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ABSTRACT

Development of a basic information system for vocational education through Project EDNEED (Empirical Determination of Nationally Essential Educational Data) is summarized in this first volume of a five-volume final report. Objectives of the project were to (1) determine the extent to which selected data questions represent the vocational education informational needs of users at the national, state and local levels, (2) prioritize the data questions according to their degree of relative importance across levels and within levels by use of the categories of planning, operation, evaluation, finance and budgeting, reporting requirements, and public information, and (3) determine similarities in information needs across levels and use categories. Procedures for the four operational phases of the project are summarized along with brief descriptions of the accompanying volumes entitled "Project EDNEED Classification of Information"--Volume II; the EDNEED Lexicon--Volume III; Issues and Recommendations, Reports of Project EDNEED Conferences--Volume IV; and Data Analysis: Procedures and Results--Volume V. (Volumes II and III are products of the project; Volumes IV and V present detailed results of the project.) Interpretation of results are given and implications are discussed. A bibliography and a source list are appended. (TA)

DATA NEEDS IN VOCATIONAL EDUCATION

Volume I Summary of Procedures and Results

Project EDNEED I

FINAL REPORT VOLUME I

Project No. V0306VZ

"The Development of a Minimal Information System to Satisfy the Needs of Selected User Groups"

Grant No. OEG-0-74-1654

Research Project in Vocational Education
Conducted Under
Part C of Public Law 90-576

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March 1976

ACKNOWLEDGMENTS

Project EDNEED is deeply indebted to scores of agencies and literally hundreds of individuals who contributed freely of their time and expertise in order that the project could be completed. Many of the persons who rated and checked the Classification document and their respective agencies are listed as participants in the reports of the various conferences. Nearly fifty staff persons from the American Vocational Association; the National Advisory Council on Vocational Education; the National Center for Educational Statistics; the National Institute of Education; the Bureau of Labor Statistics, U. S. Department of Labor; and the U. S. Office of Education reviewed the "Preliminary Taxonomy" and collectively made hundreds of suggestions for its modification and improvement into what became the conference edition of the Classification document.

Of these agencies, the U. S. Office of Education and particularly the Bureau of Occupational and Adult Education deserves special mention. Personnel from every division in the Bureau were involved in some way in the project. Input into major project decisions in the form of advice and counsel is gratefully acknowledged from Deputy Commissioner William F. Pierce, Associate Commissioner Charles H. Buzzell, Division Director Howard Hjelm, Branch Chief Glenn Boerrigter and especially from Jack Wilson, Project Monitor.

Finally, appreciation is gratefully extended to the former Project Director, Dr. Robert L. Morgan, and to the more than thirty present and former Center for Occupational Education staff members, without whose efforts and dedication the project could not have been brought to fruition.

G. William Porter
Project Director

PROJECT SUMMARY

Purpose and Objectives

EDNEED I was conceived as an important first step toward the development of a basic information system for vocational education. The project had three purposes: (1) to determine, empirically, the extent to which selected data questions represent the vocational education informational needs of users at the national, state and local levels; (2) to prioritize the data questions according to their degree of relative importance across levels and within levels by use category (planning, operation, evaluation, finance and budgeting, reporting requirements, public information); and (3) to determine similarities in information needs across levels and use categories.

The central premise of the project was that once the information needs were determined and prioritized, a basic core of data questions and associated information elements could be empirically derived which would meet the shared informational needs of the three levels on a priority basis. The size and composition of the core would be a function of the need priority and the amount of resources available for allocation.

The three project purposes were translated into four operational objectives, each of which served to identify a milestone phase of the project. The phases and their accompanying operational objectives are as follows:

Phase I - To identify important questions in vocational education and those information elements necessary to provide answers to the questions.

Phase II - To refine the data questions and information elements (identified in Phase I) through the involvement of selected national user groups; to define each information element; and to collect data on national needs.

Phase III - To determine empirically the relative need for each of the data questions (by use category) through ratings by representative state and local data users. To further review and critique the questions and information elements and to identify and provide recommendations for the resolution of problems and issues associated with the future development of a national vocational education information system.

Phase IV - To analyze the ratings to determine priority data needs across levels (local, state and national) and uses (planning, operation, evaluation, finance and budgeting, reporting requirements and public information). To produce a final report of the results.

Procedures

The major steps in each of the four phases are shown graphically in Figure 1. In Phase I, two approaches to the identification of sources were utilized: first, a literature review and second, direct visitation to various potential user groups. Over 100 individuals representing more than 50 national, state and local agencies and organizations who were expected to have needs for vocational education data were contacted in an effort to identify recurring questions at administrative and policy-making levels. A secondary purpose of the agency contacts was to explain the project and secure the support of agency representatives for subsequent

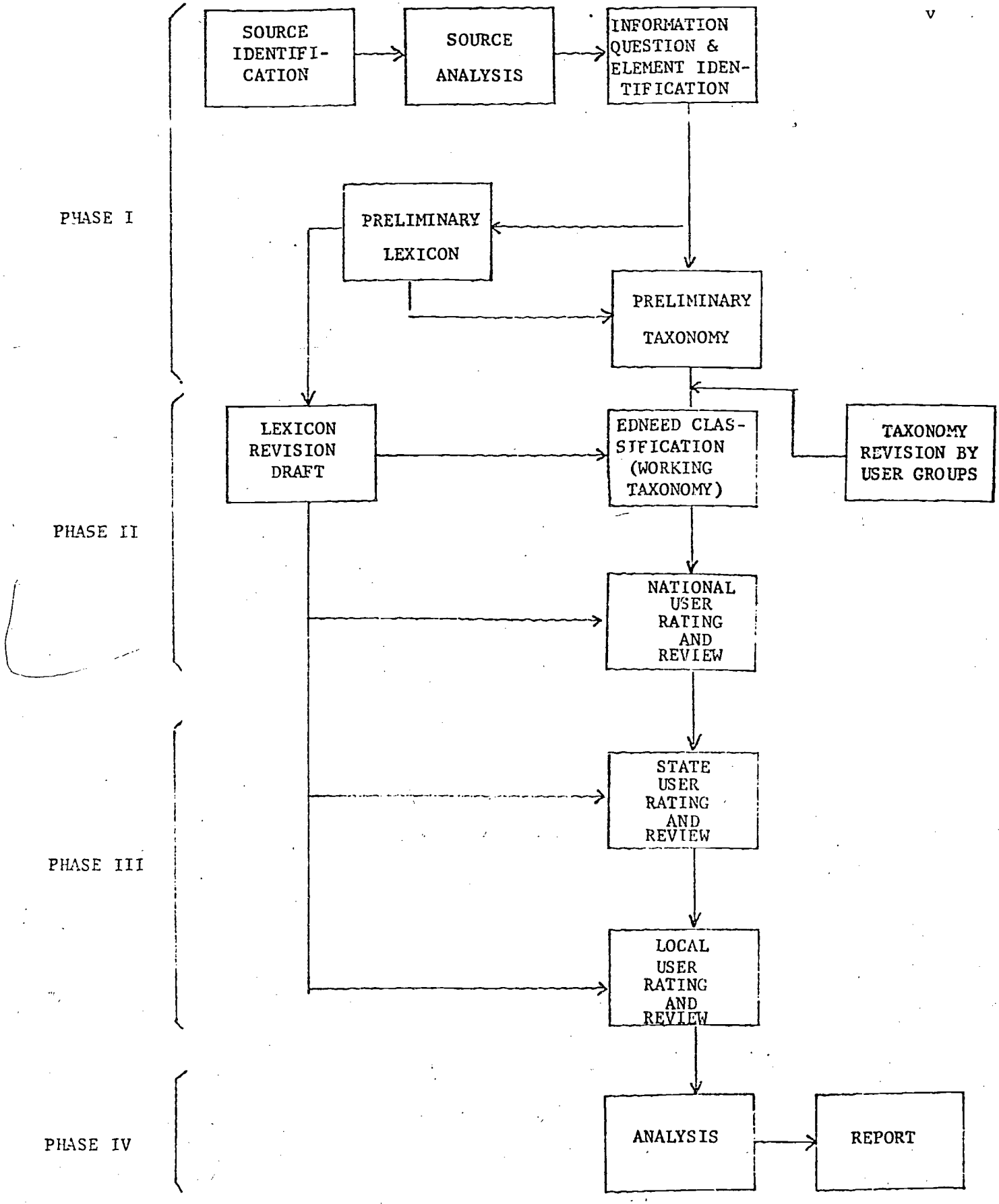

Figure 1. Products and Procedures by Phase

participation in Phase II. To facilitate this purpose a 35mm slide presentation was developed and used widely to disseminate information about the project.

As questions were identified, each was analyzed to determine those information elements from various sources which if known, could serve to answer the questions. Broad questions were broken down into components which could be answered by a single information element or group of information elements. Thus, whether a state provided for, or emphasized, one or more of the many types or levels of vocational education, the information elements were designed to allow for full coverage of elementary, secondary, postsecondary, adult, handicapped, disadvantaged and other specialized offerings.

A detailed taxonomy of information elements of potential utility to national, state and local user groups (an interim report) was prepared and was ready for in-house review in late January, 1975. This draft document, entitled "Project EDNEED: Preliminary Taxonomy for the Development of a National Vocational Information System," consisted of 20 informational files. A file was defined as a collection of similar information elements. The files were in turn organized into five parts or classes to reflect the organizational structure of the vocational education delivery system. Following a rigorous in-house review, the "Preliminary Taxonomy" was delivered in Phase II to representatives of six user groups selected for their centrality to vocational education data needs. An abundance of suggestions were received, focusing mainly in two areas (a) changes in the structure and organization of the document and (b) addition of data questions and information elements.

