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ABSTRACT

This report describes a project designed to (1) develop models for use of vocational education data available from the Oregon Management Information System (MIS) to implement decision making at key points in program planning and curriculum development, and (2) design, develop, and test a system to improve the competencies of state and local personnel in the use of MIS data and its relationship to program planning, curriculum development, and career guidance. Content covers project limitations, organization, program planning stages and procedures, and results, which included the following: models (developed at the state level) for using the vocational education data bases; a college master plan and a curriculum planning model developed by Lane Community College (Oregon); and Portland (Oregon) School District's identification of steps deemed necessary for effective vocational program and curriculum planning, and strategies for applying these steps. (For the specific models developed, see related documents.) (BL)

FINAL REPORT

Project No. 498AH60353
Grant No. OEG0700327

MODELS FOR THE USE OF A DATA BASE IN PLANNING STATE AND LOCAL VOCATIONAL PROGRAMS

Oregon Department of Education
Career and Vocational Education Section
942 Lancaster Drive, NE
Salem, Oregon 97310

August 1977

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education
Bureau of Occupational and Adult Education

ABSTRACT

The project was a cooperative effort of the Oregon Department of Education, Career and Vocational Education Section, Lane Community College, and Portland School District.

The three agencies in the consortium, each working independently but under the direction of a project steering committee, developed their own vocational program planning and curriculum development models. The state's models were to (1) review all occupations in the state, and by examining critical elements, arrive at the number of vocational programs needed throughout the state at the secondary and community college levels; and (2) show how the curriculum development model provides the latest technical information by using the steps of planning, organizing, and evaluating to arrive at priority curriculum decisions, developing or processing curriculum materials, and continously field testing and evaluating selected curriculum materials.

Lane Community College developed two models also. One was the prototype for developing the college master plan, and the other was the curriculum planning model which describes the stages Lane might use immediately before and during curriculum development.

Portland School District also developed program planning and curriculum planning models. In addition, the district applied the program planning model and projected the number of vocational programs it should have in the city.

INTRODUCTION

As Oregon schools and community colleges have increased their offerings in vocational education programs in line with goals adopted by the State Board of Education, a steady growth and interest in vocational programs has resulted.

With the vocational emphasis and enrollment increase, the urgency for the development of more accurate and complete data for purposes of vocational program planning, curriculum development and career guidance became more acute. It also became obvious that well designed plans for effective utilization of such data needed to be developed.

In response to this need, Oregon had developed a Management Information System (MIS) that included, but was not limited to manpower demand, manpower supply, alternate designs for instructional materials, secondary, post-secondary, and adult vocational program data, follow-up data from high school and community college students, and task, competency, and instructional analyses.

The Management Information System is continuing to be refined. In its stage of development before the beginning of the project, the system was being applied in program planning and curriculum development at the state level and, to a limited extent, at the local level. However, efforts made to use the system indicated an urgent need to improve the use of the data by state and local educational agencies.

Purpose of the Study

The purpose of the study was to (1) develop models for use of such data to implement decision making at key points in program planning and curriculum development, and (2) to design, develop, and test a system to improve the competencies of state and local personnel in the use of data and its relationship to program planning, curriculum development, and career guidance.

Anticipated Results and Benefits

The project was planned to produce a minimum of four products. These included:

1. A guide to the use of data by the state education agency.
2. A guide to the use of data by community colleges.
3. A guide to the use of data by local school districts.
4. A plan for in-service training of personnel involved in vocational education decision making at all foregoing educational levels.

It was anticipated that the implementation of these products would eventually result in improved decisions at both the state and local levels with attendant improvement in instructional and guidance programs. The following are some of the areas in which significant contributions were foreseen:

1. Programs that were appropriate to the real needs of students and business and industry.
2. Programs that recognized the unique needs of disadvantaged and handicapped students.
3. Increased responsiveness of instructional offerings to changing needs and conditions.
4. Improved occupational information for student career decision making.
5. Curriculum and curriculum materials that were better suited to the needs and learning styles of individual students.
6. Improved efficiency of facility and equipment use.
7. More effective processes of program evaluation.

Goals and Objectives of the Project

The following items were the goals, objectives, and sub-objectives of the project:

GOAL 1.0 Develop models to show the use of data specified in the proposal to implement decision making at key points in vocational program planning and

curriculum development, and identify major application of such data in program evaluation and in vocational guidance.

Objective 1.1. Develop and test a set of procedures for applying state-level data in planning vocational programs at the state and local levels and for developing and applying supplemental local data.

