advice of the national planning committee was sought concerning which competencies were most crucial, and what training materials were most urgently needed. It was determined that the clusters of teacher competencies related to: (1) the basic concepts, characteristics, and practices of competency-based vocational instruction, and (2) day-to-day management of a competency-based program, should be the subjects of the first modules.

The format and structure of the modules follow those proven to be successful in The Center's PBTE Curricula. The Center's modules were developed during an extensive series of projects supported by the National Institute for Education and the U.S. Office of Education. The instructional approach includes (1) cognitive learning experiences basic to the understanding and achievement of the subject competencies, (2) practice and planning experiences related to the competency, (3) alternative and optional experiences designed to be of value to teachers with varied learning styles and personal interests, and (4) a final experience in which the teacher

demonstrates the competencies in an actual school situation while being observed and assessed by a teacher educator/resource person.[1]

The modules, designated K-1 and K-2 respectively, were developed by experienced project staff using procedures found to be efficient and effective in producing The Center's 100 PBTE modules. They were completed in time for the national workshop, and were used there as well as in the 11 on-site workshops. Since that time, they have been somewhat refined, re-edited, and prepared for publication through The Center's cost recovery operation. Sample copies of Modules K-1, "Orienting the School and Community to Competency-Based Instruction," and K-2, "Managing the Competency-Based Vocational Program," accompany this report as separately bound documents.

Together, the two modules cover seven competencies (numbers 5, 6, 7, 8, 25, 26, 27, 34) of the 45 identified in the CBI Teacher Competency List. Thus, PBTE modules still need to be developed to deliver on the remaining 37 competencies. This will require approximately ten additional modules, the tentative titles of which are presented on the last page of the competency list in the Appendix. It will be necessary to secure additional funds in order to develop the ten modules, field

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[1]For more information about the structure and use of PBTE modules, see James B. Hamilton and Karen Quinn. Resource Person Guide to Using Performance-Based Teacher Education Materials. Athens, GA: American Association for Vocational Instructional Materials, 1977.

test all 12, subject the modules to refinement on the basis of field-test results, and prepare them for publication. This would require about a year's work, with the published modules forming an eleventh category (Category K, "Competency-Based Instruction") in The Center's PBTE Curricula now available to the profession.

Even though the CBI module series is presently incomplete, the two existing modules can be put to use in several ways. They can form the basis for an inservice workshop or practicum for vocational teachers who are about to install and/or manage CBI programs, they can be used as an instructional unit in a methods course in a conventional teacher education program, or they can be used as required or elective modules in an existing performance-based teacher education program.

SUMMARY AND CONCLUSIONS

An examination of the original proposed scope of work and a reading of the results reported here give evidence that all of the objectives of the project have been achieved and all the proposed products completed. Within the project's recognized limitations of time and financial resources, much has been accomplished. As in most educational endeavors, of course, some of the solutions have raised additional questions, and the accomplishments have revealed how much is yet to be done.

Vocational teacher education leadership in 11 institutions of higher education have been given training in the competency-based instructional approach in general, and teacher training needs in particular. These institutions have, to an extent, become dissemination centers for information about teacher training for CBI. Plans are being made in the participating institutions to review and revise their programs to include training for CBI. Several of the institutions have reported "spin-off" or outgrowth activities, such as additional teacher educator workshops and cooperative efforts with local school systems.

At the same time, working with teacher education groups has pointed up some inhibiting factors that will need to be addressed in any continuing efforts related to competency-based instruction. There is a tendency for teacher educators to confuse the concepts of competency-based instruction (CBI) and those of performance-based teacher education (PBTE), with which

they are more familiar. This confusion can be fairly readily overcome by well-prepared information experiences.

Because they themselves have usually not experienced the competency-based approach in their own teaching or learning, some teacher educators appear to be uncomfortable with the concepts and practices of CBI, and may even find the notion a bit threatening to them. There is a certain reluctance among many teacher educators to assume responsibility for training teachers for this approach, possibly because reorganizing for such training may disrupt a well-ordered and functioning program, and add to what they consider to be an already overburdened curriculum. This latter attitude has some serious implications, because school systems moving rapidly toward competency-based instruction might bypass teacher education institutions and look to other sources of training for their teachers.

In the task of assisting teacher educators to develop programs of training for CBI, there is a good deal of unfinished business. Work that has been initiated within this project needs to be carried through to completion, and other measures should be undertaken. The section that follows briefly outlines the work that must be done.

- The teacher competencies needed for CBI that were identified as a part of the work of this project should be subject to verification by the profession. One way to do this is to submit the list to a large national sample of practitioners expert in CBI to obtain their ratings of the importance of each competency statement. The list could then be given final revision on the basis of the ratings and recommendations received.

- The series of teacher education modules, of which two prototypes have been developed, needs to be completed. The entire group of approximately 12 modules should then be field tested in a variety of preservice and inservice teacher training settings and refined on the basis of field-test results. The series can be made available to the profession through regular publication channels.

- Additional teacher education institutions need and desire assistance in training their faculty in the concepts of CBI. This could probably best be done by conducting on-site workshops and by providing technical assistance to institution leaders as they plan programs of teacher training.

- Local and state education agencies should provide inservice education to teachers concerning the principles and practices of CBI. This is particularly urgently needed in school systems that are now planning competency-based vocational programs. The local and state agencies will probably need outside help in planning and conducting these inservice programs.

- Cooperative projects, involving vocational teacher education programs and local education agencies, should be organized for the purpose of developing plans for competency-based vocational training programs, preparing teachers to install and manage them, and monitoring the early stages of implementation.

All of this implies an active, productive, and exciting role for teacher educators as the idea of competency-based instruction moves from the abstract pages of the professional literature into the realities of the school classroom and laboratory. For, in the opinion of the project staff, CBI is now just at the threshold of wide acceptance, ready to be put to work for the improved training of men and women about to enter the occupational field. In order for competency-based instruction to reach its full potential, it will need continued financial support to marshal the best efforts of the teacher educa-

tion profession. The results will surely justify this support and be worthy of these efforts.

Appendix A

Application Form and Brochure

A PROGRAM OF TRAINING FOR INSTALLING
COMPETENCY-BASED VOCATIONAL INSTRUCTION

APPLICATION FORM

Name of the Institution or Agency

_____

_____

Name and Mailing Address of Applying Department or Division

_____

_____

_____

_____

Institutional Data

Number of vocational teacher education staff (1976-77)

Full time _____
Part time _____

Approximate number of teachers in training enrolled (1976-77)

Preservice _____
Inservice _____

Vocational service areas in which teachers are trained
(Check all that apply)

Agriculture Education	_____	Business & Office Education	_____
Distributive Education	_____	Health Occupations Education	_____
Home Economics Education	_____	Industrial Arts Education	_____
Technical Education	_____	Trade Industrial Education	_____

If there are unusual aspects of your program that need explanation, please attach a statement.

Participating Personnel

Site Leader Designate

Name _____

Title _____

Mailing Address _____

_____

_____

_____

Phone Office: _____

Home: _____

Current Responsibilities:

(Please attach current vita)

Associate Site Leader Designate

Name _____

Title _____

Mailing Address _____

_____

_____

_____

Phone Office: _____

Home: _____

Current Responsibilities:

(Please attach current vita)

Please respond briefly to the following six items

1. What is the status of competency-based instruction in the secondary and post-secondary schools served by teachers enrolled in your institution/agency (e.g. what stage of planning or implementation, what types of schools are involved, to what extent is instruction competency-based, etc.)?

2. What do you perceive as the extent and scope of need for preparing vocational teachers to install and manage CBI in your region (e.g. how many teachers need training in CBI, to what degree, for what types and levels of instruction, etc.).

3. Is your institution presently engaged in preparing teachers to install and manage competency-based vocational instruction in school programs? If so, what specific efforts are being made (e.g. unit in methods course, workshops, inservice courses, etc.)?

4. Has your institution/agency prepared plans for the future training of teachers for CBI? If so, please describe.

5. How would it be helpful to you and/or your institution to participate in the activities of this project?

6. You may wish to provide additional information that you think would help the selection committee better understand your institution's interests, needs, and qualifications.

Signatures of Institution/Agency Personnel

After reviewing the project information and this application, please sign below.

Site Leader Designate _____ Date_____

Associate Site Leader Designate _____ Date_____

Department Chairperson or Coordinator (if not one of the above) _____ Date_____

Participants

Twelve vocational teacher education institutions or education agencies will be selected to participate in the work of the project. At least one institution will be selected from each of the ten USOE regions A team of three participants will represent the institution at the National Workshop for CBI. Selection criteria will be based on commitment to preparing teachers for competency-based instruction as indicated by:

- past performance in vocational teacher preparation
- willingness to commit institution resources for this purpose
- the expected impact on educational innovation within the institutional region.

The selection process will proceed as follows:

- nominations sought from each state EPDA coordinator
- application forms sent to all nominated institutions and to others known to be interested in the preparation of vocational teachers for installing competency-based instruction
- applications reviewed and rated relative to the specified selection criteria.

For additional information about the CBI project, please contact:

Glen E. Fardig, Director, CBI Project
The Center for Vocational Education
1960 Kenny Road
Columbus, Ohio 43210
Phone: (614) 486-3655, ext. 277

A Program of Training for Installing Competency-Based Vocational Instruction is sponsored by The Center for Vocational Education in cooperation with the U.S. Office of Education under provisions of EPDA Part F, Section 553, and the Ohio State Board for Vocational Education.