As a result of this review by the six selected national agencies, an intensive effort was mounted by Center staff to incorporate the suggestions into a completely revised taxonomy in time for review, rating and checking by the conference of national users scheduled for mid-March in Annapolis, Maryland. The revised document was entitled Project EDNEED: Classification of Information for the Development of a National Vocational Information System and comprised Volume II of the Project EDNEED Final Report. Referenced hereafter as the Classification document or the EDNEED Classification, this revised document differed substantially from the original "Preliminary Taxonomy." The five-part division was replaced by a four-level division with connecting files, making the aggregation potential more explicit. The number of files was reduced from 20 to 18, and nearly 100 new information elements were added. The most striking change, however, occurred as a result of the arrangement of the information elements as subtopics or possible answers to data questions. Thus, the conference edition of the EDNEED Classification included 323 questions as well as 2340 information elements. For each of the 323 questions, respondents were asked to check whether or not their agency presently asked the question or would ask it if the information were available. If a respondent checked either of the above, he/she was then asked to indicate (on a six-point scale ranging from "no importance" through "critical importance") how important the question was for each of six use categories: planning, operations, evaluation, finance and budgeting, reporting requirements and public information. The raters were further asked to indicate for each question checked, those information elements associated with that question that were needed to answer the question.

An ongoing effort was maintained during Phases I and II to produce a Lexicon of definitions of key terms used in describing the data questions and information elements. Draft copies of the revised Lexicon were available for use by the national data users at the Annapolis Conference as well as for subsequent conferences in Phase II. Production of the report of that conference marked the end of Phase II.

Phase III consisted of three similar conferences, one for state level user group representatives and two for local level users. As at the national level, state and local conferees were presented with the EDNEED Classification document in advance of the conference and asked to check those data questions needed and to rate each one checked according to its importance for each of the six use categories indicated previously. At each of the conferences, participants were asked to make suggestions and recommendations in three areas: (a) the adequacy of the Classification document; (b) the identification of problems and issues to be encountered in the development of a basic vocational education data system; and (c) the generation of solutions to the problems. Detailed reports of all four conferences are contained in Volume IV of the EDNEED Final Report.

Phase IV consisted of the completion of the conference reports, the design of a plan for the analysis of the data generated by the rating and checking process, the analysis of the data and the production of a five-volume final report. Entitled Data Needs in Vocational Education, each volume of the final report is subtitled as follows:

Volume I Summary of Procedures and Results

Volume II Project EDNEED Classification of Information

Volume III Project EDNEED Lexicon

Volume IV Issues and Recommendations
Reports of the EDNEED Conferences

Volume V Data Analysis: Procedures and Results.

For more detailed information about any aspect of the study, the reader is referred to the appropriate volume.

Findings and Results

Although summarized in detail in Volume I, the results of the project are reported in Volumes IV and V. Only the highlights are presented here.

- A national system for vocational education data collection with emphasis on uniformity of data and format is critically needed.
- Standardized national definitions for data elements must be of the highest priority.
- A national data system will require federal funding and support.
- "Change" must be incorporated as a characteristic for any vocational education data system. Additions and deletions of data will be constant.
- The extent to which data will be used, by whom, and for what purpose must be established early, as well as the locus of control and physical location of the system.
- There appears to be little coordination among existing data systems, or among data producers and data users.
- Consideration must be given to the already heavy "data burden" on state and local education agencies. Statistically sound sampling is an alternative worth exploring in this regard.
- State vocational education agencies are both data producers and data users. The data burden problem falls most heavily on

their shoulders and they appear reluctant to become involved in activities which might increase the burden.

- A definitive study of data sources now in place is crucial. Any national data system should be designed to use every available data source. Only data which are highly needed but not currently available should be added.
- A national data system should provide a means for ensuring that data aggregated upward from local education agencies could be directed back to them in a timely and meaningful way. Local administrators indicated that this is often not the case at present, even with their own state MIS's.
- Vocational educators must learn to measure fitness for employment of graduates and early leavers in terms of their acquired and demonstrable competencies rather than in terms of courses taken and hours spent in classrooms, labs and shops. Such measurement data in a system could provide a basis for accurate studies of the costs of instruction vs. the benefits of placing people in employment.
- Local education agency data users have a greater need for curriculum information than either national or state users.
- State users have less need for data on student characteristics than either national or local users.
- Local data needs are more congruent with a national orientation than a state orientation.
- State data needs are more congruent with a national orientation than with a local orientation.
- National data needs are more congruent with a local orientation than a state orientation.

- Information on the characteristics of the curriculum and instrucational processes was the most important category of information need across all levels and uses.
- Information concerning the characteristics of vocational program completers and early leavers was the most important category of informational need over all uses at the national level.
- Information on the characteristics of the curriculum and instructional processes was the most important category for both local and state users over all uses.
- There is a distinct demand at all levels for data descriptive of vocational education at the "grass roots." At all levels, users are most interested in knowing who is being served, what they are being served, and what happens as a result of their being served.
- National data needs for planning, evaluation, reporting requirements and public information are distinct from national needs for operations and finance/budgeting data.
- State data needs for planning, operations, finance/budgeting and reporting requirements differ from state data needs for evaluation and public information.
- Local needs for data appear to be relatively consistent across all uses.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

THE PROBLEM

The problem to which Project EDNEED I (Empirical Determination of Nationally Essential Educational Data) was addressed is the lack of a nationally uniform set of essential data for planning, operating and evaluating vocational education programs at local, state and federal levels. The lack does not stem from the absence of management information systems in vocational education. P[illegible] veys show that such sys[illegible]s do exist and are in place (Mor[illegible]allenger and Lawrence, 1974). The Bureau of Occupational and Adult Education, USOE, Dr. William Pierce, Deputy Commissioner, officially recognized prior to 1973 the problem area to which the present study was addressed. Shortly thereafter, design, development, field testing, implementation and evaluation of information systems was designated a high priority for projects to be supported in FY 1974 and FY 1975 under authority of Section 13(a) of Part C of the Voc[illegible]tional Education Amendments of 1968. Many state agencies for vocatio[illegible] education utilized these available research and development funds (ove[illegible] 1.8 million from Part C alone [illegible] FY 1975) to develop and install manag[illegible]ment information systems for vocational education within the states. T[illegible] systems, however, are state specific--that is, they are designed to produce the information required by the vocational education leaders within the state, and, developed independently, they are not necessarily congruent or compatible.

The crux of the problem is the changing nature of data requirements within federal agencies and the variability of data generated within and across state agencies for planning and evaluation. Federal legislation is relatively specific regarding the necessity to collect and report data,

but is not specific about the set of data to be reported.[1] Consequently, there is a lack of common data across states and localities for use in vocational education planning, operation and evaluation. As recently as May, 1976, the Committee on Education and Labor of the U. S. House of Representatives reported (p. 39) that

> . . . the lack of adequate data has hampered attempts at evaluation of the effectiveness of the vocational education program by Congress and has hampered the program administrators from offering courses most directly related to job demand. The truly unfortunate thing about this situation is that it is a failing which could have been avoided years ago.

There is also a lack of management information system requirements which are based on the assessed needs of specific groups who ultimately make

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[1]The 1963 Vocational Education Act mandated that any state desirous of receiving federal funds under the Act . . . shall submit through its state board to the Commissioner a State plan in such detail as the Commissioner deems necessary . . ." [Sec. 5 (a)]. The 1968 Amendments further provided that state plans must contain ". . . such information as the Commissioner deems necessary . . ." [Sec. 123(a)]. Necessary information has been generally defined by the Office of Education to include information pertaining to (1) manpower needs and job opportunities; (2) availability of vocational education with special emphasis on geographic areas marked by high unemployment, high school dropouts, and heavy population density; (3) needs for vocational education as evidenced by population characteristics; (4) needs for vocational education programs with respect to special target groups and target areas to be served; (5) vocational education objectives; and (6) vocational education program delivery (Albert, 1972). As specified by the 1963 Act, each state is required to submit a plan which

> . . . provides for making such reports in such form and containing such information as the Commissioner may reasonably require to carry out his functions under the [Act] title, and for keeping such records and for affording such access thereto as the Commissioner may find necessary . . . [Sec. 5(a) (7) 1973].

In accordance with the requirements, information regarding vocational education expenditures, project expenditures, vocational education professional personnel, student enrollment, program completions, and program activities is reported annually to the regional offices of the Office of Education.

use of the data provided by the system. Although individual states have considered the needs of users in their independently developed information systems, no assessment of data needs by purpose of use has been made across states or at the national level; nor have attempts been made to isolate a common set of vocational education data based on empirically determined informational needs of user groups at local, state and national levels.

The necessity for a national vocational education data system based upon the needs of users for answers to important questions has been recognized by the U. S. House of Representatives and is included in the proposed 1976 Vocational Education Amendments which require the

> . . . establishment of a national vocational education data reporting and accounting system. This system is meant to provide answers to these questions: Who is being served in vocational education programs? What are they being served? What is being accomplished? And what is the cost? More specifically, information is required to be submitted on the evaluations newly required to be conducted by the states of local programs and on vocational students, programs, program completers and leavers, staff, facilities and expenditures. (Committee on Education and Labor, 1976, p. 40.)

Project EDNEED I, conceived prior to the Committee Report and funded under BOAE's Part C priority, was designed to be a first step in the development of the kind of data system now recognized by Congress as being necessary. The project sought to determine data needs through empirical assessment procedures in order to serve as a base for the development of information system requirements at national, state and local levels which would be responsive to the needs of the respective data users.

OBJECTIVES

Project EDNEED I had three purposes: (1) to determine, empirically, the extent to which selected data questions satisfy the vocational education informational needs of users at the national, state and local levels; (2) to priorize the data questions according to their degree of relative importance across levels and within levels by use category (planning, operation, evaluation, finance and budgeting, reporting requirements, public information); and (3) to determine similarities in information needs across levels and use categories.

These purposes were translated into four operational objectives, each of which served to identify a milestone phase of the project. The phases and their accompanying operational objectives are as follows:

Phase I - To identify important questions in vocational education and those information elements[2] necessary to provide answers to the questions.

Phase II - To refine the data questions and information elements (identified in Phase I) through the involvement of selected national user groups. To define each information element. To collect data on national needs.

Phase III - To empirically determine the relative need for each of the data questions (by use category) through ratings by representative state and local data users. To further review and

[2] An information element is a specific piece of data such as: "the number of program graduates employed in a related area within six months of graduation," and is designed to answer a particular data question.

critique the questions and information elements and to identify and provide recommendations for the resolution of problems and issues associated with the future development of a national vocational education information system.

Phase IV - To analyze the ratings to determine priority data needs across levels (local, state and national) and uses (planning, operation, evaluation, finance and budgeting, reporting requirements and public information). To produce a final report of the results.

The central premise of the project was that once the information needs were determined and prioritized, a basic core of data questions and associated information elements could be empirically derived which would meet the combined needs of the three levels on a priority basis, to the extent of available resources. The size and composition of the core would thus be a function of the need priority and the amount of resources available for allocation.