Sub-objective 1.1.1. Determine the program planning needs of each participating agency and assess their current program planning procedures.

Sub-objective 1.1.2. At the community college level, determine which of the data available from state and local sources have direct application to the total vocational program.

Sub-objective 1.1.3. Select the data available from state and local sources that have use in planning a total vocational cluster program at the secondary level.

Sub-objective 1.1.4. Develop and present to each agency for utilization, alternate plans which include state and local data for vocational program planning.

Sub-objective 1.1.5. Develop and implement procedures to field test and refine, as needed, the program planning recommendations in the participating agencies and in one or more other school districts and community colleges.

Sub-objective 1.1.6. Prepare for publication, guides for using data in vocational program planning at each level.

Objective 1.2. Develop alternative procedures to use state and local data in the curriculum process.

Sub-objective 1.2.1. Develop the curriculum development needs of each participating agency and assess their current curriculum development procedures.

Sub-objective 1.2.2. At the community college and school district levels, determine which of the data available from state and local sources have direct application to the vocational curriculum.

Sub-objective 1.2.3. Develop and present to each agency for utilization, alternate plans for including state and local data in vocational curriculum development.

Sub-objective 1.2.4. Prepare for publication, guides for using data in vocational curriculum development at each level.

Objective 1.3. Design procedures which apply at least two of the state data base components to the vocational program evaluation (justification and content) process at the local level.

Sub-objective 1.3.1. Review the agencies' program evaluation plans to determine the state data which can be incorporated.

Sub-objective 1.3.2. Determine sources of local data which are needed to supplement the state data.

Sub-objective 1.3.3. Prepare procedural recommendations for the inclusion of data in the program evaluation process at the community college and school district levels.

Objective 1.4. Design procedures to apply the state's manpower and task analysis components to the vocational guidance process at the local level.

Sub-objective 1.4.1. Review the vocational guidance inputs at the community college and two Portland high schools.

Sub-objective 1.4.2. Determine local data which could be used to supplement the state's data.

Sub-objective 1.4.3. Develop procedures for implementing the manpower and task analysis components of the state's data base in local guidance programs with particular attention to coordination with the statewide Career Information System (CIS).

GOAL 2.0. Design, develop, and test systems to improve the competencies of state and local personnel in the use of the "data-use models" for improving decision making in program planning, curriculum development, and vocational guidance.

Objective 2.1. Design an in-service program for training state staff, regional coordinators, and local program planners in the data applications included in the program planning, curriculum development, and vocational guidance.

Sub-objective 2.1.1. Develop alternate workshop content outlines.

Sub-objective 2.1.2. Develop a basic set of instructional modules covering major data applications.

Sub-objective 2.1.3. Test the workshop plans and materials in each participating agency.

Objective 2.2. Develop and test an in-service plan for training local vocational curriculum development personnel in data applications included in the curriculum development models.

Sub-objective 2.2.1. Develop alternate workshop content outlines.

Sub-objective 2.2.2. Develop a basic set of instructional modules covering major data applications.

Sub-objective 2.2.3. Test the workshop plans and materials in each participating agency.

Limits of the Research

The major limit to accomplishing all the goals and objectives of the project was the difficulty in getting all agencies and their project coordinators to understand what was expected of them. Although the agencies prior to working on the project were already involved in the process of planning and implementing new programs and related curriculum, each found it quite difficult to formulate and put to writing what it was they did when planning. Another problem was that each agency spent considerable time reviewing various planning models to help them develop their own, but ultimately found it could use none of them. Consequently, large amounts of time were used before any tangible output was generated.

Still another problem affecting all three agencies was staffing. One agency reassigned its project coordinator to another project, one for which he was better suited. This resulted in a new project coordinator being selected some five months into the project. None of the work by the first coordinator was deemed useful by his replacement. Still another agency had two part-time project coordinators doing the program planning and curriculum planning respectively. Little was accomplished by the curriculum coordinator who, midway into the project, took another assignment. It was some seven months later before this person was replaced because no one qualified was available. The third agency's project coordinator was only able to spend limited time on the project because of other constraints of his regular assignment.

All the foregoing made it more difficult for the three agencies to reach their expected outcomes. Considering these difficulties, the final products resulting from the project are very appropriate and provide excellent models for vocational program planning and curriculum development.

METHODOLOGY

The project was planned as a cooperative effort of the State Career and Vocational Education Section, Instruction Division, Career Program Planning and Evaluation Unit, Lane Community College, and Portland School District.