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University · 1960 Kenny Road Columbus Ohio 43210

A PROGRAM OF TRAINING FOR INSTALLING COMPETENCY-BASED VOCATIONAL INSTRUCTION

CBI

THE CENTER FOR VOCATIONAL EDUCATION
The Ohio State University · 1960 Kenny Road · Columbus Ohio 43210

A Program of Training for Installing Competency-Based Vocational Instruction

Purpose

The competency-based approach to instruction is being met with much enthusiasm among vocational educators. Throughout the country, plans are moving forward and instructional materials are being developed to implement competency-based instruction (CBI) in vocational education programs. If CBI is to achieve its potential for improving vocational training, teachers must be prepared to install and conduct such programs. This training program for teacher educators is designed to assist the participants to prepare teachers for CBI. It will do this by meeting the following major objectives to assist selected teacher educators to:

- understand the basic concepts and rationale underlying competency-based vocational education
- identify unique professional competencies needed by teachers to install and implement CBI
- be familiar with the alternative approaches to implementing competency-based vocational instruction in secondary and post-secondary schools
- locate and evaluate competency-based instructional materials appropriate to vocational programs
- design and implement a training program for preparing vocational teachers for competency-based instruction
- develop instructional strategies and materials for a teacher training program in CBI
- serve effectively as resource persons, advisors, and evaluators of CBI

Products

The following educational products will be developed. These products will be made available to the profession upon completion of the project:

- Listing of professional vocational teacher competencies unique to implementing competency-based vocational instruction in the schools
- Bibliography of currently available competency-based vocational instructional materials for each of the several vocational service areas
- Training packages for preparing vocational teacher educators to train vocational teachers to install and manage competency-based instruction
- Two prototype instructional modules including several teacher competencies needed for installing competency-based vocational instruction

Activities

The major project activities which will take place during the year's duration of the project are:

- Three-day National Workshop for participating vocational teacher educators (department heads and their associates) at The Center, January 1977

  FOCUS: Developing Teacher Education Programs for Competency-Based Instruction

- Two-day training sessions at each of the participating teacher training institutions. Designed to assist faculty to train vocational teachers for competency-based instruction—Spring 1977
- Technical assistance to participating institutions as they plan their programs for training in CBI—Spring 1977
- Dissemination of products of the project to all interested vocational teacher training programs—Summer 1977

Appendix B

National Planning Committee Agenda

MEETING OF THE NATIONAL PLANNING COMMITTEE

FOR THE

COMPETENCY-BASED INSTRUCTION PROJECT

October 26-27, 1976

Purpose: To obtain recommendations from the National Planning Group concerning major activities of the project.

Specific Objectives:

1. To acquaint the Planning Committee with the work of the Performanced-Based Curricula Program.

2. To have the Planning Committee identify competencies required by teachers for installing competency-based vocational instruction.

3. To seek advice on the selection and sequencing of training activities of the project.

4. To have the Planning Committee develop criteria for the selection of teacher education institutions to participate in the project.

5. To have the Planning Committee identify exemplary CBI programs and instructional materials.

6. To have the Planning Committee review plans and make recommendations regarding the:
   a. National Workshop training package
   b. On-site Workshops training package
   c. PBTE modules on CBI.

The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

AGENDA

Tuesday, October 26, 1976

8:45 A.M.	Introductions Purpose of The Meeting	Glen Fardig
9:00 A.M.	Welcome to CVE Overview of The Center's PBTE Program	Jim Hamilton
9:30 A.M.	Overview of The CBI Project Project Activities to Date	Glen Fardig
10:00 A.M.	Coffee Break	
10:20 A.M.	Report on The Review of The Literature . Structure of the Review . Sources of Information . General Results (search for competencies and information identified) . Participants' Suggestions for Additional Sources of Information	Joan Jones
10:50 A.M.	The Center's Experience with PBTE Modules and Materials	Lois Harrington/ Karen Quinn
11:30 A.M.	Plans for the Teacher Education Prototype Modules . Structure . Topic Priorities	Glen Fardig
11:45 A.M.	Lunch at Jai Lai	
1:15 P.M.	Identification of Teacher Competencies for Installing Competency-Based Instruction . Explanation of The DACUM Approach . Teacher Competency Chart Development . Criteria of Performance	Bob Norton

Wednesday, October 27, 1976

8:15 A.M.	Meet in Stouffer's Lobby for Transportation to CVE

8:30 A.M. AD HOC COMMITTEES: PROJECT PLANNING

Committee A: Plans for The National Workshop

- Experiences Proposed
- Presentations and Presenters
- Suggestions from The Committee

Committee B: Plans for The On-Site Workshops

- Arrangements
- Activities

Committee C: Selection of Project Participants

- Procedures of Selection
- Development of Criteria for Selection
- Recommendations for Participating Institutions

10:00 A.M. Ad Hoc Committee Reports

10:30 A.M. Concerns of Teacher Education Institutions re: CBI — Jim Hamilton

- Course Organization
- Teaching Strategies
- Other Concerns

11:00 A.M. Summary and Business Matters

11:30 A.M. Adjourn

Appendix C

National Workshop Agenda,
Sample Daily Evaluation Form,
and Final Evaluation Form

DAILY AGENDA

NATIONAL WORKSHOP

A PROGRAM OF TRAINING FOR INSTALLING COMPETENCY-BASED VOCATIONAL INSTRUCTION

FEBRUARY 8, 9, 10, 1977

Professional Development in Vocational Education
The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

Tuesday, February 8, 1977

Introductions

Purpose of the Workshop

Overview of the Workshop Module

The Role of the Student in Competency-Based Vocational Instruction

Learning an entry-level occupational skill using the competency-based approach

Discussing the principles of CBI

Participating in individual activities related to the principles of CBI

Summarizing the basic principles of CBI as applied to vocational education

-- Lunch at Presuitti's Restaurant --

The Role of the Teacher in Competency-Based Vocational Education

Orienting vocational students to CBI

Developing students' individualized occupational programs

Wednesday, February 9, 1977

The Role of the Teacher in Competency-Based Vocational Instruction

Managing a competency-based program

Selecting and evaluating competency-based instructional materials for occupational training

Developing teacher-made CBI curricular materials

-- Lunch at the Jai Lai Restaurant --

The Responsibilities of the Teacher Educator in Preparing Vocational Teachers for Installing CBI

Identifying teacher competencies for installing and managing CBI

Utilizing the performance-based approach to teacher education

Working with instructional modules in preparing teachers for CBI

Assuming the role of the resource person

Organizing professional staff development in secondary and post-secondary schools in using the CBI approach

Thursday, February 10, 1977

The Responsibilities of the Leader in Teacher Education for Planning the Program to Include Training in CBI

Infusing PBTE modules in a conventional teacher education program

Solving problems involved in organizing teacher education programs to include CBI

Orienting and training teacher education staff

Planning the on-site training session

-- Lunch at Bill Knapps' Restaurant --

Tour of The Center

Adjourn

NATIONAL WORKSHOP ON CBI
DAILY PROGRAM SURVEY

Thursday, February 10, 1977

DIRECTIONS: The title of each of today's major activities appears in the left hand column below. Please rate each activity on the characteristics appearing along the top row. In each cell, please enter the number from the rating scale that most closely represents your opinion of the activities. Please fill every cell.

RATING SCALE:

5- Strongly Agree
4- Agree
3- Neutral
2- Disagree
1- Strongly Disagree
0- Was Not Present

ACTIVITY	Content was Valuable	Activity was Stimulating	Discussion was Useful	Format was Suitable	Time Allowed was Appropriate	Topic was Covered Adequately
1. Presentation on role of teacher in managing a CBI program						
2. Reviewing and evaluating sample CBI materials						
3. Planning how to use CBI materials in a particular facility						
4. Presentation on PBTE and the role of the teacher educator						
5. Walk-through of Module K-1						
6. Slide-tape on role of resource person						
7. Presentation by post-secondary person on program at Holland College						
8. Completing Review Guideline Questions on Module K-2						

COMMENTS

If you have any comments, recommendations, or requests regarding today's activities, please write in the space below. Include comments on specific activities, accommodations, materials, or the program as a whole.

Strengths

Weaknesses

General Comments

ON-SITE WORKSHOP
COMPETENCY-BASED VOCATIONAL EDUCATION

Final Evaluation of the Workshop

Directions: Along each dimension given below, circle the number that corresponds most closely with your opinion.

The Workshop in General							
A.	Stimulating	5	4	3	2	1	Dull
B.	Informative	5	4	3	2	1	Uninformative
C.	Well organized	5	4	3	2	1	Disorganized, chaotic
D.	Appropriate activities	5	4	3	2	1	Inappropriate activities
E.	Efficient use of time	5	4	3	2	1	Much waste of time
F.	Ample opportunity for interaction	5	4	3	2	1	Little or no interaction
G.	Met my needs as a participant	5	4	3	2	1	Failed to meet my needs as a participant
Workshop Material							
H.	Well written	5	4	3	2	1	Poorly written
I.	Valuable content	5	4	3	2	1	Poor content
Workshop Staff							
J.	Knowledgeable	5	4	3	2	1	Uninformed
K.	Helpful	5	4	3	2	1	Unhelpful
L.	Congenial, friendly	5	4	3	2	1	Disagreeable, unfriendly
Accommodations and Facilities							
M.	Comfortable, pleasant	5	4	3	2	1	Uncomfortable, unpleasant

GENERAL COMMENTS ABOUT THE TOTAL WORKSHOP

In the space below, please make any comments that may help us in conducting future events such as these.

General Strengths of the Workshop

Needs for Improvement...Recommendations

Other Comments or Observations

NAME (Optional)

Appendix D

Overview of DACUM Approach

AN OVERVIEW OF THE DACUM APPROACH TO COMPETENCY/TASK IDENTIFICATION

A unique and innovative approach for comprehensively deriving local administrator competencies (tasks) and skills has been identified and is being used in a Center project entitled "Development of Competency-Based Instructional Materials for Local Administrators of Vocational Education." This project which emphasizes the identification and national verification of competencies needed by local administrators of vocational education is currently in progress. The project will also result in the development of a limited number of prototype modularized materials for administrators. The DACUM approach to competency identification is one of the two approaches being used to identify the critical competencies for which instructional materials should be developed.