PROCEDURES

The design of the project and the procedures utilized relate directly to the four operational objectives or phases. The methodology for each phase is first outlined in the form of procedural steps, followed by a narrative description of the specific activities conducted in the process of moving through the various steps in each phase. Although there is some overlap among the phases, and among the steps within phases, the procedures are presented as nearly as possible in chronological order.

Phase I (July 1974 - February 1975)

Phase I consisted of the identification of important data questions and associated information elements and their organization into a document suitable for selected user group review. Specific steps in this phase included:

A. Explore and determine (identify) sources of questions.

B. Initiate development of a taxonomic structure for classifying questions and information elements.

*C. Develop list of questions.

D. Analyze each question to determine information elements needed to answer it.

*E. Organize information elements according to taxonomic structure (B above).

F. Review taxonomy of information elements (in-house).

G. Begin work on lexicon containing definitions of terms used in taxonomy.

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*Indicates a publication or interim report associated with step in each phase.

Two approaches to the identification of sources of data questions and information elements were employed. A review of the literature, including legislation, Congressional hearings, agency mandates, other data system publications (including MIS data collection forms from 36 states) and the proposed 1975 Vocational Amendments reporting requirements, revealed many of the potential information needs. Especially helpful at this stage were the publications of Project Baseline, the NCES Handbook Series, Common Core Data, USOE, the Department of Labor (BLS), the National Advisory Council on Vocational Education and the American Vocational Association. A Source List[3] (bibliography) was compiled as a function of this review (Porter and Morgan, 1975). Further, an additional literature review was conducted in search of an existent method or scheme by which the questions and information elements could be classified. This search proved fruitless, and a classification scheme was subsequently developed by the project staff.

The second approach to the identification of sources of questions and information elements involved direct visitation to various potential agency user groups. Over 100 individuals representing more than 50 national, state and local agencies and organizations who were expected to have needs for vocational education data were contacted in an effort to identify recurring questions at administrative and policy-making levels.

A secondary purpose of the agency contacts was to explain the project and secure the support of agency representatives for subsequent participation in Phase II. To facilitate this purpose a 35mm slide

[3] See Appendix.

presentation was developed and used widely to disseminate information about the project. Among the agencies contacted were the following:

AFL-CIO
International Brotherhood of Electrical Workers

American Association of Community and Junior Colleges

American Association of School Administrators

American Council on Education

American Society for Training and Development

American Technical Education Association

American Vocational Association

Association of Independent Colleges and Schools

Bureau of the Census

Congress
House Counsels
Senate Counsels

Council of Chief State School Officers
Committee on Evaluation and Information Systems

Federal Interagency Committee on Education

National Advisory Council on Vocational Education

National Association of State Approving Agencies

National Association of State and Territorial Apprenticeship Directors

National Association of State Directors of Vocational Education

National Association of Trade and Technical Schools

National Bureau of Standards

National Center for Educational Statistics

National Education Association (Research)

National Institute of Education

Office of Management and Budget

Ohio State University (MISVE)

President's Domestic Council

Project Baseline

State Advisory Councils on Vocational Education

State Management Information Systems (36 states)

State Research Coordinating Units

U. S. Chamber of Commerce

U. S. Department of Agriculture

U. S. Department of Defense

U. S. Department of Housing and Urban Development

U. S. Department of Labor
Bureau of Apprenticeship and Training
Bureau of Labor Statistics
Manpower Administration

U. S. Department of Transportation

U. S. Office of Education

Veterans Administration

As questions were identified, each was analyzed to determine those information elements from various sources which if known, could serve to answer the questions. Broad questions were broken down into components which could be answered by a single information element or group of information elements.

In late 1974, an informal request was made by BOAE/USOE for a representative list of some of the more important questions typically asked of the vocational educational enterprise. This request was honored in January, 1975, through the publication of an interim report, Questions in Vocational Education: What Everyone Wants to Know and is Not Afraid

to Ask (Drewes, et al., 1975). For the purposes of that document, the questions were organized in two ways. First, general questions were included according to the following categories: questions about target populations; questions about curricula; questions about resources (staff, facilities and equipment); questions about costs; and questions about outcomes of vocational education programs. In the second section of the document, each of the general questions in the categories above was subdivided into more specific questions, each answerable by a single piece of data. These more specific questions were categorized according to a context, input, process, product and impact classification structure. Context questions included those associated with the milieu in which vocational education takes place (e.g., demographic, economic, education and employment, revenue base and training resources data). Input questions included those providing information on revenues and about new students entering the system. Questions in the process category were concerned with enrollments and expenditures as well as programs, staff and facility resources. Product questions were considered to be those relating to program completers and dropouts. The impact area included questions associated with post-school employment, job satisfaction, employer satisfaction and school satisfaction.

Given the identification of these vital questions, the most complex and time-consuming task in Phase I was the development of the information elements necessary to answer these questions and their organization into a rational structure for presentation. The population served, the vocational education content provided, and the delivery techniques utilized in the United States vary from state to state, yet the taxonomy

in which the information elements was classified attempted to be representative of all levels and all functions of vocational education. Thus, whether a state provided for, or emphasized, one or more of the many types or levels of vocational education, the information elements were designed to allow for full coverage of elementary, secondary, postsecondary, adult, handicapped, disadvantaged and other specialized offerings.

A detailed taxonomy of information elements of potential utility to national, state and local user groups (an interim report) was prepared and was ready for in-house review in late January, 1975. This draft document, entitled "Project EDNEED: Preliminary Taxonomy for the Development of a National Vocational Information System," consisted of 20 informational files. A file was defined as a collection of similar information elements. The files were in turn organized into five parts or classes to reflect the organizational structure of the vocational education delivery system. Part A consisted of six files relating to state level information: state information, SEA information, SEA expenditures by function, SEA expenditures by object, SEA property information, and SEA staff information. Part B consisted of six similar files relating to the LEA service area. Part C contained three files of information: information about the school, school vocational expenditures by function, and school vocational expenditures by object. Part D contained information in three similar files by curriculum rather than by school. Part E, the student section, contained one file on enrolled individuals and one file on completers/early leavers. Upon completion of the first draft

of the Preliminary Taxonomy, it was subjected to a rigorous in-house review by all professional staff.

The final activity of Phase I was the commencement of work on a rough draft of the EDNEED Lexicon, which would subsequently contain definitions of each information element in the taxonomy. The lexicon was developed to eliminate any possible confusion in the minds of reviewers or users of the taxonomy as to the intent of any of the information elements. Since the draft lexicon was not completed until the middle of Phase II, attention was first given to those terms deemed by the project staff to be most ambiguous or difficult. Many of these were included as a Glossary to the final draft of the "Preliminary Taxonomy" for the benefit of the early reviewers.

Phase II (January 1975 - June 1975)

The second phase consisted of the refinement and revision of the "Preliminary Taxonomy" and the collection of national level data. Specific steps in this phase included:

A. Circulate taxonomy to six selected national users for review and modification suggestions.

*B. Revise taxonomy based on above into a classification instrument suitable for rating and checking by users.

C. Plan conference for review by an expanded group of national users.

*D. Complete rough draft of lexicon.

E. Hold conference.

F. Process data gathered at conference.

*G. Produce conference report including analysis of data from national user group representatives.

The second phase of the project overlapped slightly with Phase I. Nearly 50 copies of the "Preliminary Taxonomy" were delivered to representatives of six selected agencies for their review and critique. The six agency representatives listed below replaced the five consultants mentioned in the original proposal: the U. S. Office of Education, the National Advisory Council for Vocational Education, the National Center for Educational Statistics, the Bureau of Labor Statistics (DOL), the American Vocational Association and the National Institute of Education. Additionally, the document was reviewed unofficially by representatives of the Office of Management and Budget.

Each reviewer was asked to consider the taxonomy in terms of the following three questions:

1. Is the coverage indicated by the broad titles of the 20 data files adequate and providing the data needed ultimately in the proposed Vocational Education Information System?

2. In viewing the taxonomy as a whole, is it clearly evident that the data files (a) are in sufficient detail by categories and items, and (b) have sufficient breadth and depth to make possible subsequent acquisition of data necessary for the proposed Vocational Education Information System? What further modifications should be considered?

3. What suggestions can be made at the present time concerning conference procedures which will ensure the most efficient use of the time and expertise represented by the conference participants?

As copies of the taxonomy were delivered and explained to the reviewers, return appointments were made with each agency reviewing group one to two weeks later for the purpose of discussing reviewer reaction to the document. On the return visits project staff members met with each group of reviewers representing an agency. The meetings ranged from one and one half to three hours in length and produced an abundance of suggestions, focusing mainly in two areas: (a) changes in the structure and organization of the document and (b) addition of data elements

As a result of this review by the six selected national agencies, an intensive effort was mounted by Center staff to incorporate the suggestions into a completely revised taxonomy in time for review, rating and checking by the conference of national users scheduled for mid-March in Annapolis, Maryland. The revised document was entitled Project EDNEED: Classification of Information for the Development of a National Vocational Information System and comprises Volume II of the Project EDNEED Final Report. Referenced hereafter as the EDNEED Classification, this revised document differed substantially from the original, preliminary taxonomy. The five-part division was replaced by a four-level division with connecting files, making the aggregation potential more explicit. The number of files was reduced from 20 to 18, and nearly 100 new information elements were added. The most striking change, however, occurred as a result of the arrangement of the information elements as subtopics or possible answers to data questions. Thus, the conference edition of the EDNEED Classification included 323 questions as well as 2340 information elements. For each of the 323 questions, respondents were asked to check whether or not their agency presently asked the question or would ask it if the information were available. If a respondent checked either of the above, the respondents were asked to indicate (on a six-point scale ranging from "no importance" through "critical importance") how important the question was for each of six use categories: planning, operations, evaluation, finance and budgeting, reporting requirements and public information. The raters were further asked to indicate for each question checked those informational elements associated with that question that were needed to answer the question.

During the revision process, other project staff were planning a conference at which the revised document would be reviewed by an expanded group of national users. Still other project staff were computing the previously mentioned lexicon beginning with Level I. A rough draft version of that document, containing definitions of the terms in the EDNEED Classification was available at the conference. A revised version is included as Volume III of the Project EDNEED Final Report.