Lane Community College located in Eugene, Oregon, is a two-year coeducational institution established in 1964 to serve the 220,000 residents of Lane County and the surrounding area. The college offers more than 40 technical-vocational programs and 60 college transfer and preprofessional programs for more than 20,000 full- and part-time students. Of this total, 8,000 students are enrolled in vocational-technical programs. More than 700 full- and part-time staff are presently employed.

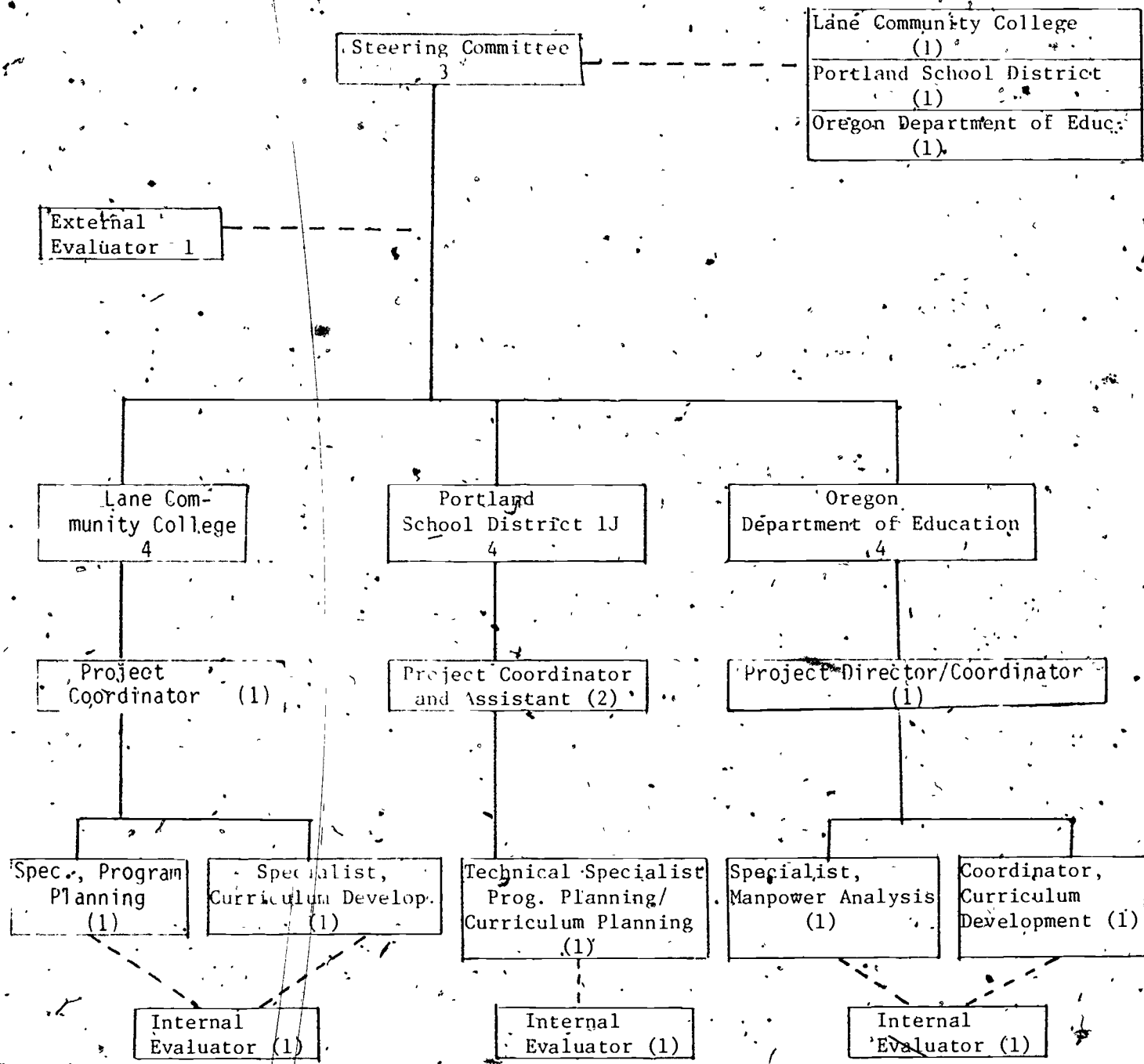
Portland School District 1J is located in Portland, Oregon, the largest city in Oregon with a population of 386,000. The district has an average daily membership (adm) of 65,821. This includes 21,095 (adm) at the 15 high schools, of which some 7,264 (adm) are enrolled in approved vocational-cluster programs. Portland currently employs more then 3,200 certificated staff.