DACUM (Developing A Curriculum) was created in the late 1960's by the Experimental Projects Branch, Canada Department of Regional Economic Expansion, and the General Learning Corporation of New York. It has proven to be a very effective approach for quickly deriving, at a relatively low cost, the competencies or tasks that must be performed by persons employed in a given position or occupational area.

DACUM which utilizes small group brainstorming techniques is a process which results in a skill profile for a particular job or occupational area which can serve as a solid basis for curriculum development. As a process, it is a dynamic group analysis of a specific job or occupational area. As used, the DACUM approach involves all of the processes of analysis, charting, program planning, rating, selection, and sequencing.

DACUM is primarily concerned with the WHAT of a curriculum, rather than the HOW. It is an element or function of a systematic approach to curriculum development, which can be characterized as a type of task analysis. DACUM represents a relatively new and innovative approach to establishing a solid basis for curriculum development.

It is graphic in nature, presenting definitions of an entire occupation on a sheet of paper. This tends to prevent treatment of any element of the occupation in isolation, and conversely tends to promote treatment of each element as part of a larger whole. It is, in fact, a form of an analysis of the occupation rather than a curriculum evolving from an analysis. General areas of competence required in the occupation are defined and each is subdivided into those individual skills (tasks) that collectively enable an individual to perform competently within that general area. These skills are defined quite simply and are structured independently in small blocks on the chart. Each can serve as an independent goal for learning achievement.

To facilitate the development of a DACUM chart of competencies for local administrators of vocational education a carefully selected group of 12 experienced administrators from four different states was convened in January 1976, at the Center in Columbus, Ohio. Under the leadership of an experienced DACUM Coordinator, the group was carefully guided through each of the following steps:

1. General introduction and orientation.

2. Review of the administrators' occupational area.

3. Identification of the general areas of competence.

4. Identification of the specific skills for each of the general areas of competence.

5. Review and refinement of the skill statements.

The DACUM chart has served as <u>one</u> basis for the content structure of the prototype materials to be developed and field tested in the administrator project. While the prototype materials can be expected to deliver upon some of the high priority competencies identified and verified nationally, it is expected that several additional instructional modules will also be needed to complete the curriculum development task.

5/10/76

Appendix E

Annotated Bibliography of Competency-Based Vocational Instruction

AN ANNOTATED BIBLIOGRAPHY OF COMPETENCY-BASED VOCATIONAL INSTRUCTION

Prepared as a part of the project
A Program of Training for Installing
Competency-Based Vocational Instruction

Glen E. Fardig, Director
Joan Jones, Technical Assistant

This project is sponsored by The Center for Vocational Education in cooperation with the U.S. Office of Education under provisions of EPDA Part F, Section 553, and the Ohio State Board for Vocational Education.

The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

November 1977

FOREWORD

Materials included in this bibliography were originally collected for use in the project, A Program of Training for Installing Competency-Based Vocational Instruction. The broad objectives of this project were to assist teacher educators to --

understand the basic concepts and rationale underlying competency-based vocational instruction (CBI).

identify unique professional competencies needed by teachers to install and implement CBI.

be familiar with the alternative approaches to implementing competency-based vocational instruction in secondary and post-secondary schools.

locate and evaluate competency-based instructional materials appropriate to vocational programs.

design and implement a training program for preparing vocational teachers for competency-based instruction.

develop instructional strategies and materials for a teacher training program in CBI.

serve effectively as resource persons, advisors and evaluators of CBI.

It was intended that this bibliography contribute in some way to each of the above objectives. A preliminary version was produced for use and discussion during the several project activities and was augmented and revised as additional information was collected; this refined version has been produced as part of the final report of the project.

It should be noted that terminology in this area of education is still unformed and is sometimes confusing. The terms "competency-based instruction (CBI)" and "performance-based instruction" are used synonymously by most writers, while others

make a distinction between the two. To further complicate matters, quite often the general term "competency-based education" is used when the author is really describing the more specific application of performance-based teacher education (PBTE). This bibliography attempts to maintain clarity between the concepts. The literature of PBTE is more voluminous than that of CBI; therefore, it has sometimes been necessary in the production of this bibliography to derive ideas from the field of teacher education which have implications for, or can be applied to, competency-based vocational instruction in secondary and post-secondary vocational programs.

In the following annotated listing, an "ED" number following an entry indicates microfiche or hard copy availability from ERIC Document Reproduction Service, P.O. Box 190, Arlington, VA, 22210. Entries followed by a "VT" number can also be ordered through ERIC by cross-reference with their "ED" numbers. "VT" numbers indicate retrieval through Resources in Vocational Education at The Center for Vocational Education.

Part I Competency-Based Instruction: General Theory and Overviews

This section includes books, articles, presentations, and bibliographies which provide the vocational teacher/implementer with information about the conceptual base of CBI, an overview of the CBI movement, the state-of-the-art, and current controversies regarding the competency-based approach to instruction. The listings in this section should aid teacher educators and vocational teachers in gaining an understanding of the basic concepts and rationale underlying competency-based vocational instruction.

Adams, Robert E. "Building Competency Models: One Approach to Occupational Analysis." Canadian Vocational Journal. 10(November 1974): 36-41, 54.

Describes a DACUM competency model as a form of occupational analysis and an evaluation instrument, and discusses chart construction via a committee of experts (incumbent workers) supported by a coordinator. Discusses (1) general areas of competence, (2) the first "band" of competencies, (3) remaining "bands," (4) skill review, (5) sequencing, (6) structuring, (7) vertical scanning, and (8) chart preparation.

Bjorkquist, David. What Vocational Education Teachers Should Know about Individualizing Instruction. Columbus, OH: The Center for Vocational Education, The Ohio State University, 1971. (VT 013 713; ED 057 184)

An excellent general overview of the elements of individualized instruction which form the foundation of competency-based instruction.

Burns, Richard W. and Joe Lars Klingstedt, eds. Competency-Based Education: An Introduction. Englewood Cliffs, NJ: Educational Technology Publications, 1973.

Articles reprinted from Educational Technology, November 1972. Includes the following titles:

Philosophical Basis for Competency-Based Education.
Psychological Implications of Competency-Based Education.
Secondary Curriculum Design and Competency-Based Education.
Competency-Based Education and the Open Classroom.
Implications of Competency-Based Education for Urban Children.

Carpenter, Bruce. "Performance-Based Instruction." Paper presented at the Maryland Vocational-Technical Education Conference, 1976.

Discusses the underlying principles of CBI, the improvement of vocational education through CBI, and CBI procedures.

Competency-Based Education--An Annotated Bibliography. (Fred W. Harrington, Project Director). Charleston, WV: West Virginia State Department of Education, Bureau of Vocational, Technical, and Adult Education, 1974. (VT 102 044)

Listed materials were collected for EPDA Project No. WV-73-7, "Familiarizing Teachers with New Curriculum Materials." Lists competency-based curriculum models and materials to assist fulfillment of the project objective: "to train vocational teachers in competency-based curriculum models so that they could apply this knowledge of new curricular materials to the development of new instruction."

Couch, Sue and Sarah Henry. "Competency-Based Vocational Education." Paper presented at the Southern Region Vocational Education Leadership Development Conference (Atlanta, GA, April 4-7, 1976). (ED 130 095)

This paper discusses four aspects of competency-based vocational education:

What is CBVE?
Why CBVE?
V-TECS-A System of Curriculum Development
Problems-Issues

A Curriculum Effort in the Implementation of Competency-Based Vocational Education. (Bruce Carpenter, Project Director). Lexington, KY: University of Kentucky, Curriculum Development Center, 1976.

A set of 11 modules and an instructor's manual designed to prepare teachers for competency-based vocational instruction. The modules include slide/tape presentations and learning activities. The module categories are:

1. Defining CBVE
2. Identifying Process Steps of Kentucky CBVE Plan
3. Identifying Products of Kentucky CBVE Plan
4. Explaining the Model for Developing a Catalog of Objectives
5. Using the Catalog of Objectives
6. Developing a Module
7. Organizing Learning Centers
8. Preparing to Use Modules

9. Evaluating Students
10. Managing Instruction
11. Orienting Students to Competency-Based Individualized Instruction
12. Identifying the Role of the Regional Contact Person

Gentry, Castelle G. "Will the Real Advantage of CBE Stand Up?" Educational Technology. 16 (October 1976): 13-15.

Discusses competency-based education as a framework for objective comparison, by both teachers and learners, of the teaching strategies and other components involved in the instructional system. Provides a model of discussion for the CBE advocate by describing six characteristics of CBE.

Goodlad, John I. et al. Behind the Classroom Door. Worthington, OH: Charles A. Jones Publishing Co., 1970. (VT 024 392)

Focuses on organizational, curricular, and instructional recommendations for schools. Implies a need for an educational system similar to CBI. A tripartite (industry, schools, universities) partnership for educational improvement is suggested.

Hines, R. Performance-Based Education: An Annotated Bibliography. Severn, MD: Maryland Research Coordinating Unit, Data Center, North Arundel Vocational-Technical Center, 1976.

A bibliography divided into the following sections: (1) ERIC Report Literature, (2) AIM/ARM Report Literature, and (3) Journal Articles.

Hosford, Philip L. and Angela Schroder. Southwestern Leadership Conference on Performance-Based Education. Las Cruces, NM: New Mexico State University, Bureau of Educational Research, 1974. (ED 091 372)

Describes the objectives for the conference and includes a section of selected quotes from participants. Objectives included: "to assist leaders from all levels (in)...implementing PBE programs" and "to assist operators of PBE... programs." Participants quoted include Karl Massanari, Ed Gaussion, and Helen Hurriger.

Jelden, David L. "LAPS: Applications to Vocational and Technical Teacher Education." Journal of Industrial Teacher Education. 10(Spring 1973): 73-87.

Provides historical background about curriculum structure, principles and concepts, analysis, and guidance for teachers in the preparation and use of LAP's that offer time-free instruction based upon exit competency.