A great deal of interest in Project EDNEED was generated by the initial review process and by the conference planning process. This interest turned what was conceived as a conference for 35 agency representatives and seven staff members into a conference of 55 agency representatives and 11 staff members.

Approximately one week before the conference was to be held, the EDNEED Classification document, accompanied by a complete set of instructions for checking and rating the questions and information elements, was mailed to a previously selected wide spectrum of agency representatives authorized to speak to the vocational education needs of their constituencies. As mentioned above, 55 individuals representing nearly 40 agencies sharing a common interest in vocational education participated in the working conference held at Annapolis, Maryland, on March 16-18, 1975.

The purposes of the conference were:

1. To review and critique the questions and information elements in the EDNEED Classification document.

2. To identify issues and problems associated with the design, inauguration and operation of a nationwide system of vocational education information.

3. To provide recommendations on how the issues and problems identified could be resolved.

Agency representatives were assigned to one of four discussion groups by the project staff in advance of the conference, on the basis of expected agency interests. Thus, individuals in each discussion group reflected a balance of agencies and governments on a wide spectrum. The discussion groups met for three high productive periods, during which time discussion was confined to specific topic areas. The first discussion period concentrated on topics related to the "Adequacy of the EDNEED Classification." The second discussion period concentrated on "Policy Problems and Issues Related to National Information System," and the final session was concerned with "Suggested Solutions to Some of the Problems."

Project staff members served as resource personnel to the discussion groups, provided supporting documents as needed and explanations as desired by the conferees, and recorded notes from the discussions which would provide suggestions for the conduct of the project subsequent to the conference.

Following each discussion session, the elected leaders of the four discussion groups reported to the total group in general sessions, (a) the major agreements reached in the respective discussion groups and (b) other information revealed by group members about problems, issues and constraints that might be anticipated. All general session reports were recorded.

Subsequent to the conference, the transcripts were typed, edited and organized for presentation in a report. Concurrently, other project staff members designed a simple procedure for analyzing the preliminary data produced by the rating and checking process and analyzed the data.

The tapescripts provided the substance for the first section of the conference report entitled Project EDNEED: Report of the Conference on the Determination of Nationally Essential Educational Data, which can be found in Volume IV of the Project EDNEED Final Report entitled Data Needs in Vocational Education. Issues and Recommendations: Reports of the Project EDNEED Conferences. Preliminary analysis of the data produced by the rating and checking of the EDNEED Classification comprised the second section of the report.

In addition to the findings, recommendations, and data from the rating and checking process, several other conference outcomes were apparent. The conference served as a national forum for the discussion of important issues relating to the production, storage, retrieval and use of vocational education data. Many organizations and agencies developed interfaces which previously had experienced little contact. Some of these agencies have already begun to extend and strengthen their linkages with other organizations through subsequent meetings. For a more thorough treatment of conference procedures and outcomes, the reader is referred to Volume IV of the Project EDNEED Final Report.

Phase III (July 1975 - October 1975)

This phase consisted of the collection of data on state and local needs, and further data on the adequacy of the EDNEED Classification and on issues and problems. The mail survey, envisioned in the original proposal was replaced by a series of conferences. Specific steps in Phase III included:

A. Plan mini-conference for local employer representatives

B. Plan mini-conference for state directors of vocational education.

C. Conduct mini-conference for local employer representatives and state directors of vocational education

*D. Produce Project EDNEED Annual Progress Report (Porter and Morgan, 1975).

E. Plan conference for local administrators of vocational education programs (secondary, postsecondary and proprietary).

F. Conduct conference for local administrators

The mini-conference involving five employer representatives was conducted in Chicago, Illinois, on August 28, 1975. It incorporated generally the same objectives and procedures that were utilized in the Annapolis Conference for national user group representatives described in Phase II. In addition, answers were sought at the mini-conference to the following three questions:

1. What is the role of the employer as a user of information about public vocational education?

2. What kinds of information can best be used to assess the impact or effectivenss of vocational education?

3. What kinds of information can or should employers generate or contribute to a vocational education information system?

In the discussion of the adequacy of the EDNEED Classification, particular attention was given to strengthening the document in the area of outcome or impact data. A discussion guide, list of participants and agenda (included in Volume IV of the Project EDNEED Final Report) were provided to the participants in advance of the meeting, as well as a copy of the EDNEED Classification.

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*Indicates a publication or interim report associated with step in each phase.

The second mini-conference, involving state vocational education administrators, was conducted in Research Triangle Park, North Carolina, on the same day (August [illegible]) as the employers' mini-conference in Chicago. Although only [illegible] state directors attended, 14 rated and checked EDNEED Classification documents were submitted to the project staff from state directors or their designated representatives.

Procedures were almost similar to those followed at the conference for national data users in Annapolis, Maryland. Each participant was mailed a copy of the EDNEED Classification for rating and checking prior to the mini-conference, along with a discussion guide. The topics addressed by the participants were:

1. Questions and comments relating to the adequacy of the EDNEED Classification.
2. Questions and comments relating to problems in setting up a national information system for vocational education.
3. Questions and comments relating to solutions to the identified problems.

A more complete description of this and all other EDNEED I conferences can be found in Volume IV of the Project EDNEED Final Report.

Between [illegible] and conference planning, the Project EDNEED Annual Progress Report [illegible] previously was produced. The report contained the problem to which the study was addressed, project objectives, a detailed description of the procedures utilized and project results and accomplishments during its first two phases. Recommendations and plans for the future were also included, as well as the "Source List" developed in Phase I.

The final activities in Phase III were to plan and conduct a conference for local administrators of vocational education. This

conference was held in Chicago, Illinois, on September 1, 1975. The 22 participants were recommended by their peers, professional associates and others as being among the nation's outstanding local administrators of vocational, technical and occupational education. Urban city school systems, medium-sized city school systems and rural area school systems were represented as well as technical institutes, community colleges and proprietary schools.

Prior to the conference, the EDNEED Classification document, a list of participants, an agenda and a discussion guide were mailed to each selected conferee. Also included with the packet of materials was a copy of the report of the national conference held previously in Annapolis. It was expected that the review of the Annapolis conference proceedings would assist the local administrators in their checking and rating of the EDNEED Classification and in dealing with the second and third conference objectives enumerated below:

1. To determine data needs of representative local administrators.
2. To review and critique the questions and information elements in the EDNEED Classification with particular emphasis on their missions.
3. To identify and to provide recommendations for the solution of problems and issues to be anticipated in connection with the design and operation of a nationwide system for providing vocational education information.

In order to facilitate the review and critique of the EDNEED Classification and to obtain as many suggestions as possible in a limited time period, the morning session of the day-long conference divided the participants into two work groups. One group consisted primarily of local directors of vocational education and was essentially oriented

toward the concerns of public, secondary school vocational education. The other group consisted primarily of community college, technical institute and proprietary school administrators, and was oriented toward postsecondary vocational, technical and occupational education. Following lunch, however, the two groups were brought back together to discuss the problems and solutions indicated in Objective 3. A more detailed description of this conference can be found in Volume IV. The major findings and results of each of the two conferences and both mini-conferences are included in a later section of the present volume.

Phase IV (September 1975 - December 1975)

This phase consisted primarily of data reduction and analysis and the production of the final report. Specific steps were as follows:

*A. Complete summary reports of all Phase III conferences and mini-conferences for dissemination to participants and for collective inclusion as a separate volume in the final report.

B. Design data analysis.

C. Meet with U. S. Office of Education officials to determine weights to be assigned to user groups, use categories and levels.

D. Analyze all data.

E. Produce final report.

Individual reports of the Phase III conferences and mini-conferences were completed and mailed to participants. These reports were assembled into a separate volume which comprises the fourth volume of the final report.

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*Indicates a publication or interim report associated with step.

The first step in the data analysis design was to develop a data verification procedure so that each rated and checked EDNEED Classification could be recorded in an error-free and consistent format. The verified data were organized into three master data sets according to national, state or local levels. Within each level, the data were organized by files, questions within files and elements associated with questions. Files contained between seven and thirty-one questions. Questions had between one and 105 information elements associated with them.

In order to determine the importance of each question, a Similarity Index (S) was devised. The Similarity Index varies between 0 and 1 according to the degree of correspondence (similarity) of the assigned ratings for each use category with the maximum possible ratings for use categories. Thus a Similarity Index of 1 would indicate that all raters assigned the highest possible importance rating to a given question for that particular use category. A Similarity Index of 0 for a question would indicate that every rater assigned the lowest possible importance rating to the question for the use category under consideration. The Similarity Index was defined for every question in the EDNEED Classification by use category and by levels according to the following formula:

$$S_{ijkl} = \frac{\sum_{m=1}^{N_k} U^2_{ijklm}}{36\ N_k}$$

where N_k = number of raters at Level k;

N_i = number of questions in File i;

i = 1 to 18 (File parameter);

j = 1 to N_i (Question parameter);

k = 1 to 3 (Level parameter);

l = 1 to 6 (Use category parameter); and

m = 1 to N_K (Individual rater parameter)

The variable U_{ijklm} represents the importance rating (0 to 6) which Rater m at the k^{th} level gave to Use Category l for Question j, in the i^{th} file of the Classification. These values for U were squared and then summed across all raters at a given level to produce the numerator in the above formula. These figures were then normalized (converted to a value between 0 and 1) by performing the indicated division operation in the formula.

The Similarity Index was utilized in prioritization of questions rather than means or sums of ratings so that questions rated as being of greater importance by smaller numbers of raters would be ranked slightly higher on the priority lists than questions rated of lesser importance by larger numbers of raters even though the sum of the ratings might be equal. A more complete explanation of the Similarity Index and its use in priority determination is included as Appendix A of Volume V.

The rather political questions as to whether the responses of all user group representatives at the national level should be weighted equally in priority determination; as to whether all levels should be weighted equally; and as to whether all use categories were of equal importance posed a significant problem. In an effort to answer the questions in a manner satisfactory to USOE a six page paper outlining the problem and the various alternatives was developed and presented to the project monitor. The paper is included as Appendix B of Volume V.

Project staff members then met with 15 individuals separately to discuss the weighting problem--nine from USOE, four from NCES, one from the Bureau of the Census and one Congressional Counsel. A decision was subsequently made to weight all national user groups, all three levels and all use categories equally in ranking questions by priority.