Management Schema

The project was managed by the project steering committee. This group was composed of three representatives. They included the project director, who was the program coordinator for the Career Program Planning and Evaluation Unit of the Department of Education, the Dean of Academic and College Planning for Lane Community College, and the Director of Career Education for the Portland School District.

Throughout the life of the project there were some five meetings of all staff from all agencies. (The staff are identified in the Project Organization Chart.)

PROJECT ORGANIZATIONAL CHART *



*Number in parentheses indicates the number of project staff or project evaluators. Number not in parentheses equals the total of those staff identified in parentheses.

KEY: Line relationship _____

Advisory relationship - - - -

The initial meeting was to decide how best to pursue the goals and objectives of the project. It was decided by the steering committee that each agency (having its own copy of the approved project) would work independently in developing program and curriculum development planning models. The reason being that (1) each agency (with perhaps the exception of the Department of Education) typically had the responsibility for its own existence, and (2) would need to use the various data bases for an educational level different from the other agencies. The result would be to have at the end of the project three separate products, one for the state agency, a public school district, and a community college, each addressing two areas, namely, vocational program planning and curriculum development planning.

Subsequent meetings of the group at large were to report each agency's progress, problems and successes being met, and suggested ways to insure that all agencies would meet reasonable success. These meetings resulted in the project coordinator from the Department of Education meeting the other project coordinators frequently as the need arose. In this way there was immediate feedback so that all parties were pursuing the same outcomes as best they could for the mission of the project in general, and the mission of the individual agencies specifically.

Individual Agency Meetings. Each agency was also in daily contact with its own staff which allowed it to call on those who had expertise in vocational program planning and curriculum development. And although the effort to relate these concepts directly to vocational guidance was incidental, guidance staff were contacted for input that resulted in the four products generated from the project.

Evaluation

The project was evaluated by a third party, an independent contractor, who provided a formative and summative evaluation of the project and the efforts of the individual agencies. This was done at the end of the first twelve months of the eighteen-month project and at the end of the project. Copies of the evaluation were provided each agency.

Each of the agencies also appointed its own internal evaluator. Each of these evaluators provided its agency with both a formative and summative evaluation. In toto, the combined effort of the third party and internal evaluators gave valuable direction to the individual agency which was quick to take advantage of the suggestions outlined. This helped to insure that all parties were in unison, more or less, and accomplished models which primarily addressed the same concerns.

Other Related Methods or Procedures. The products generated by the Portland School District and Lane Community College mention in more detail other steps and meetings used to produce their products. The Department of Education product makes no such mention. However, a private educational consultant was contracted with for some three months to gain ideas of those questions that needed to be asked when developing a model for planning vocational programs. Some of those were incorporated into the final product.

RESULTS

Outcomes from the project are in most instances unique to the particular agency; although certainly there are some generalizable ones affecting all agencies. The following are those identified for each agency.

Portland School District

The project produced essentially two significant results: (1) the steps deemed necessary for effective vocational program and curriculum planning, and (2) strategies for applying the planned principles to real program planning situations were identified and applied in Portland School District 1J.

The two phases of planning program and curriculum decisions were distinguished as two separate, but related steps. The importance of distinguishing between the two steps is stressed. Program decisions tended to require a variety of data regarding employment needs information and local school and

community information. Curriculum decisions focused on information regarding what should be taught, how it should be taught, and what are the expected results of the teaching. Savings in time and greater efficiency might be derived from establishing ongoing procedures to review program decisions, applying manpower information and curriculum review decisions, using, among other factors, manpower demand and supply statistics, competency data, and performance indicators.

Much of the value of the project has been achieved in the review and subsequent modification of Portland IJ's program planning procedures. Essentially all of the planning factors identified in the guide are being applied to new program requests. Steps are being taken within each high school, in cooperation with "area" offices and the central office of the Director of Career and Vocational Education, to incorporate both the program and curriculum planning review steps into current school programs on a regular, systematic basis.

The principles of school district decentralization are unaffected by the planning procedures. Each "area" and high school is expected to do a responsible job of planning and reviewing of their own programs. The cooperation and support of the central administration are available, as are resource people, to aid in the application of the planning principles.