Johnson, Barbara. Individualizing Instruction for Competency-Based Education. Tallahassee, FL: Florida Department of Education, 1975.

Discusses the following CBI-vocational education elements: goals, performance objectives, criterion-referenced tests, learning experiences, strategies, and organization, evaluation, and implications for instruction.

Johnson, Charles E. "Competency-Based and Common Education." Journal of Teacher Education. 25(Winter 1974): 355-356.

Compares practical characteristics of CBI with traditional programs.

Lessinger, Leon M. "Implications of Competency-Based Education for Urban Children." Educational Technology. 12 (November 1972): 58-61.

Describes the primary implication of CBI for urban children as a revision of traditional assumptions about aptitude and success. CBI is discussed not as negating aptitude differences but as assuming that aptitude is a function of time and resources needed for "an operationalized description of competence." Maintains that CBI implies involvement and accountability, education "embedded" in the real world, cooperative education, and continuing education.

Magisos, Joel H. and Anne E. Stakelon. Individualization and Modularization of Vocational Education Instructional Materials: An Annotated Bibliography of Publications and Projects. Columbus, OH: The Center for Vocational Education, The Ohio State University, 1975.

Includes ERIC and AIM/ARM documents, journal articles, and current projects dealing with individualization and modularization of vocational education instructional materials. Useful for instructors who want an overview of current research and development in the field. All projects and publications abstracted deal with at least some of the essential elements of a competency-based instructional system.

Nagel, Thomas S. and Paul T. Richman. Competency-Based Instruction: A Strategy to Eliminate Failure--A Branching Programmed Text. Columbus, OH: Charles E. Merrill Publishing Co., 1972. (VT 029 533)

A branching programmed text in the philosophy and practice of a competency-based program, the characteristics of a module, and the comparison of traditional criterion-referenced, and competency-based programs.

Palardy, J. Michael and James E. Eiselle. "Competency Based Education." The Clearing House. 46(May 1972): 545-548.

Discusses five assumptions underlying CBI and five stages within the CBI framework. States that CBI assumptions include: (1) behavioral outcomes descriptions, (2) differences among learners, (3) opportunities for learners to pursue personal goals, (4) involvement of community, home, etc., and (5) provision for CBI's own continuous evaluation and revision. The five stages are: (1) listing behavioral outcomes, (2) diagnosis, (3) pretesting, (4) alternate activities, and (5) post-testing.

Pucel, David J. and George H. Copa. "Monitoring Individualized Student Progress in Vocational Education Programs." Educational Technology. 13(October 1973): 54-57.

Focuses on various procedures and ways of monitoring, record-keeping, etc. within individualized vocational programs. Includes discussion of "deriving and reporting program effectiveness and efficiency."

Pucel, David J. and W. C. Knaak. Individualizing Vocational and Technical Instruction. Columbus, OH: Charles E. Merrill Publishing Co., 1975.

Discusses instructional strategies, establishment and justification of program content, new teacher role, the development of objectives, monitoring, and managing. Includes sample job descriptions, sample differentiated staffing job descriptions, national college verb list, and a sample learning guide.

Roueche, John E. "Can Mastery Learning Be Humane? The Case for Performance-Based Instruction." Community College Review. 3(June 1975): 14-21.

Makes a case for performance-based instruction. Argues the "humanity" of individualization and a systematic approach in which all students can achieve competency within varied time periods.

Schalock, H. Del. "Competency-Based Vocational Education: Some Subtleties and Complexities." Paper presented at the EPDA Rgional Workshop on Competency-Based Vocational Education, Lexington, Kentucky, 1976.

Discusses the following subtleties:

1. the meaning of the word "competence:" mastery of knowledge, acquisition of skills, or application of knowledge and skills?
2. the nature of the indicators used as evidence of outcome achievement: verbal reports, printed measures, etc.?
3. "what level of performance should be required to claim mastery of...knowledge...or skills?"
4. individualization but accompanying depersonalization?

Schmieder, Alan A. and ERIC Clearinghouse on Teacher Education. Competency-Based Education: The State of the Scene. PBTE Monograph Series: No. 9. Washington, DC: American Association of Colleges for Teacher Education, 1973. (ED 073 046)

An overview of the CBE movement: the movement's origins, distinguishing characteristics, and potential. Current resources and important issues are also described. "The State of the States" and a CBE glossary are appended. Focus is on teacher education, but the report is a good historical reference on the CBE movement as a whole.

Spady, William G. "Competency Based Education: A Bandwagon in Search of a Definition." Educational Researcher. 6(January 1977): 9-14.

Provides a comprehensive, prescriptive analysis of the theoretical constructs of CBE and seeks to distinguish CBE from competency-based teacher education, mastery learning, individualized instruction, etc. This discussion of the definition of CBE is derived from a consensus of experts in the field and reflects a concern for "students as active agents in the educational process."

Turney, Mildred et al. "Competency-Based Education--What Is It?" Report to the Vice Chancellor by a Task Force appointed by the Faculty Senate, University of Wisconsin-Stout, Menomonie, Wisconsin, 1974 (ED 114 361)

Discusses issues and problems within the CBE movement.

Part II Competency-Based Instruction: Implementation Materials

This section includes materials which may aid vocational teachers in the process of implementing competency-based instruction. The materials deal with several aspects of this process, such as: orientation, management, adaptation and blending of CBI into traditional programs, individualization of instruction, and professional development. These listings should also help the vocational teacher/implementer to become familiar with the alternative approaches to implementing CBI in secondary and post-secondary schools.

Alvir, Howard P. "How to Individualize Your Classroom Instruction by Using Performance Objectives." Washington, DC: ERIC Clearinghouse on Teacher Education, 1972. (ED 074 032)

Discusses use of performance objectives in the classroom as well as in the individualization of a course. Useful for its lesson plan examples and critiques (auto mechanics and advertising courses) and its discussion of the transition from traditional teaching to performance-based education.

Andreyka, Robert E. "A Florida Approach to Competency-Based Vocational Teacher Education." Paper presented at the Competency-Based Vocational Leadership Conference, Lexington, Kentucky, 1976.

Discusses "attainments" from which more specific competencies for implementing CBI may be derived.

Aubertine, Horace E. "Secondary Curriculum Design and Competency-Based Education." Educational Technology. 12(November 1972): 38-39.

States that CBI teacher-installers should ideally be graduates of CBI teacher education programs. Discusses alteration of teacher role: need to be able to relate information to competency objectives and to be involved in a feedback system and in assessment and curricular decisions.

Baird, Hugh and Dwayne Belt. "Some Organizational Problems Encountered in Implementing Competency-Based Education." Paper presented to the American Educational Research Association, New Orleans, Louisiana, 1973. (ED 084 221)

Although the focus of the document is implementation of teacher education programs, the organizational problems discussed can be applied with adjustment to implementation of CBI in vocational school programs. Examples of problems encountered are: (1) decision-making by staff, (2) identification of teacher competencies, (3) the teacher-as-counselor, and (4) staff training.

Berger, Robert J. and Ralph A. Hanson. "Quality Assurance in Large Scale Installations of Criterion Referenced Instructional Programs." Paper presented at the National Council on Measurement in Education Annual Meeting, New York, New York, 1971. (ED 059 547)

Discusses quality assurance as a way of maintaining performance levels during the operation of a criterion-referenced program. Analyzes the functions and requirements of such a system. Implementation procedures described have implications for management of CBI programs.

Block, J. H. and L. W. Anderson. Mastery Learning in Classroom Instruction. (A title in the "Current Topics in Classroom Instruction" series). New York, NY: Macmillan, 1975.

Elements of CBI are addressed in the discussion which also includes such topics as "grading for mastery" and traditional classroom control prescriptions. Discusses primarily the use of traditional classroom materials and resources for development of mastery teaching and learning.

Butler, F. Coit. Instructional Systems Development for Vocational and Technical Training. Englewood Cliffs, NJ: Educational Technology Publications, 1972. (VT 016 621)

Describes the curriculum development process from task analysis through curriculum implementation. Focuses on individualized instruction and instructional material development. Useful discussion of implementing and installing a systematized curriculum, including the teacher's role.

Career Education Center, The Florida State University. Delivering Competency-Based Vocational Education: A Teacher's Guide to Individualizing Instruction. Tallahassee, FL: Florida Department of Education, 1976.

This 227 page manual has been prepared for vocational teachers who are planning to individualize instruction and implement competency-based instruction. The main sections of the manual include: (1) setting individual vocational goals, (2) utilizing performance objectives and criterion-referenced tests, (3) using instructional strategies to individualize instruction, (4) using contingency management, and (5) evaluating and managing individualized instruction. The document generally equates competency-based instruction with individualized instruction.

Career Education Center, The Florida State University. Florida V-TECS Participant Activity Guide. Tallahassee, FL: Florida Department of Education, 1976.

This is a guide for participants in workshops sponsored by the Florida Department of Education, Division of Vocational Education. The contents include an introduction to V-TECS, principles and practices of competency-based instruction in vocational education, and the use of V-TECS catalogs of performance objectives in developing competency-based instruction. The guide includes scripts for three related slide/tape presentations, and progress check questions.

Career Education Center, The Florida State University. Florida's Approach to Competency-Based Individualized Teaching (FACIT). Tallahassee, FL: Florida Department of Education, 1977.

This is a series of individualized learning packages (modules) for training preservice and inservice vocational teachers who are to implement individualized, competency-based programs. The materials are basically self-contained and self-instructional, and are suitable for classroom or workshop use. There are six instructional components: Goal Setting; Objectives; Criterion Referenced Testing; Learning Experiences; Evaluation; Instructional Management.

Champagne, D. and R. Goldman. Handbook for Managing Individualized Learning in the Classroom. Englewood Cliffs, NJ: Educational Technology Publications, 1975.

Focuses on teacher implementation and management of a custom-made individualized learning system in real, non-utopian public schools.