Application of the Similarity Index calculations to the user levels and use categories resulted in twenty-eight possible prioritizations. These prioritizations are presented as separate data tables in Volume V. The organization of these tables is presented in Figure 1. The notation in each square of Figure 1 represents a vector of 323 questions prioritized according to descending magnitude of Similarity Index. The number in each cell of Figure 1 indicates the table number in which the prioritization is presented. For example, the entry in the extreme upper left box (S_{ij11}) is a priority ranking of questions for planning purposes as rated by national level respondents and is presented in Table 11 of Volume V; the entry ($S_{ij3\bullet}$) at the extreme right of local level is a similar priority ranking of questions according to the mean similarity index across use categories at the local level and is presented in Table 10 of Volume V.

For each of the 28 possible prioritizations, non-parametric statistical analyses were performed to test the null hypothesis Ho: the mean rank of questions within a file is equal across all eighteen files. Files were also ranked according to mean rank of the questions within a file. The importance of files was further analyzed by recording the minimum and maximum question ranks for each file.

USE CATEGORIES

		Planning 1	Operations 2	Evaluation 3	Finance & Budget 4	Report Requirements 5	Public Information 6	Mean by Level Over Use Categories
NATIONAL LEVEL	1	(S_{ij11}) Table 11	(S_{ij12}) Table 12	(S_{ij13}) Table 13	(S_{ij14}) Table 14	(S_{ij15}) Table 15	(S_{ij16}) Table 16	$(S_{ij1\bullet})$ Table 8
STATE LEVEL	2	(S_{ij21}) Table 17	(S_{ij22}) Table 18	(S_{ij23}) Table 19	(S_{ij24}) Table 20	(S_{ij25}) Table 21	(S_{ij26}) Table 22	$(S_{ij2\bullet})$ Table 9
LOCAL LEVEL	3	(S_{ij31}) Table 23	(S_{ij32}) Table 24	(S_{ij33}) Table 25	(S_{ij34}) Table 26	(S_{ij35}) Table 27	(S_{ij36}) Table 28	$(S_{ij3\bullet})$ Table 10
MEAN BY USE CATEGORY OVER LEVELS		$(S_{ij\bullet1})$ Table 2	$(S_{ij\bullet2})$ Table 3	$(S_{ij\bullet3})$ Table 4	$(S_{ij\bullet4})$ Table 5	$(S_{ij\bullet5})$ Table 6	$(S_{ij\bullet6})$ Table 7	$(S_{ij\bullet\bullet})$ Table 1

Overall Mean Similarity Index

Where:

$$S_{ij\bullet l} = \frac{\sum_{k=1}^{3} S_{ijkl}}{3}$$ = Mean Similarity Index by Use Category Across Levels

$$S_{ijk\bullet} = \frac{\sum_{l=1}^{6} S_{ijkl}}{6}$$ = Mean Similarity Index by Level Across Use Categories

$$S_{ij\bullet\bullet} = \frac{\sum_{l=1}^{6}\sum_{k=1}^{3} S_{ijkl}}{18}$$ = Overall Mean Similarity Index (i.e., over levels and use categories)

Figure 1. Layout of Similarity Index Tables

A Spearman rank order correlation matrix was computed for twenty-one of the twenty-eight prioritizations (three levels by six use categories plus the mean by use category over the three levels). This intercorrelation matrix was factor analyzed by the principal component extraction method and rotated according to the Varimax criterion.

A more detailed description of the data analysis procedures as well as the results of the analyses is presented in Volume V. The remaining results of Project EDNEED I are contained in Volumes II through IV. The contents of all five Volumes are described or summarized as appropriate in the next chapter.

RESULTS

As stated previously, the detailed results of Project EDNEED I appear in Volumes IV and V of this report and will be summarized later in this section. Volumes II and III, the EDNEED Classification and the accompanying EDNEFD Lexicon, while not containing conclusions or findings are, none-the-less, products or results of the project. Since they do not lend themselves to summarization, they will be described briefly prior to the presentation of the summaries for the purpose of providing contextual and chronological continuity.

DATA NEEDS IN VOCATIONAL EDUCATION

Volume II: Project EDNEED Classification of Information

This volume, referred to as the EDNEED Classification document throughout the project, served as the primary data gathering instrument for the EDNEED study. The procedures followed and the sources utilized in its development have been recounted previously.

The files in the EDNEED Classification follow the hierarchical organization of public education. There are files pertaining to the curriculum, the school, the local education agency and the state education agency. The logical structure of the file organization is depicted in Figure 2. It is important to note that curriculum is the "link-pin" in that students, LEA staff and LEA property are linked through the school to the curriculum in which the student is enrolled; the staff assigned to that curriculum; and the property allocated to that curriculum. Since a student is enrolled in at least one curriculum, a curriculum is located in a school, a school is attached to a local education agency (LEA), and a local education agency is situated in a state,

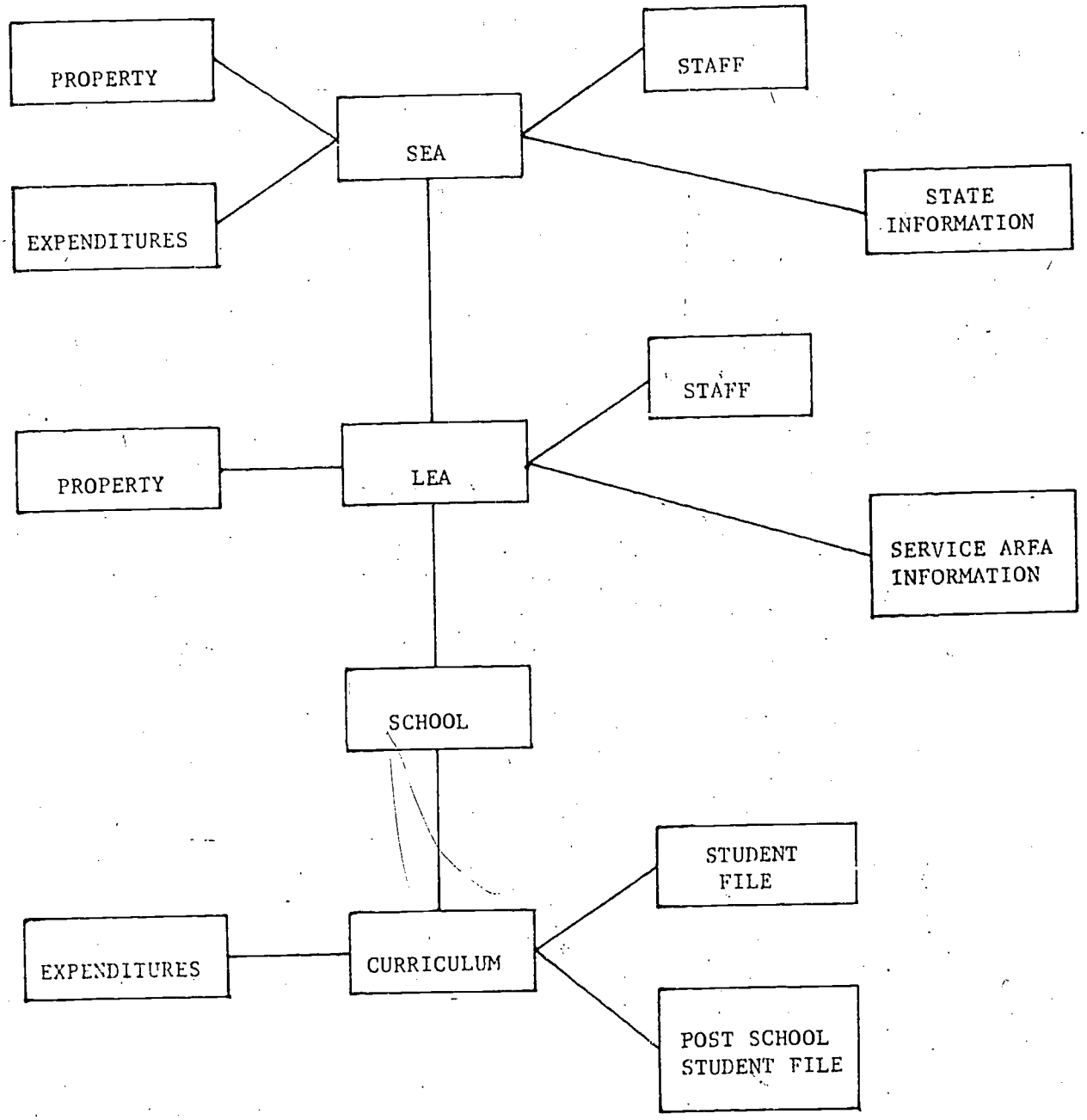

Figure 2. File Organization

it is possible to aggregate all information upward from the student to the state level.

The files contained in the EDNEED Classification are described briefly below. It is perhaps important to note at this point that the file content and structure are addressed to public vocational education. Thus, the files cover only those students, curriculum, staff, property, and expenditures directly associated with public controlled vocational education. The selection of expenditure accounting as opposed to accrual accounting reflects the historical preference in education for expenditure accounting.

File 1: Vocational Curriculum and Instructional Characteristics

Refers to characteristics descriptive of a specific vocational education curriculum in a specific school (e.g., auto mechanics). Characteristics include the identity of the curriculum in terms of its location, program area (e.g., Trades and Industry or Home Economics), program level (e.g., elementary, secondary, postsecondary, adult or other); accrediting and approval status; entrance and completion requirements; planned instructional outcomes; instructional media and methods; procedures for evaluating outcomes; occupations trained for in the curriculum; and post-school outcomes. Also included are characteristics of buildings utilized by the curriculum; staff allocated to the curriculum; expenditure information and curriculum advisory committee information.

File 2: Vocational Curriculum Expenditures by Activity

Refers to the expenditures for a specific curriculum in terms of the activities staff members perform in carrying out their assigned responsibilities in a secondary, postsecondary, adult or special vocational facility. Included are expenditures for classroom, laboratory, and related technical instructional activities that support instruction, such as administration, counseling and guidance, and curriculum development. While not expenditures in the strictest sense, transfer payments such as student stipends, employer reimbursements and payments to other LEAs are included for completeness. Debt service expenditures allocated to the curriculum are also included.