In-service models have been developed, and some of these were implemented during the latter half of the 1976-77 school year. Such in-service support is thought to be extremely important if sound planning principles are to be consistently applied to school program planning.

Lane Community College

Following the initial meeting of the project steering committee when the project goals were clarified, a series of interviews with staff members at Lane Community College was undertaken by the program planning coordinator at Lane Community College. The purpose was to determine (1) how much manpower information was available on the college's campus and how it was being used,

(2) what additional data was desirable, (3) how needed information could be acquired, and from whom, and (4) how this information was currently being used at the college in decision-making, with particular reference to the approval or disapproval of new vocational programs, and with decisions for continuing, revising, or terminating existing curriculums.

The approach was to tape interviews with selected members of the college staff within four distinct job assignment areas so as to reflect as many divergent backgrounds and needs as possible. The areas included the chairperson of the mechanics department, the director of counseling, a career counselor in the mechanics department, the coordinator of counseling, the associate dean of instruction for community education, and two coordinators for the cooperative work experience program.

Materials from these interviews were then used to address the objectives set forth in the project with emphasis on developing some helpful and meaningful materials which could be used by the staff in developing "models" for use in decision making on vocational curriculum and programs. The interviews provided the initial insight of how far Lane Community College was from the goals and objectives of the project and what was needed to be done to accomplish them.

The content of the taped interviews, their analysis and the reactions of other members of the staff to these observations, resulted in a source book of approximately 65 pages which was shared with project members. The major reactions of those interviewed resulted in many of the decision point highlighted in the college's two models.

The models generated by Lane Community College resulted in the College Master Plan and the Curriculum Planning Model. The former describes the early stages of data use in curriculum planning that takes place far ahead of the actual development. (At the present time, the model is being used as the initial draft of the college's ten-year college master plan.) The curriculum planning model describes those stages occurring immediately before and during curriculum development.

The final step in completing the project was to visit other Oregon community colleges and present the college master plan for their reactions. (The curriculum planning model was not included because it had not been approved by the college's board by the time the project terminated.) Three colleges were personally visited. Three others mailed the plan and asked to respond.

Specifically, the colleges were asked the questions:

1. How well does the college master plan model communicate to you?

2. What problems do you foresee if you want to apply the models at your college?

Staff members of the colleges had various opinions, but all indicated that with adaptations to fit their circumstances, they could use the model. Also, all of the colleges contacted expressed a real need for the models to aid them in college and curriculum planning.

The suggestions made in response from the colleges were incorporated into the revision of the model.

Oregon Department of Education

The Career Program Planning and Evaluation unit of the Department developed two planning models for using the data bases identified. The vocational program planning model was developed for Oregon's secondary schools and community colleges. The curriculum development process model was developed to provide the technical information once the program was approved.

The program planning model provides a series of stages and procedures the vocational planner must follow to arrive at a decision to approve or disapprove a program for implementation. These are identified as:

TABLE I

PROGRAM PLANNING STAGES AND PROCEDURES

STAGE	PROCEDURE
I	Review the vocational education state plan for needed thrusts and priorities.
II	Identify the occupational universe from which programs will be projected.
III	Calculate and determine the programs needed.
IV	Insure that program areas are trainable.
V	Determine employer hiring practices.
VI	Examine other critical elements such as urgency of need, adverse impact on other segments of education, fiscal impact, and student demand.
VII	Recommend new programs for implementation.

The same series can be followed for existing programs.

This series allows the planner to start with a maximum of programs. Then by applying the procedures, a gradual and realistic "dropping out" of program possibilities takes place until only the programs passing all critical stages and tests remain. These programs are then used for program recommendation and implementation.

The curriculum development process model establishes a systems approach, highlighting a three-part operation of (1) inputs, (2) processes of planning, organizing, and evaluating, and (3) outputs. Typical inputs were determined to be:

a. Needs assessment
b. Data sources
c. Data bases
d. Data collection
e. Data analysis and establishment of needs and priorities by:

1. State curriculum advisory committee.
2. State director of vocational/career education.
3. State program specialists, vocational and career education.
4. State curriculum coordinator and specialists.
5. State developmental center director and specialists.

The processes and their common outputs are:

Process	Output
Planning	Curriculum development priority decisions
Organizing	Developed or procurred curriculum materials
Evaluating	Contiguously field tested, revised, and evaluated curriculum materials.

This approach provides the most current technical and nontechnical information to the instructional units within the state at both the secondary and community college levels.

CONCLUSIONS

The following conclusions were drawn by the respective agency and are concurred with by the project steering committee.