Development of a Curriculum Delivery System for Individualizing Instruction in Vocational-Technical Education. (B. E. Johnson, Project Director). Tallahassee, FL: Florida Department of Education, 1975.

A project in which a curriculum development task force of nine experts develop a theoretical framework. Criteria are developed for learning managers for implementation of individualized instruction in vocational-technical education. The project involves:

1. field testing guidelines and procedural manuals for individualized instruction
2. disseminating/diffusing V-TECS catalogs within Florida
3. discrimination among professional educators of Florida's individualization activities
4. determining the effectiveness of the guidelines for individualization

5. producing an instructional package for training vocational teachers in individualization of instruction within the framework of competency-based education
6. documenting project activities and making recommendations for follow-up

Diversified Occupations: Coordinator's Handbook. Clemson, SC: Clemson University, Vocational Education Media Center, 1973.

A handbook designed to assist school administrators and coordinators in the implementation of new D.O. programs and the more efficient operation of existing programs. Discusses "the role and qualifications of the D.O. coordinator."

Fardig, Glen E. Handbook for the Development of Vocational Education Modules. Lexington, KY: University of Kentucky, Curriculum Development Center of Kentucky, 1975.

Includes guidelines for the development of Kentucky model competency-based instructional modules in vocational education.

Franz, Nevin R. Individualized Instructional Systems for Vocational and Technical Education: A Series of Instructional Modules. Athens, GA: Vocational Instructional Systems, Box 54221, 1974.

The four modules in this series are intended for supervisors and instructors who are interested in the development, operation, and evaluation of an individualized instructional system for vocational education. The modules include learning objectives, activities, feedback, and post-assessment procedures.

Hall, Katherine B. "A New Approach: Competency-Based Education." Forecast for Home Economics. 22(September 1976): 127 ff.

Describes a model for CBE in Home Economics which has implications for secondary and post-secondary competency-based instruction in vocational education programs. Discusses the following points in detail:

Identification of Competency
Establishment of Appropriate Criteria
Selection of Instructional Strategies
Selection or Development of Assessment Instruments
Alleged Strengths and Weaknesses

Johnson, Rita B. and Stuart R. Johnson. Assuring Learning with Self-Instructional Packages or Up the Up Staircase. Reading, MD: Addison and Wesley Publishing Co., 1973.

Shows teachers how to produce a short instructional package to be tested and revised which will give students a time-free, individualized learning experience.

Lambert, Roger H. and O. Donald Meaders, eds. Guidelines: Individualizing Instruction in Agriculture. East Lansing, MI: Michigan State University, Department of Secondary Education; Lansing, MI: Michigan Department of Education, Division of Vocational Education.

Describes individualized instruction and provides examples from Product Agriculture Programs and Off-Farm Occupational Programs. Part II discusses requisite preparation and planning for development of individualized instruction.

Lineberry, Nina T. "Putting the Consortium LAPs to Work for Individualized Instruction." American Vocational Journal. 51(March 1976): 52-53.

Discusses the management of materials from the Interstate Distributive Education Curriculum Consortium (North Carolina). Includes a description of implementation within the existing program.

Looney, Era F. and Curtis R. Finch. Implementing Competency-Based Instruction in Vocational Education. Blacksburg, VA: Virginia Polytechnic Institute and State University, Division of Vocational and Technical Education, 1977.

This competency-based module is designed to help any person involved in the administration and implementation of CBI in vocational schools to develop expertise in designing CBI implementation plans and administering a successful CBI program. The module is organized around a set of learning experiences intended to facilitate demonstration of five objectives concerning implementation strategies, the rationale for implementing CBI, identifying administrative concerns, and occupational objectives and their implications for administration. The final experience requires application in an actual school setting.

Northwest Regional Educational Laboratory. Competency Based Education Sourcebook. Portland, OR: Northwest Regional Educational Laboratory, 1977.

A comprehensive and current guide for curriculum planners, administrators, teachers, and others involved in program planning and implementation of competency based education.

This 500 page reference tool lists available resources in the areas of identifying instructional outcomes, measuring outcome attainment, promoting instructional outcomes, and managing program operation.

$22.50 per copy, postage prepaid. Department K. Office of Marketing and Dissemination, Northwest Regional Educational Laboratory, 710 S.W. Second Ave., Portland, OR, 97204.

Place, Roger A. "The Performance-Based Curriculum." Speech delivered to the National Association of Secondary School Principals, Dallas, Texas, 1973. (ED 077 118)

Discusses the organization of a general competency-based curriculum in the Norfolk City Schools. Success of such a program is dependent on "involvement of teachers and first level administrators in...the planning, development, and operation of the system."

Performance-Based Self-Paced Individualized Instructional System. Woodside, DE: Delaware State Department of Public Instruction, Kent Vocational-Technical District-Kent Center, 1975.

This is an in-process project that will result in instructor-built packages including performance objectives. The time-free packages will be delivered to Delaware schools upon completion of the project.

Peter, L. J. Competencies for Teaching: Teacher Education. Volume 4. Belmont, CA: Wadsworth Publishing Company, Inc., 1975.

Includes procedures for operating competency-based satellite inservice programs (college-based). Appendix lists competency objectives for writers of competency-based job or course descriptions. Program will result in graduates who can establish competency-based instruction in new (non-satellite) school district settings.

Popham, E. L.; A. F. Schrag; and W. Blockhus. A Teaching-Learning System for Business Education. New York, NY: McGraw-Hill, Inc., 1975.

A three-part training text for business education teachers regarding implementing CBI. Part 1 is a history and discussion of current philosophy of business education. Part 2 describes the CBI teaching-learning system. Part 3 applies the system to various subjects, such as typewriting, shorthand, and general business.

Talmadge, H. Systems of Individualized Education. (Part of Series on Contemporary Educational Issues). Berkeley, CA: National Society for the Study of Education, 1975.

Collection of essays on "individualization of instruction." Includes discussion of Wisconsin R & D Center's IGE, Pittsburgh Learning R & D Center's IPI and related programs, and PLAN from the American Institute for Research-Westinghouse Learning Corporation.

Utz, Robert R. et al. "A Comparative Analysis of Two Modes of Implementing Competency-Based Instructional Systems." Paper presented to the American Educational Research Association, Chicago, Illinois, 1974. (ED 089 468)

Findings related to the programs in Toledo Public and Toledo Diocesan Elementary Schools may be applicable to the implementation of any competency-based system.

Wall, James E. "Adapting Curriculums to Local Needs." Paper presented at a Training Institute for Curriculum Personnel Development, Fort Collins, Colorado, 1972. (VT 018 410; ED 070 867)

Roles of instructors and administrators in adapting vocational-technical curricula to local schools are discussed. Useful information on typical adaptation problems. Stresses importance of a collaborative relationship between change agent and client system. Describes Havelocks's model for innovation in education.

Part III Development of Instructional Materials for Competency-Based Instruction

Included here are materials designed to help CBI teachers/implementers develop, refine, or select CBI instructional materials appropriate for their own students, schools, and local needs. These listings should help teachers in competency-based programs recognize and evaluate the several characteristics of effective and truly competency-based instructional materials.

Alvir, Howard P. "How to Clarify Classroom Instructional Goals through Performance Objectives." Washington, DC: ERIC Clearinghouse on Teacher Education, 1971. (ED 056 994)

> Focuses on writing instructional objectives which relate to student's career objectives and industry's needs. Suggests implications for training programs in vocational education. Emphasizes the need for evaluation and feedback in a systems approach.

Ammerman, Harry L. and William H. Melching. The Derivation, Analysis, and Classification of Instructional Objectives. Fort Bliss, TX: Human Resources Research Office (HUMRRO), 1966.

> Useful discussion of a sequence for the development of instructional objectives as well as the extent to which a performance action should be described.

Brandau, George C. The Development of Individualized Instruction in Vocational Education. Final Report. Willingboro, NJ: Willingboro Public School District, 1970. (VT 014 100; ED 055 240)

> A training program to prepare teachers to develop their own learning packages and objectives for implementation in a vocational education program.

Burger, Laura J. and Judith J. Lambrecht. Handbook for Vocational Instructors Interested in Competency-Based Education. Minneapolis, MN: Minnesota Research Coordinating Unit for Vocational Education. 1974. (ED 118 979)

> Provides a development model for teachers developing their own competency-based packages. Chapter Five suggests a system for teacher use in monitoring progress toward goals, keeping records, and assigning grades when a school so prescribes.

Drumheller, Sidney. Handbook of Curriculum Design for Individualized Instruction: A Systems Approach. Englewood Cliffs, NJ: Educational Technology Publications, 1971.

Purpose is to provide guidelines for the development of curriculum materials from behavioral objectives that, when plugged into the Drumheller Design Model, will determine the specifications for self-paced curriculum materials. Maintains that a curriculum designer can use the procedure to produce comprehensive sets of objectives and then spend necessary energy on development of learning experiences. Discusses implementation of the model.

Gorth, William Phillip and Hariharan Swaminathan. Criterion-Referenced Item Banking in Electronics: Appendix G. Final Report. Amherst, MA: University of Massachusetts, Center for Occupational Education, 1972. (ED 097 414)

A summary of products from a Performance Test Development Project. Products include: set of behavioral objectives, set of related criterion-referenced test items, and a course guide for using the objectives and test items. The process of objective and item development is implied.

Hambleton, Ronald K. and Francis Olszewski. Woodworking Objective and Test Item Bank: Appendix J. Final Report. Amherst, MA: University of Massachusetts, Center for Occupational Education, 1972. (ED 097 417)

Provides objective's groupings, evaluation criteria, descriptions of objectives development, and a list of materials needed to test each item. Two appendices include pretest materials and unit breakdowns.

Instructional Objectives Exchange: Home Economics, Grades 10-12. Los Angeles, CA: Center for the Study of Evaluation, Instructional Objectives Exchange, 1970. (VT 028 794)

An exchange providing listings upon request of performance objectives in many course areas in addition to Home Economics.