File 3: Vocational Curriculum Expenditures by Local Assignments

Refers to the expenditures for a specific vocational curriculum in terms of the duty assignments performed by local vocational education staff. Major assignment classifications include instruction, administration, instructional and pupil support services, and community support. Expenditure information includes transfers and debt reduction.

File 4: Vocational Curriculum Expenditures by Object

Refers to the expenditures for a specific curriculum in terms of such objects of expenditure as salaries, employee benefits, purchased services, supplies and materials, equipment, land and buildings. Also includes the expenditures for the debt service and transfer payments.

File 5: Vocational Student Characteristics

Refers to the characteristics of a specific vocational education student. Characteristics include age, racial and ethnic origins, cultural background, socioeconomic background, physical condition, curriculum enrollment membership and attendance data, test information, future education and career intentions and employment history while in school.

File 6: Characteristics of Vocational Completer/Early Leaver

Refers to the characteristics of completers and/or early leavers from vocational education curricula. Included are those who graduate and those who withdraw from school prior to completion of the curriculum. Includes characteristics regarding current status, e.g., employed, going to school, military, etc. Employment information includes such items as current employment status, earnings on past and current jobs, and current employer's evaluation of job performance.

File 7: Local Education Agency Vocational Staff Characteristics

Refers to the characteristics descriptive of vocational education staff. Includes personal characteristics such as age, sex, and marital status; level of education; credentials held; work experience; educational experience; position title; activities performed; curriculum assignment; and such other job-related characteristics as salary, fringe benefits, etc.

File 8: Local Education Agency Vocational Property Characteristics

Refers to the characteristics of the property used in the conduct and/or support of vocational education in a school or LEA. Includes such factors as location of site; ownership of site; cost of site; uses made for vocational purposes; numbers of buildings on the site and their instructional characteristics. Also included is information concerning equipment, supplies and materials located on the site(s) and their allocation to curricula.

File 9: Local School Characteristics

Refers to the characteristics of a school conducting vocational education. Characteristics include the type of school by grade (elementary, high school, postsecondary) and by program offering (e.g., comprehensive high school); students served by the school; the curricula offered; school entrance requirements; characteristics of vocational staff assigned to the school; facilities of the school used for vocational purposes; available school support services; school expenditures; community school relations; and curricular information aggregated over vocational education curricula.

File 10: Local Education Agency Characteristics

Refers to the organizational characteristics of the public agency having administrative control and direction of vocational education. Contains such characteristics as number of schools operated; organizational structure of vocational education; vocational curricula offerings; total LEA staff and facilities; total student enrollment in vocational curricula; expenditures; community relations; and cooperative arrangements with external agencies.

File 11: Local Vocational Education Service Area Characteristics

Refers to the geographic area served by the LEA in terms of target population characteristics, the geographic coverage of vocational curricula, the employment characteristics of the population, and opportunities for employment. Also included are general economic characteristics, educational characteristics and other specialized information related to the service area.

File 12: Vocational Characteristics of State Education Agency

Refers to characteristics of the state agency having legal responsibility for the administration of vocational education. Characteristics include the total expenditures by federal, state and local sources for vocational education; methods used for allocating federal and state funds for vocational education to LEAs; total state enrollments, expenditures, completers/early leavers and staff related to the statewide vocational education program. Includes also aggregate LEA data as described in the LEA files.

File 13: State Education Agency Vocational Education Expenditures by Activities

Refers to the state level expenditures in terms of activities performed by state vocational education personnel in carrying out their specific job duties. Included are expenditures for general management activities, planning and research activities, improvement and approval of program activities, support services activities, agency operated schools activities, institution and consultation services activities, and nonprogrammed charges and debt services.

File 14: State Education Agency Vocational Education Expenditures by Assignment

Refers to the vocational education expenditures of a state education agency in terms of the duty assignments of the staff responsible for the state vocational education effort. Major assignments include instruction and instructional support, pupil support, administration support, and community support.

File 15: State Education Agency Vocational Education Expenditures by Object (Service or Commodity)

Refers to and describes the expenditures by the state agency by object of expenditure. Includes expenditures for such services and commodities as SEA staff salaries and benefits; supplies and consumable materials; equipment; land and buildings; purchased services such as printing and binding; transportation costs; and telephone charges. Grants and subsidies to local education agencies and other educational segments of the state system are included for completeness.

File 16: State Education Agency Vocational Education Staff Characteristics

Refers to the characteristics of a state level staff member responsible for vocational education. Includes such biographical characteristics as sex, age, race, and physical condition. Also included are those characteristics that describe the professional education; educational experience; work experience related to the occupations offered within vocational education; credentials; salaries; employment status; position assignment; activity allocation; and source of funds used to support vocational staff members.

File 17: State Education Agency Vocational Education Property Characteristics

Refers to the property utilized by the SEA in the conduct and service of statewide vocational education. Includes characteristics of the property that describe the ownership of the property; its location geographically; costs of sites; acreage; condition of buildings on sites; areas within buildings; information on rooms (shops, classrooms, laboratories), equipment and library books. Also included is information on the allocation of state property by staff activities, staff assignments, program level and program area.

File 18: General Characteristics of the State

Refers to characteristics generally descriptive of the state as a geo-political entity. Included are population characteristics; vital statistics (e.g., births and deaths); households information (e.g., numbers and sizes); employment characteristics (e.g., opportunities,

labor supply and demand); educational characteristics; economic characteristics of state government; local revenue bases for schools; and information on the availability of training slots external to vocational education.

During the course of the rating and checking process and at the conferences, numerous valuable suggestions were received by the project staff for modifying and improving the EDNEED Classification. None of the suggestions were incorporated into the Classification during the course of the project, however, in order to preserve the comparability of the data across the three collection levels--national, state and local. Suggestions and recommendations for changes in specific questions and information elements resulting from the four EDNEED conferences should be incorporated into a revised version of the EDNEED Classification. Unfortunately no provisions for accomplishing this were made in the project, nor are funds available to produce a revised version.

The EDNEED Classification in its present form is a prototypical, but comprehensive, classification by content of important questions in vocational education. Objective variables in the form of information elements are provided which can be used to determine answers to the questions. The document illustrates how needs assessment procedures can be used to determine information needs for the management of vocational education programs at national, state and local levels.

The EDNEED Classification can provide a basis, if used as a preliminary source book, for the development of vocational education information needs assessment studies at state and local levels. Such potential users, however, are cautioned to consider the recommendations for changes and additions reported in the summary of Volume IV.

DATA NEEDS IN VOCATIONAL EDUCATION

Volume III: The EDNEED Lexicon

Early in the conceptualization process associated with Project EDNEED, it became apparent that the information elements to be placed in the EDNEED Classification document would need precise definitions. From the very beginning of the project, staff members conducted a continuing search for commonly accepted definitions of the information elements to be included in the Classification as soon as they were identified.

Definitions that had been utilized over the years and were available in a variety of publications were secured. The chief source for such information was the series of handbooks of the National Center for Educational Statistics (NCES). From the several handbooks currently in use, and from handbooks currently in preparation by NCES, definitions that could be appropriately used or adapted for use from the handbook were incorporated into the EDNEED Lexicon. Another valuable source of definitions was the American Vocational Association publication "Vocational Technical Terminology" which described many of the specialized vocational terms. This publication, published and regularly revised over the years, proved to be of inestimable value as a resource. Also, the published results of a special task force on "Definitions" of the National Association of State Directors of Vocational Education provided materials that had received national acceptance in defining vocational education. These definitions largely pertained to terms used in the gathering of data needed by the states and forwarded annually as a data requirement of USOE.

The original sources of the information elements were also helpful. In addition to those mentioned previously, they included vocational education legislation, Common Core of Data (NCES), Project Baseline, federal, state and local data collection forms and guides, reports of Congressional hearings, census publications and professional associations. Information elements included in the EDNEED Classification for which satisfactory definitions could not be located in planned or extant publications were developed by project staff members.

By March, 1975 when the national conference was held, a nearly complete rough-draft version of the EDNEED Lexicon was available for use by the conferees. Since that time, many hours of checking and revision have been devoted to the lexicon, culminating in a document containing a definition for every information element in the EDNEED Classification. The EDNEED Lexicon was thus designed for the exclusive purpose of accompanying the Classification document. It provides uniform definitions for vocational education terms found in the EDNEED Classification for project purposes. The EDNEED Lexicon was not designed as a solution in itself to the immense problem, emphasized by the participants in all four EDNEED conferences, of a lack of standardized definitions of terms used throughout vocational education. It may, however, be a start toward the solution of that problem in that it is reflective of the rather primitive state-of-the-art in uniform data definitions across the states and territories.

For whatever uses may be found for the EDNEED Classification, the accompanying EDNEED Lexicon will aid in the understanding of information elements used in gathering and interpreting data for planning,

organizing, implementing and evaluating vocational education programs. Should a national vocational education information system be developed based on the EDNEED needs assessment, the EDNEED Lexicon would help to insure that data collected and aggregated across the various levels would have consistency based upon uniform definitions. Thus data aggregated to the national level, for example, would assist the federal government and other national data users to make meaningful analyses for purposes of comparison, coordination and cooperation across all levels. The EDNEED process, including the Classification and Lexicon could also be of great benefit to state and/or local units interested in developing information systems based on empirically determined data needs. The Classification and Lexicon comprise a comprehensive catalogue of well specified data, with which information needs can be determined.

DATA NEEDS IN VOCATIONAL EDUCATION

Volume IV: Issues and Recommendations

Reports of the Project EDNEED Conferences

Volume IV contains the complete reports of each of the four EDNEED conferences on the determination of nationally essential educational data. Listed in order of occurrence, they are: the national conference, held at Annapolis, Maryland on March 16-18, 1975; the state directors' mini-conference held at Research Triangle Park, North Carolina on August 28, 1975; the mini-conference for local employer representatives held in Chicago, Illinois on the same day; and the local administrators' conference, also held in Chicago, but on September 17, 1975.

Conference purposes and procedures are given in Volume IV, findings and recommendations are listed and agendas, discussion guides and participant lists are included. Although each of the conference reports has been disseminated separately, they are brought together in a single document in Volume IV.