Portland School District

The project resulted in very satisfactory goal attainment. The district developed and has begun testing a set of procedures for applying state-level data and other information in planning vocational programs at the local level. The program planning model includes a series of input factors other than data that are thought to be vital to responsible planning.

Procedures for using state and local data in the curriculum development process were also achieved. The achievements of the Oregon Department of Education in writing curriculum publications, preparing data derivatives such as task analyses, competency analyses, and performance indicators have all been integrated into the curriculum planning model. All Portland District 1J curriculum vice principals and selected vocational teachers have been informed about the curriculum support materials, such as individualized learning packets and in-service classes are being planned to help vocational instructors to implement such curriculum-data content into their instruction.

Procedures have been identified to review and evaluate secondary vocational programs. Additional sources of local data have been identified and are identified in the guide. Recommendations as to how the principles of program planning, evaluation, and review might be applied are included in the guide, and the principles have been implemented in the planning-review process required for funding requests for fiscal year 1978.

Other procedures for applying manpower and task analyses components to the vocational guidance process are discussed to some extent in the guide produced by the Portland School District. Special plans have been discussed with a number of school administrators and guidance personnel. Efforts and

activities to cooperate and complement a related project which is directed at increasing counselor participation in career and vocational guidance have been ongoing.

The in-service outlines which have been prepared will provide educators with a variety of information necessary for effective program planning and curriculum development. Their general awareness and ability to use data as a planning and instructional resource will be substantially greater as a result of this project.

Lane Community College

The project has resulted in the production of two models for use by community colleges to more effectively utilize data to (1) plan for vocational programs and (2) develop curriculums necessary for successful programs. The staff members at the colleges where the college master plan model had been presented feel it is both needed and usable.

The potential for use of the models appears quite promising but additional field testing is needed. Undoubtedly, as a result of further field testing, both the college master plan and curriculum planning models will need to be modified. Individual colleges that use them will need to modify them to fit their particular college setting.

Oregon Department of Education

The vocational program planning model provides an excellent view of the various stages and elements that must be considered when planning for new programs in the state or reviewing existing ones at the secondary and community college levels.

The model has the capability to reasonably predict the number of new vocational programs that should be implemented and those that might be discontinued. The model provides the means to consider such critical elements of concern as those expressed by the State Board of Education, Oregon Educational Coordinating Commission, and the Oregon Legislature.

The role of the Department of Education in improving curriculum for local educational agencies is a complex and time-consuming enterprise. The organizational environment requires the coordination and integration of many administrative levels within numerous organizations and institutions. The curriculum development processes will continue to require individuals who are capable of working well with data and a variety of persons in various organizations and areas of vocational education.

The curriculum development process model that was described to control and direct the various human, financial, and material resources will, of necessity, be changed, modified, and adapted to existing Department of Education policies and personnel.

To insure that the vocational program and curriculum development planning models were most representative of the views of the Department of Education, additional effort was expended. This reduced the time available necessary to plan and develop the in-service models which were to be used to train selected staff in the use of the agency's models. These plans and instructional modules are foreseen to be completed in the near future.

GLOSSARY

(1) Manpower Demand--Includes the past, present, and projected employment, as well as expected one-year and six-year expansion and replacement needs for the total labor force by occupation for all industries, including government, railroads, and public utilities.

(2) Manpower Supply--Includes the output of trained individuals from high schools, community colleges, universities, proprietary schools, and apprenticeship programs.

(3) Alternate Designs for Instructional Materials--Includes materials available from the Oregon Department of Education, the regional vocational curriculum laboratory, and research and exemplary projects.

(4) Secondary, Post-Secondary and Adult Vocational Program Data--Includes class offerings and enrollments, student characteristics, program enrollments and completions, disadvantaged and handicapped mix, teachers, and student-teacher ratios.

(5) Follow-up Study--Includes characteristics of high school and community college program graduates and dropouts, reasons for their departure, number receiving additional education, number entering the labor market directly, relationship of training to post-school activities, factors affecting career and future education choices, and suggestions for improving existing programs.

(6) Task Analyses--Includes detailed task analyses for all major occupations in the established Oregon occupational clusters and selected occupations for post-secondary and adult curriculum areas.

(7) Competency Analyses--Includes listing of the occupational competencies common to each cluster area as derived from the task analyses of the included occupations.

(8) Instructional Analyses--Includes learning objectives, suggested learning activities and materials and teaching strategies.