Klingstedt, Joe Lars. "Learning Modules for Competency-Based Education." Educational Technology. 12(November 1972): 29-31.

Describes the purpose of a learning module plus six major parts: objectives, pretest, rationale, learning alternatives, posttest, and resources.

Lafferty, Linda. "Planning and Writing Measurable Objectives." Illinois Career Education Journal. 33(Winter 1976): 34-36.

A succinct discussion of the development of performance objectives for occupational education in terms of the outcome statement, the condition statement, and the criterion statement.

Mager, Robert F. Preparing Instructional Objectives. Belmont, CA: Fearon Publishers, Inc., 1962. (VT 024 931)

The basic book on behavioral objectives. Clearly explains the development of accurate, understandable objectives. This is a programmed course.

Mager, Robert F. and Kenneth M. Beach, Jr. Developing Vocational Instruction. Belmont, CA: Fearon Publishers, Inc., 1967. (VT 017 469)

Includes a discussion of strategy, job description, task analysis, objectives, prerequisites, measurement, sequencing, and resources, as well as examples of the above.

Melching, W. H. et al. Deriving, Specifying, and Using Instructional Objectives. Fort Bliss, TX: Human Resources Research Office (HUMRRO), 1966.

This text is made up of four papers presented at a symposium on instructional objectives. Includes discussion of variations in performance objectives, content validity, and measurement of success of instruction.

Miller, W. R. and F. M. Miller. "Developing Self-Instructional Modules." School Shop. 34(June 1975): 15-16.

The module format described for Drafting Technology can also be applied to other subjects. Includes introduction, objectives, pretest learning experiences, and posttest.

A Modular Scheduling Program for Vocational-Technical Schools: A Demonstration Model. Final Report. Ebensburg, PA: Admiral Peary Area Vocational-Technical School, 1972.

Includes discussion of D.O.T. synthesis, computer software and hardware, instructional area floor plans, and examples of units, modules and tasks. Curriculum areas addressed are: Agriculture, Automotive, Building Construction, Metal and Materials, Service, and Technical.

Murray, Norman J. M. "Competency-Based Learning Packages--A Case Study." Training and Development Journal. 30(September 1976): 3-7.

Describes the instructional design, development, and delivery system of the competency-based LAPs used in the external degree programs of the Institute for Personal and Career Development (ICPD) of Central Michigan University. Provides a development model and discusses LAPs currently in use, as well as cost considerations and grading.

Parsons, Jerry et al. "Criteria for Selecting, Evaluating, or Developing Learning Modules." Educational Technology. 16(February 1976): 31-32.

Discusses the structure and validation of learning modules including: objectives, subject matter, design characteristics, learning activities, adaptability, validity, and evaluation. The criteria set forth are helpful for teachers using, choosing, or designing learning modules.

Performance Objectives Development Project. Lansing, MI: Michigan State Department of Education. Vocational Education and Career Development Service, 1974. (ED 105 246)

Provides an overview of the Performance Objectives Development Project and guidelines for writing performance objectives. Lists recommended minimum vocational-technical performance objectives for Agriculture, DE, Health, Consumer and Homemaking, Occupational Home Economics, Office, Technical, T&I, and employability skills.

"Prepare Individualized Learning Packages." Charlottetown, Prince Edward Island, Canada: Holland College, Professional Development Program, n.d.

Competency-based instruction for teachers on designing individualized learning packages. Includes rationale, elaborations, learning activities, resources, and evaluation.

Schrag, Adele F. "Where to Begin in Writing Accounting Performance Goals." Business Education Forum. 29(May 1975): 20-21.

Discusses four items to be considered when writing performance goals: types of thought processes, communication skills, interpersonal behaviors, and specific job competencies to be developed.

Spillman, Robert E. and Herbert Bruce, Jr. "V-TECS: The Push to Competency-Based Curriculum." American Vocational Journal. 51(September 1976): 30-32.

Discusses the Vocational-Technical Education Consortium of States as an effort designed to produce curriculum materials which can aid in organizing a competency-based instructional program. Describes the six steps in the V-TECS model for developing catalogs of performance objectives and criterion-referenced measures. Offers implication of V-TECS for vocational education.

Smith, Robert G., Jr. The Development of Training Objectives. Washington, DC: Human Resources Research Office (HUMRRO), 1964. (VT 023 783)

Useful for its definition of a system and for providing a procedure for developing a task inventory as well as its discussion of how to determine relevant job-related objectives. (A military training program.)

Task Inventory Exchange (TIE). Columbus, OH: The Center for Vocational Education, The Ohio State University, 1974, 1975, 1976.

This three volume set lists work activities in hundreds of specific job or occupational areas. Also includes addresses for request copies.

Teal, Dean. "Individualized Instruction Packages Made Easy (How to Make Up Self-Instructional Materials for Cooperative Education Students)." Industrial Education. 64(January 1975): 28-30.

Describes a twelve-step procedure for co-op coordinators to develop specific individualized "packs." Includes forms for simplifying the procedure.

van Eijl, Pierre. "A Concise Building Scheme for Instructional Modules." Educational Technology. 16(February 1976): 33-35.

Discusses the main sections of a module as well as "the build-up of a module." A good developmental base.

Waks, S. "Modular Learning in Electrical Engineering." Educational Technology Systems. 4(1975): 215-222.

A learning module conceptual model for subjects in technology and engineering. Discusses integration of theory with laboratory experimentation as well as individualized learning with traditional instruction. Useful as background when developing instructional materials.

Wallace, Bertran F. "Modular Design: Another Method of Curriculum Development." American Vocational Journal. 47(May 1972): 42-44.

Provides ten procedures and a format for developing modules in any vocational subject.

Writing Performance-Goals--Strategy and Prototypes: A Manual for Vocational and Technical Educators. New York, NY: McGraw-Hill Book Co., Gregg Division, n.d. (VT 014 645; ED 061 413)

A two-part manual for preparing performance objectives which also includes prototypes of performance objectives. Discusses characteristics and advantages, a system for writing, general directions (task sequence), general instruction plan, specific instruction plan, and implementation. Prototypes are provided for Agricultural Education, Business and Distributive Education, Health, Home Economics, Technical Education, and T&I.

Part IV Selected Available Instructional Materials for Competency-Based Occupational Training

The following listing of competency-based instructional materials includes competency-based resource guides, student guides, and curriculum guides, as well as materials fully developed for student use in CBI training programs. These have been selected as being well-developed materials that may meet the resource needs of secondary and post-secondary vocational teachers who are implementing CBI in their vocational programs. Teacher educators should find these materials useful as examples of available CBI resources.

Occupational Analyses. (Thomas L. Hindes, Project Director; William L. Ashley, Project Coordinator). Columbus, OH: The Ohio State University, Instructional Materials Laboratory, 1973-

Each of these 75 booklets (currently) was developed by occupational consultants with teacher verification. The booklets include: job description, resources, performance knowledge, decisions, cues (feedback), errors, subject matter related task statements, performance modes, and appendices listing duties in general occupational areas. Approximately 10 new booklets of occupational analyses are scheduled for development annually.

Further booklets under development describe: Organization of Performance Activities, Example Test Items, Criterion Referenced Objectives, and Materials Required. These serve as aids to teachers in preparation of performance test items.

Berks County Area Vocational-Technical School-West. (William Bartholomeu, Curriculum Supervisor) competency-based materials (no title). Leesport, PA: Author, 1976.

The modules in the Berks program provide pretests, work steps, well-produced photographs for each step, and evaluation and record-keeping procedures. The program includes the following titles:

Health Assisting
Auto Mechanics
Electronics
Carpentry
Plumbing
Air Conditioning and Refrigeration
Textiles

California Business Education Program Guide for Office and Distributive Occupations. Sacramento, CA: California State Department of Education, Bureau of Business Education, 1973. (ED 105 274)

A program guide and 16 instructional modules covering the identified competencies are now available.

Colorado Individualized Instruction Consortium Project. Auto Mechanics, Welding, Air Conditioning/Refrigeration. Fort Collins, CO: Larimer County Vocational-Technical Center, n.d.

These are competency-based learning modules which include: purpose, rationale, objectives, learning activities, media, information sheets, and post-evaluations. Further programs under development include Advanced Welding, MIG and TIG Welding, Electronics, Radio/TV Repair, and Drafting.

Cowan, E. Welding. Stillwater, OK: Oklahoma State Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1974. (ED 112 002)

This curriculum guide for welding instruction contains sixteen units or modules divided into six sections: Introduction, Related Information, Blueprints, Oxyacetylene Welding, Arc Welding, and Gas Arc Welding. Modules are formatted as follows: terminal objectives, specific objectives, suggested activities, instructional materials, informatic sheet, transparency masters, assignment sheets, test, and test answers.

Day, Gerald F. and Herschbach, eds. T&I Resource Guides. College Park, MD: The Center for Research and Instructional Materials, Industrial Education Department, 1974-77. (VT 102 114)

A series of eleven resource guides available by June 1977. The series provides information designed to aid the classroom teacher in implementing a competency-based program. Each guide contains occupational information, instructions for developing a competency-based program, and annotated lists of instructional materials and resources. The guides address the following instructional areas: carpentry; graphic arts; electricity; electronics; auto mechanics; auto body and fender; machine shop; drafting; masonry; welding; and cosmetology. A series of LAPs are being developed and will be available during the school year 1977-78.

Day, G. F. and J. Tucker. Carpentry Performance Objectives. College Park, MD: The Center for Research and Instructional Materials, Industrial Education Department, 1976. (VT 103 040)

This source contains performance objectives which reflect up-to-date and verified competencies needed for job entry. Suggestions for use are included.

Handle X-Ray Equipment Safely. Science Department Learning Package. Charlottetown, Prince Edward Island, Canada: Holland College, 1975.