In addition to the findings and recommendations reported below, the conferences provided empirical data on agency information needs at national, state and local levels, justified according to purpose of use. Further, the conferences provided dialogues between data users and data producers both across and within levels. The meetings served as forums for the discussion of critical issues relating to the production, storage, retrieval and use of vocational education data. Many organizations and agencies developed interfaces which previously had experienced little contact. Some of these agencies, particularly at the national level, have already begun to expand and strengthen their linkages with other organizations through subsequent meetings.

Findings and Recommendations--National Conference

The output of the conference in terms of findings and suggestions made by the conferees is reported in this section. Reports of each of the work groups were given in three general sessions, each dealing with a different topic. As stated previously, the first general session was concerned with the adequacy of the EDNEED Classification document, the second with policy issues and problems associated with the development of a national data system and the third with possible solutions to the problems identified in the second. The findings are reported in that order.

Adequacy of the Classification

1. The EDNEED Classification document was found to be more than adequate to serve as a basis for the discussion and subsequent development of a national vocational education data system. Its breadth and depth of coverage should, however, be increased to:

a. Include more information elements (possibly a separate file) relating to amounts and sources of revenue. Information about tuition rates, local revenue structures including property taxes, income taxes, sales taxes, endowments, gifts, etc., is important to local institutions in making decisions about program continuation and support based on cost/benefit analysis.

b. Include more information, probably from sources outside the education system, on manpower supply and demand. More and stronger linkages among labor, industry and education would be desirable.

c. Include more information about postsecondary education in general and about the proprietary sector in particular, in order that the delivery system of skilled personnel to the labor market will more accurately reflect all efforts that are being made to provide a wide spectrum of training for all individuals. There is a need to be more concerned with the total universe of vocational education and training, while at the same time making extensive efforts to maintain the integrity of all public and private agencies that provide training. The current definition of vocational education in the EDNEED Classification should be broadened.

d. Include additional outcome information, particularly with regard to secondary education dropouts, completers and early leavers based on one and five year placement and follow-up studies.

2. An efficient vocational education data system ought to incorporate "change" as a major characteristic, since employment and underemployment are phenomena of rapid change in the economy. A real danger in recording data concerning the economy is that the data are no longer current by the time they have been aggregated and made available for the purposes of decision-making. Further, arrangements must be made for periodically purging the system of data previously but not currently needed.

3. An important concern of the conference was the extent to which the data in the EDNEED Classification document would be used, by whom they would be used, and for what purposes they might be used. A corollary concern was expressed regarding data production. For example, the EDNEED Classification does not indicate which data are now being collected, nor by whom, nor at what level within organizations or across organizations (i.e., national, state or local). In addition to a call for more information about present and future collection and storage mechanisms and locations, specific questions were raised concerning how often the data should be up-dated and whether or not a 100 percent sample is necessary each year.

4. Data users, particularly at the national level, were well represented at the conference. Data producers, particularly at state and local levels, were not. It is important to distinguish between users and producers at each level and more state and local participation is imperative.

5. A number of conferees were vehement in their recommendation (also made earlier by the small group of selected users who carefully reviewed the EDNEED Classification document in advance of the conference) that the planned mail-out survey was not the way to secure such participation and could in fact be politically damaging to future project efforts. Mini-conferences or one or more Annapolis-type conferences for state and local representatives were offered as alternatives to the survey.

6. There appears to be little coordination among existing data systems, or among data producers and data users. For example, annual data reports are not coordinated with state plans. The EDNEED Classification should reflect cognizance of "crosswalks" that are in place or would need to be put in place, such that data presently available in a variety of agencies could be interfaced with data scheduled for collection in the EDNEED Classification.

Policy Problems and Issues

7. Some method for delimiting the scope of a proposed national data system is mandatory. The prioritizing of files, subfiles and data elements is vital to that end and must be continued through state and local inputs.

8. Several of the conferees felt strongly that there are only four major kinds of data that need to be collected, and in the collection of these four types, there is a natural tendency to order the kinds of data that will be used. The four types include general purpose data, data concerning demonstration and research, evaluation data, and data concerning budgeting and expenditures.

9. The kind or kinds of data needed on a continuing basis by the committees of the Congress do not differ greatly from data needed by state and local authorities to evaluate local programs of vocational education. However, while a general but accurate description would suffice on the national level, such a description would have to be derived from data aggregated from the locals. Effective planning is based upon evaluation, and evaluation concerns the availability of data for comparative purposes.

10. Attention must be directed to those who will subsequently use the data, the extent to which the data will be used, and the relevance of the data to the needs of administrators, planners, evaluators and others. Directed attention and inquiry of this nature should disclose the level of sophistication actually required in the data, and the extent to which the sophistication has a bearing upon the uses of the data for decision-making. The depth of sophistication and detail needed in the data should be reflected in the subfiles within the EDNEED Classification.

11. One of the most signficant problems facing any national data system concerns the matter of definitions. Although a national system constructed upon national definitions of such terms as vocational education, postsecondary vocational education, adult vocational education and others, is urgently needed now, many of these terms have various definitions in different states. Within the same state, the definitions of major terms in the vocational firmament are often understood to mean quite different things. The present confusion of definitive terms has produced, and will continue to produce, confusion in data acquisitions, and in its usefulness in decision-making. Because of the lack of consistent definitions, it is virtually impossible to meaningfully aggregate data for use on the national level.

12. The activity now needed most is that of bridging the gap between national data needs and state data production capability. However, where local and state agencies receive and use federal vocational dollars, there is a requirement that data emanating from such agencies be supplied to federal education agencies. Most vocational educators urgently need accurate and current data for planning and organization, for evaluation, for budgeting and for expenditures, and most of these educators should willingly involve themselves in a system of data collection that would ultimately provide them with usable data available for local decision-making.

13. Financial incentives and support funding on a continuing basis should be considered by the federal government and federal educational agencies if they are urgently concerned with the establishment of an educational data system of the magnitude suggested by the present EDNEED Classification. The financial incentives and the supporting funds should accompany the requests to the states for designing, installing and operating permanent data systems on the local and/or state level.

Further, personnel to operate such data systems would need to be trained and continually updated in their work.

14. One of the major obstacles to the matter of installing a national data system for vocational education might be offset by the steps presently under way in the United States Office of Education to bring together individuals from the 10 or 12 states that now have educational data systems in operation. U. S. Office of Education officials, local educators, Bureau of Labor Statistics representatives and Manpower representatives drawn from the Department of Labor are being presently identified as those who will confer shortly on matters pertaining to policy and procedure in connection with data collection. Such interagency cooperation and the dissemination of information about present data systems is urgently needed.

15. A major concern of the conference was the cost of operating a national data system on the order of that suggested by the EDNEED Classification. Since it was not known how much of the information would be considered necessary, not how much data was already being collected, estimates varied from $40 million to less than $1 million. Two steps are vital: (a) prioritize the data files and elements such that the needed data can be determined and (b) establish how much of the higher priority data is currently being collected by state and local agencies.

16. The problem of the burden on states and locals to produce data necessary for a national system was considered. The degree of additional burden on producers cannot be realistically assessed until the two steps recommended in the above paragraph have been taken.

17. In addition to cost effectiveness and data burden a number of other questions were raised: Where will the data reside? Who will control its use? Could a CETA prime sponsor or other regional basis be used for its collection? Could the data be obtained through a sampling process? Is a national vocational education data system feasible apart from a general education data system? What will be the implications of the Buckley Amendment for such systems? Are special periodic studies of a GAO nature sufficient?

Solutions to the Problems

18. There is an apparent need to reorganize the files along different lines, or establish the reorganization around a different "theme." While it was understood that curriculum was the central theme in the 18 files currently included in the EDNEED Classification, other organizational themes were considered. For example, both a classification which would at one extreme be all inclusive for all agencies; or at the other extreme would be only the collation of such data files as were common to all agencies, were mentioned. The latter was preferred.

19. It was clear that much of the information needed by federal, state and local vocational planners and evaluators is already being collected and used by a number of agencies at one level or another. Thus, the task of assembling all of the data shown in the EDNEED Classification may not be as difficult as it presently may appear. If an actual inventory of data available in the nation could be assembled first, the determination of the difference between that which is available and that which appears to be needed would be a task that would be both feasible and within federal budgetary possibility.

20. Along with the prioritizing of data needs may also be the need to define the uses of the data in terms of the level of administrators who would use the data, and the purposes for which they would use the data. Some of these purposes might be planning and organization, evaluation, facility utilization, etc.

21. A partial solution to the problem of securing data from many sources and levels may be in the design of the data collection procedures. Data collection procedures utilizing statistically sound sampling methodology may be worth considering.

22. The curriculum theme or core for the EDNEED Classification might be modified to emphasize the product of the vocational education process--the employability of the graduate or curriculum completer and his impact upon the economy. While employability characteristics might be difficult to develop, several agencies were identified as being of help. Among them were the U. S. Civil Service, various agencies in the Department of Labor, and a number of private agencies representing business and industrial groups.

23. Users of vocational education data ought to be made aware of the fact that all of the evaluation data that may be needed by local and state agencies are not necessarily shown in the data files of the EDNEED Classification. The current EDNEED Classification is an excellent indication of the needs of individuals and/or agencies for information. Beyond that, however, the needs of administrators and the training required by administrators on local, state and federal levels to become skillful in data use for decision-making is a most important matter for early action. Inservice education programs would be needed.

24. There needs to be a definitive study of data sources now in place. When the data requirements in the EDNEED Classification have been prioritized, they can be checked against existing sources for the purpose of eliminating duplication of effort. Under no circumstances should vocational educators seek to collect information that other experts in other fields may already have available.

25. Much vocational education data have been collected on the secondary level in the past. Future emphasis ought to be considered in the areas of postsecondary, adult, handicapped, and other categories that have not received concentrated attention.

26. Once the EDNEED Classification has been refined on the basis of the Annapolis conference, data producing agencies should be contacted with regard to each agency's willingness to modify its data collection procedures to include some of the additional needed data. In essence, this would further reduce the need to originate data collection by new or other agencies.

27. There is a need to disseminate to the total professional field, information relating to data systems in the nation. The dissemination of advisories, publication, and detailed information about data sources should be on a continuing basis, in order that local, state and national users of data be constantly aware of data availability for decision-making purposes. Thus, planning and organization, evaluation, utilization of training facilities, cost-benefit studies and other aspects of vocational education could be influenced to produce positive changes in the entire vocational delivery system.