This competency-based learning package in dental radiography includes: rationale, "elaborations" (competencies), learning activities, resources, and evaluation (pre- and post-assessment forms and learning package evaluation forms). Other competency-based packages are also available in the fields of Construction Technology, Property Appraising, Environmental Technology, Resources Planning, Electronics Technology, Dental Assisting, Commercial Design, Photography, Business and Office, Farm Management, and Hotel/Restaurant Operations.

Health/Cosmetology: Career Education Guide. Washington, DC: Dependents Schools (DOD), European Area, 1974. (ED 111 942)

These learning modules are grouped within health services and cosmetology and include behavioral objectives, module outline, list of materials and resources, and laboratory activities.

Housman, J. L. et al. Individualized Study Guide on Apiculture: Student Guide. Curriculum Materials for Agriculture Education. Blacksburg, VA: Virginia Polytechnic Institute, 1974. (VT 101 011)

This study guide contains information and lessons for training for entry-level jobs in beekeeping. Each lesson plan includes: activity (and performance objectives), information and project sheets, glossary and references, quizzes, and answer sheets.

Individualized Instruction in Occupational Education. Final Report. Raleigh, NC: North Carolina State Department of Public Education, Sanford Research Project, 1974.

Document provides an appendix of sample competency-based instructional materials from the Sanford Project. Includes masonry, carpentry, metals, drafting, typing and distributive education task packages as well as sample competency statements, a unit test, an instructor's performance checklist, a student progress chart, vocational skill list, student survey form, and staff development plan.

Individualized Material for Industrial Education Based on the AVA Booklet, "A Guide to Improving Instruction in Industrial Arts." Detroit, MI: Wayne State University, n.d. (VT 011 399; ED 040 303)

These learning modules contain competency-based instructional elements. Format consists of objective, prerequisite, activity, and posttest.

Instructional Materials (no titles). Minneapolis, MN: Suburban Hennepin County Area Vocational-Technical Centers, District Office, 1975.

Sample available documents and materials include:

1. development of a teacher task inventory;
2. cumulative record form;
3. student certificate listing competency ratings within general competency blocks;
4. occupational description, program blocking, task detailing sheet, general performance objective, evaluation for the general and specific objective; and
5. "Individual Learning Pak" (Shielded metal arc welding - flat position).

Instructional Support System for Occupational Education in New York State (ISSOE). Albany, NY: New York State Education Department, The Office of Occupational Education, State University of New York at Albany, 1976.

These curricula in auto mechanics and office training (to be field tested 1976-77) offer a performance-based organization pattern for courses and is composed of the following components: units, modules, tasks, code, major objectives, enabling objectives, suggested instructional content, and criterion-referenced measures. Actual learning activities are to be written by the teacher with the system as a base. The curricula was developed by the Cornell Institute for Research and Development in Occupational Education. Not generally available for purchase.

Interstate Distributive Education Curriculum Consortium (IDECC) LAPS. Columbus, OH: The Ohio State University, Ohio Distributive Education Materials Lab, 1974.

A series of competency-based learning activity packages (LAPS) which reflect the following occupational areas: advertising; communications; display; human relations; mathematics; merchandising; operations/management; product/service technology; and selling. Also included are such support materials as: The Ohio Handbook for Effective Use of LAPS; Student Orientation Handbook; and Learning-Manager's Guide.

Introduction to Technical Drafting; Carpentry; Basic Technical Drafting; Bricklaying. Sanford, NC: Sanford Research Project and Sanford Central High School, 1974.

Materials are divided into unit, task package, prerequisite, rationale, objective, learning activity, learning practice, and posttest.

Kempton, Robert F. Teaching Guide for Business Machine Repair Occupations. Teaching Guide for Building Maintenance Occupations. Teaching Guide for Fire Cadet Occupations. Teaching Guide for Still Photographic Technician Aide Occupations. Amherst, MA: National Evaluation Systems, Inc., 1976. (ED 129 984, ED 129 985, ED 129 987, ED 129 988)

These booklets provide performance-based secondary level guides to tools, resources, and a development and instructional process. Each booklet includes an overview of the career field, a performance-based job task list and related learning activities, a method for developing LAPs, two sample LAPs, descriptions of useful teaching methods, and resources and references. Information for guidance counselors is provided in a separate section in each booklet.

Learning Guides. White Bear, MN: (916) Vocational-Technical Institute, 1972-76.

Guides (5,800 to date) include student data, terminal performance objective, micro-performance objective(s), agreement, learning steps and resources, and products/performance checklist. A great many vocational and technical curricular areas are included. Information and materials are available from: Minnesota Instructional Materials Center, State Department of Education, Minneapolis, MN.

Mid-America Vocational Curriculum Consortium, Inc. (MAVCC). Curriculum Manuals (Teacher and Student Editions). Stillwater, OK: MAVCC, 1975-77.

Manuals are divided among major course areas which, in turn, are divided into instructional units. Each unit contains the following components:

1. statement of objectives (performance objectives)
2. teacher and student activities (activities and resources)
3. information sheets
4. transparency sheets
5. assignment sheets
6. job sheets
7. unit criterion-referenced test (test items sequenced to correlate with the objectives)
8. answers to unit test (teacher edition only)

MAVCC products available are:

Occupational Child Development
Agricultural Sales and Services
Food Service: Production and Service
Automotive Emission Control
Snowmobile Repair

MAVCC products available by Fall 1977 are:

Diesel Engines
Attitude Development and Human Relations
Dental Assistant
Outboard Repair
Lawn and Garden Equipment Repair
Chainsaw Repair
Residential Wiring
Motorcycle Repair
Basic Small Engine Repair
Air Conditioning and Refrigeration

All above materials are available through: MAVCC, 1515 West Sixth Avenue, Stillwater, OK, 74074, (404) 377-2000.

Minnesota State Department of Education. Automotive Mechanic, Service Center Mechanic, Lubrication Specialist: Task List and Competency Record; Exploratory Program for Auto Mechanics. St. Paul, MN: Minnesota State Department of Education, Division of Vocational and Technical Education, 1976. (ED 128 625, ED 128 628)

Each of these booklets provides a task list for the respective vocational programs. The tasks are also grouped into areas of competence and a competency record (designed to substitute for the report card) is suggested. Also included for each program are a job description, list of references, and a competency-based rating scale.

New Jersey Vocational-Technical Curriculum Laboratory. A Media Technology Curriculum. New Brunswick, NJ: Rutgers University, 1976. (ED 129 991)

This curriculum guide provides a two-year, competency-based, post-secondary program in media technology. It uses an interdisciplinary approach and addresses two levels of attainment: the media equipment technician level and the multimedia technician level. Units of study are divided into ten components. Each unit includes specific objectives, a content list, and an equipment list. The introduction provides a student progress chart.

Reeder, Dean. Vocational Agriculture 4: A Curriculum Guide--12th Grade. Revised. Stillwater, OK: Oklahoma State Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1974. (ED 117 406)

This guide contains twenty-seven units organized into four modules: farm business management, leadership and careers, plant and soil science, and agricultural mechanics. Provides objectives, activities, information sheets, assignment and answer sheets, job sheets, and tests.

Skyline Career Development Center, Dallas Independent School District. Student Learning Plans. New York, NY: Harper & Row Publishers, Inc., 1976.

This is a series of 32 competency-based learning guides with such support documents as Teacher Implementation Plan and Evaluation Instruments. Student learning plans are available in the following areas:

- Ornamental Horticulture
- Floral Design
- Ornamental Crop Production
- Landscape/Turf Development
- Child Development
- Cosmetology
- Carpentry
- Masonry
- Business Administration
- Fashion Design
- Apparel Assembly
- Cutting Production
- Merchandising
- Pattern Drafting
- Automotive Technology
- Automotive Body Technology
- Diesel Technology
- Electricity
- Plumbing
- Materials Processing
- Machine Shop
- Welding
- Sheet Metal
- Technical Drafting
- Music
- Food Preparation
- Shorthand
- Typewriting
- Simulated Office
- Accounting
- Communications Lab
- Keypunch
- Concepts of American Business

South Carolina State Board for Technical and Comprehensive Education. Individually-Paced Learning in Civil Engineering Technology. Columbia, SC: Author, 1976. (ED 131 870)

This civil engineering technology curriculum provides open-entry/open-exit learning modules based on 163 competencies for 11 courses. Included are written modules as well as alternate supplementary media forms.

A Study for the Articulation of Competency-Based Curricula for the Coordination of Vocational-Technical Education Programs. Final Report. Baton Rouge, LA: Louisiana State Department of Education, 1976. (VT 102 839, VT 102 843)

These competency-based curriculum guides for drafting, refrigeration and air conditioning, office, nursing, and electronics occupations include terminal and performance objectives and criterion-referenced measures. Several of the guides provide task lists and task analyses.

Time-Free Modular Competency-Based Curricula. Montgomery, AL: Link Educational Laboratories, 1973.

This curricula is divided into modularized units in 26 subject areas and includes learning objectives, learning activities, materials, tests, instructional resource lists, and a filmstrip and cassette for instructor orientation. The subject areas are as follows:

- Engine Tune-Up
- Brake & Front End
- Transmission Specialist
- Auto Body Repair
- Welding
- Industrial Electricity
- Basic Electronics
- Air Conditioning & Refrigeration
- Electrical Appliance Repair
- Radio & Television
- Auto Service Technician
- Drafting
- Machine Shop Operations
- Basic Accounting
- Clerical Skills
- Secretarial Skills
- Small Gasoline Engine Repair
- Teacher Aide
- Solid Waste Operator
- Liquid Waste Operator
- Short Order Cook
- Executive Housekeeper
- Masonry (Home Building)
- Plumbing (Home Building)
- Carpentry (Home Building)
- Electrical Wiring (Home Building)

Welding for Related Occupations. Hastings, NE:. Central Technical Community College, n.d.

This test is used in course #140.10 currently implemented at CTCC. It was developed for students requiring a basic welding course and is not available for a welding tech. major. No inert gas welding processes are covered.

West Virginia Vocational Curriculum Laboratory. West Virginia Competency Based Curriculum. Charleston, WV: West Virginia Board of Education, Bureau of Vocational, Technical and Adult Education, 1977.

The curriculum includes teachers' sections, introductions, student competency sheets and learning activities, supplements, and evaluation sheets. The formats differ somewhat among the occupational areas; all require outside resources. The business and office program differs in that it is prevocational. All materials are available from the Vocational Curriculum Laboratory, Cedar Lakes Conference, Ripley, WV, 25271. The subject areas available are:

- Business and Office
- Home Management
- Nursing Assistant
- Automotive
- Building Construction
- Drafting
- Clothing Services and Production Sewing
- Tool Sharpening and Fitting

Part V Competency-Based Instructional Materials Under Development as of June 1977

The field of vocational instructional materials is changing rapidly. This section lists projects and materials currently in progress or being developed. Each listing provides a contact person or agency and a list of expected products.

Competency Based Curricula Development for the Mining and Related Industries.

(Bryan V. Fluck, Executive Director)
Admiral Peary Area Vocational-Technical School
Route 422 West, RD 2
Ebensburg, PA 15931 (814) 472-6655

The project expects to--

- provide task sheets for the mining and related occupations
- develop a competency-based, modularized, and individualized curricula
- develop and implement methods for curricula dissemination

Competency-Based Vocational Instructional Modules.

Doyle K. Stewart, Curriculum Specialist
Paul M. Hodgson Vocational-Technical School
Route 896
South Newark, DE 19702 (302) 731-2401

Instructional modules have been written based on industry-validated performance objectives and V-TECS catalogs. Each module consists of performance objectives, learning activities, resources, instruction sheets, and performance evaluation. Some 600 instructional modules in 25 vocational curricular areas are now being tested and revised.

The Development, Field Testing and Evaluation of Individualized Instruction Programs in Selected Vocational Occupations.

Russell Clark
Georgia State Department of Education
Office of Adult and Vocational Education
Room 309, State Office Building
Atlanta, Georgia 30334 (404) 656-6711

Four individualized secondary programs will be developed:

- agriculture (gardening and grounds-keeping)
- graphic arts
- auto body repair
- electronics

Three individualized post-secondary programs will be developed:

- data processing
- graphic arts
- entrepreneurship

The secondary data processing program will utilize computer-assisted instruction for use as a model for other programs. Additional products will include:

- a model for continuous revision of existing individualized instruction systems to close the gap between school and industry regarding the development of saleable skills and attitudes
- an evaluation system for process and product evaluation (formative and summative)

Development and Field Testing of Individualized and Modularized Instructional Materials for Vocational Education.

Melissa Briscoe
Competency-Based Instruction Coordinator
Kentucky Bureau of Vocational Education
Capitol Plaza Tower
Frankfort, Kentucky 40601 (502) 564-3775

The project is developing an extensive series of modules for competency-based programs. The project is also providing related catalogs of objectives and criterion-referenced measures in selected occupational areas. Modules for the following programs are currently available on a cost-recovery basis ($10.00/module; $20.00/set of slide/tapes):

- Cashier Checker
- Tractor Mechanic
- Carpentry (2-year program)
- Machinist (2-year program)
- Child Care Worker
- Bank Teller
- Secretarial
- Auto Body
- Food Preparation
- Legal Secretary
- Floral Designer
- Home Furnishings Worker

Programs for which modules will be available by Fall 1977 are:

- Auto Mechanic
- Air Conditioning and Refrigeration
- Alterationist
- Court Reporter
- Landscaping

Development of Learning Modules for Machine Shop Occupations.

Kent Randall, Professor and Chairman
Manufacturing Engineering Technology
Weber State College
3750 Harrison Blvd.
Ogden, Utah 84408 (801) 399-5941

A completely individualized program of 70-75 machine shop learning modules is scheduled for use in either secondary or post-secondary training programs. Other products will include a teachers' guide for use in identifying the specific modules required for each machine tool career code, and a recommended teaching sequence.

Individualization and Modularization of Office Occupations and Trades and Industry Materials.

Arthur K. Jensen, Director and Professor of Education
Vocational Education Media Center
Clemson University
109 Freeman Hall
Clemson, South Carolina 29631 (803) 656-3116

This implementation project will utilize criterion-referenced measures identified in V-TECS catalogs and will search for and retrieve multimedia instructional materials, implementation models, materials design models, and management training materials in order to implement competency-based education for the occupations of bookkeeper, bank teller, automotive mechanic, and carpenter.

Miller Electric Manufacturing Company.

Bryan Blazer
Miller Electric Manufacturing Co.
Appleton, WI (414) 734-9821

This company has produced a competency-based manual, including student guide and 16 mm film, for a Stick Electrode Welding program. A Pipe Welding Manual is under development. The programs are intended for both English- and Spanish-speaking students, include objectives, learning experiences, and assessment forms, and take approximately 235 hours to complete.

Appendix F

Vocational Teacher Professional Competencies for Competency-Based Instruction

VOCATIONAL TEACHER PROFESSIONAL COMPETENCIES ESSENTIAL TO INSTALLING AND CONDUCTING COMPETENCY-BASED INSTRUCTION

Competency-Based Instruction Project
Glen E. Fardig, Project Director
Joan Jones, Technical Assistant

The Center for Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

November 1977

Following is a list of teacher competencies identified as being essential to the installation and management of competency-based vocational instruction in secondary and post-secondary schools. The training of teachers to achieve these competencies is seen as an integral part of a total professional program of vocational teacher education.

The identification of the competencies was accomplished as one phase of the work of a federally-funded program of training for installing competency-based vocational instruction. The identification process included the following major steps:

1. A thorough search was made of the literature of teacher education and competency-based instruction (CBI). The teacher competencies for installing and managing CBI, as implied in the literature, were developed into a tentative list of 22 competency statements.

2. A group of 12 national leaders in competency-based education functioned as a DACUM committee to independently generate a list of 64 teacher competencies. The DACUM approach (Develop A Curriculum) utilizes modified small-group brainstorming techniques resulting in a chart of competencies.

3. The two lists were compared and merged. In this step, teacher educators eliminated redundencies, resolved inconsistencies, and strengthened any incomplete areas in the list.

4. The competency statements were finally refined as to wording, grouped for topical relationships, and organized in an approximate instructional sequence.

The competency statements presented here may be useful for a wide variety of teacher training purposes. They are also designed to fit the needs of a national curriculum development effort in vocational teacher education. As such, they are consistent with, and augment, the 384 performance elements which form the developmental base of The Center's Performance-Based Teacher Education Curricula.

1. Work with the vocational program advisory committee to develop the competency-based program.

2. Assist with support staff development to prepare them for competency-based instruction (CBI).

3. Assist in school-wide curriculum planning and evaluation in implementing CBI.

4. Involve students in planning and evaluation of the competency-based vocational program.

5. Inform staff and administrators about competency-based instruction.

6. Inform referring schools and agencies about competency-based instruction.

7. Orient the community to competency-based instruction.

8. Assist in orienting accrediting personnel to competency-based instruction.

9. Conduct (verify) an occupational task analysis for use in identifying competencies.

10. Establish performance criteria for the occupational competencies.

11. Write terminal performance objectives.

12. Sequence and cluster competencies for instruction.

13. Develop criterion-referenced assessment measures.

14. Establish student performance data-collection procedures.

15. Conduct student performance assessment of occupational competencies.

16. Write enabling instructional objectives.

17. Develop learning activities to deliver on occupational competencies.

18. Develop instructional media materials for specific competencies.

19. Select available competency-based instructional materials.

20. Adapt existing instructional materials to the competency-based program.

21. Revise instructional materials in accordance with student interest and achievement.

22. Estimate time and cost of the competency-based program development process.

23. Participate in the budgeting process.

24. Participate in the cost accounting process.

25. Provide a resource center for competency-based instruction.

26. Develop a management system for the competency-based vocational program.

27. Organize the physical facilities for competency-based instruction.

28. Organize field-based instructional settings.

29. Work with students individually.

30. Help students identify preferred learning styles.

31. Utilize teaching/learning strategies based on student needs.

32. Schedule individual/group learning experiences.

33. Provide for continuous performance feedback to students.

34. Establish a daily CBI progress reporting system for students.

35. Assist with the development and maintenance of the CBI institutional record-keeping/reporting system.

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36. Orient students to the competency-based program.

37. Enroll students in the competency-based program.

38. Counsel/advise students in self-assessment of their progress through the CBI program.

39. Assess student progress throughout the CBI program.

40. Provide for the development of competency-based programs unique to individual students needs.

41. Guide students' exit from the program.

42. Assist with collecting and interpreting student follow-up data for program improvement.

43. Involve business and industry in CBI program renewal.

44. Revise the CBI program on the basis of student interest and achievement.

45. Implement a personal program of professional development in the area of competency-based instruction.

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A preliminary review of the identified teacher competencies has been made for the purpose of clustering them into instructional modules. Using the format and structure of The Center's Performance-Based Teacher Education Materials, 12 modules would need to be developed to deliver on all 45 competencies. A tentative listing of the module titles follows.

Module 1 Develop Plans for Implementing Competency-Based Instruction in your Vocational Program

Module 2 Orient the School and Community to Competency-Based Instruction

Module 3 Specify Occupational Competencies Desired of Students

Module 4 Assess Student Performance in a Competency-Based Program

Module 5 Provide Competency-Based Instructional Materials.

Module 6 Manage Resource Requirements for Competency-Based Instruction

Module 7 Organize the Vocational Program to Install Competency-Based Instruction

Module 8 Manage the Learning Environment

Module 9 Maintain a Record-Keeping System

Module 10 Orient Students to the Competency-Based Program

Module 11 Guide Students Through the Competency-Based Program

Module 12 Evaluate Program Effectiveness for Improvement