28. Any national data system must depend upon individuals and agencies at state and local levels for its information. Therefore, it is imperative that there be state and local involvement in and input into the EDNEED Classification. States and locals must be shown how they will benefit from such a system. In order to ensure that the national system operate effectively, mandates in certain areas may have to be handed down from federal to state to locals.

29. A strategy worth considering would be turning over to the National Center for Educational Statistics (NCES), the completed EDNEED Classification for incorporation in its total approach to the preparation of statistics for all education. Further, since data collection depends upon definitions and their ready acceptance by those who must ultimately provide the data, it would be advisable to have the identified data collection agency responsible for the production of the definitions.

30. As a further solution to the problem of adopting national definitions within the vocational education enterprise, it was urged that where definitions are at variance because of different pieces of legislation, for example, two major governmental agencies should be responsible for adjudication. The National Center for Educational Statistics should work closely with the Office of Management and Budget (OMB) to develop definitions which would be consistent and which would reduce redundancies and errors in input data from the LEAs and the states.

31. The establishment of "crosswalks," or bridges between two discrete data files or systems should await general agreement on clearly identified data needs. Building or establishing the "crosswalks" should not be undertaken until such time as the systems to be "crossed" have been identified and a determination made as to which data are, in fact, needed.

32. The following were recommendations for next steps toward the development of a national vocational education data system:

a. Stress state and local involvement in reacting to the EDNEED Classification and in establishing priorities of data needs, but not through a mail-out survey. Alternatives suggested for securing such involvement were conferences and/or mini-conferences.

b. Strengthen the EDNEED Classification in the areas noted previously (impact data, postsecondary, etc.) through meetings with appropriate groups.

c. Conduct a definitive study of data sources and capabilities at state and local levels, disseminate the findings and determine which data in the EDNEED Classification are of high priority but not currently available.

3. Finally, any national data system should be designed to use every available data source. It should then promote the production only of such data which are both highly needed and not currently produced.

Findings and Recommendations--State Administrators' Conference

Adequacy of the Classification

1. State vocational education divisions are currently being requested to supply more and more information to legislators and to legislatures. The urgent need for data is illustrated by the frequent telephone calls from legislators for information to be provided them in their task of considering vocational legislation for a state. To the extent that information can be supplied, there is evidence that vocational education will benefit. It would appear very wise to keep members of State Legislative Committees on Education fully advised as to progress being made in the adequacy and uses of a national information system for vocational education.

2. Many more data elements are now being collected about vocational education than are needed by the states. Some states have already indicated their unwillingness to collect additional data, unless it is clearly established that the data have a utilization of a practical nature, rather than data that are "nice to know." State directors of vocational education are not unwilling to collect needed data, but the constant pressure to collect data which have no apparent use in the organization and administration of a state vocational education program is extremely annoying, and will be resisted.

3. Some expression of opinion in connection with a national information system for vocational education of the magnitude of EDNEED revealed that there was a high level of doubt concerning its need and utilization. It was pointed out by several of the state directors that they are extremely "leery" about recommending a system of information collection that would assure the passing on up to national data users a

lot of information that has no apparent value on the state or local levels. If such a procedure of recommending a study such as EDNEED is given widespread appropriate consideration, the statement was made that many state directors would not approve the system since it would induce national data users to insist that states then provide the data they had earlier approved.

4. It was pointed out that in one state, the governor had already taken the initiative by ordering 148 different information forms to be discontinued. As a measure of increased efficiency and savings in operation, the governor had directed that these forms be eliminated from state government, since the information was not apparently vital in the operation of the state. With such kind of state action, some doubt was expressed concerning a vocational education data information system of the EDNEED magnitude ever receiving state-by-state approval.

5. One of the state directors pointed out that we are at this very moment trying to collect too much data on a continuous basis, and if the data that are indicated in the Classification are to be seriously considered, it should be from the standpoint of who is planning to use the data and for what purposes. If legislators ask for large amounts of data for the purposes of legislation, they ought to be prevailed upon to provide the necessary funds to employ the personnel and to take care of costs in providing the data. As an example of this, one state director observed that one-year studies and five-year follow-up studies for use by state legislatures will result in considerable cost to a state division of vocational education and that those state agencies requesting special information ought to be aware of the fact that their requests should be accompanied by the necessary appropriations to conduct the studies.

6. In many states, the State Superintendents of Public Instruction (or the Commissioners of Education) in consultation with their respective state boards of education will make the decisions concerning data and its collection. The prediction was made that ultimately each state will have one system of data collection, and that the vocational education data items will have to be included in the overall collection of statewide data. Such a comprehensive system of data collection will certainly come about, since far too many separate agencies are collecting data at the present time. Further, it was pointed out that if a state system of education can get all of the data that it needs to effect efficient operation in the state, that that is the point where the state will draw the line and will stop the collection of other data which is of the "nice to know" variety, but not critically needed.

7. In general, the Classification was viewed by the state directors as a document which is extremely detailed, and undoubtedly has information categories and items which could be of value in the respective states. However, the Classification was commented upon as a listing of information items that would have far greater appeal to national data users than to state, regional and local data users. It

was expressed that the local users of data would undoubtedly see in the Classification far more data items that would be used in state and national situations than they (the local users) would ever have any reason to utilize in local planning or evaluation of vocational education.

Policy Problems and Issues

8. In answer to questions relating to problems that are foreseen in connection with setting up a national data system, a number of the directors pointed out that the very obvious problem which was at the heart of such an operating system would be that of persuading regional and local vocational people to collect data. It was pointed out that without common definitions, the data coming in would not be usable, since many of the services included in vocational education are understood and operated under different understandings. Further, it was suggested that there isn't enough money from national, state or local sources for vocational education to collect all the data that is needed. Every effort will have to be made to be realistic, to identify clearly the uses that will be made of the data that is being collected or that which is being recommended for collection, and to stay within the very limited budgets on whatever level of data collection the operation takes place.

9. Problems are already developing in data collection on many fronts. These problems have little to do with the willingness of individuals to collect the data, but rather because the data collection activity is an immediate conflect with national legislation recently enacted which provides that the confidentiality of data shall not be violated. Whatever data are being collected at the present time, it was observed that questions will be raised about the nature of the data, and in the future all information suggested for collection will be carefully examined in the light of the legislation.

10. There will be great problems in convincing local people that the state vocational data system is usable, viable, valuable. Local administrators of vocational education and all others who will have the task of assembling data at the local level for transmission to the state authorities will question the data items and the utilization of the data items, since the collection process is an expensive and time-consuming function. It was strongly recommended that wherever possible data collection requests be kept to a minimum in number and magnitude, since serious problems have already been generated by far fewer requests for information. The requests for anything resembling what is in the EDNEED Classification would cause consternation at the local vocational education level.

11. Many states are now looking at comprehensive state educational data systems, in the hope that such systems will reduce some of the costs, and will provide the basis for the inclusion of vocational education data in the overall state system. However, the comprehensive education data systems where started have already generated some significant problems,

and will take much "working out" over the next few years. It was pointed out that in six years of developing a comprehensive system for one state, the problems had only been slightly ameliorated. It was observed that the addition of anything of the magnitude of the EDNEED Classification would further exacerbate the problem and cause much confusion.

12. One of the problems that will be clearly evident when matters of data collection are carefully considered by the several states is that all too frequently data that are supplied by the states to national users are subsequently used against the states. This practice will continue to generate a reluctance on the part of state directors in supplying information which when compared with information supplied by other states, and treated statistically, will become a matter that is detrimental to the respective states. State directors of vocational education don't like this procedure and will take steps to prevent it wherever possible.

Solutions to the Problem

13. It was suggested that before the study proceeds much further the Western Interstate Commission on Higher Education (WICHE) should be involved in discussions concerning the classification of vocational education information. WICHE has in the past addressed itself to higher education primarily, but is now moving into the two-year post-secondary vocational and technical education programs. At the same time there is a need to involve the National Center for Higher Education Management Systems (NCHEMS) which is getting increasingly involved in vocational education. Both WICHE and NCHEMS have valuable inputs to a national data system for vocational education, and certainly from the standpoint of compatibility of data systems, the matter is deserving of immediate investigation.

14. One of the groups that needs to be critically involved in data system considerations would be the education committee members of the 50 state legislatures. Each of these committees in the several states is a frequent user of data and continues to make more and more extensive requests for data from state vocational education departments. The urgency in meeting with a representative group of education committee legislators is clearly evident, and steps should be taken early in the EDNEED Project to secure advice from this source. In one state, efforts are already underway to work with five legislators, members of the education committee of the state legislature, in an effort to determine exactly which kinds of data and in which form the data would be of most value to the education committee.

15. Several of the state directors pointed out that the obvious differences in data utilization on the national, state and local levels would appear to indicate that steps will have to be taken shortly to bring representatives of all three levels into a common meeting for the purpose of identifying the minimum data needs that would satisfy all education administrators at the three discrete levels.

16. Every effort should be made early in this age of data collection technology to effect a jointure of data collecting "empires" and agencies. The multitude of data collecting agencies and the multitude of data files make the foregoing suggestion one of great importance and one not to be ignored in connection with the EDNEED Project. One of the considerations that should be given intensive discussion concerns the procedure under which EDNEED data would be collected. It was strongly urged that there ought not to be another complete new system of data collection established for vocational education. Rather, vocational education information should be collected as part of a comprehensive national system. Further, it was urged that all be cognizant that such data as are collected on the national level will be far greater in number of items than will conceivably be needed on either the state or local levels.

17. Great interest was shown in connection with the Lexicon that is presently under preparation by the EDNEED staff. The recommendation was made that the Lexicon would make a great contribution to the field of vocational education, certainly as a starting document, and possibly as part of the continuing effort to make available to all directors of vocational education common definitions for reporting data. Speed in the perfection of the Lexicon was recommended, with copies to be provided to all who collect vocational education information. It was recognized that data without common definitions of terms can only result in the perpetuation of the procedures which currently result in national data which is available to the states and is often meaningless.

18. Following the discussion of the recent Center publication entitled, "Questions in Vocational Education: What Everyone Wants to Know and is Not Afraid to Ask," the state directors felt strongly that the document should be used to follow-up with representatives of the Congress and with the respective state legislators to determine the actual data that is needed on the national and state levels. It was urged that ste s be taken immediately, particularly at the national level, to follow on the suggestion and to determine exactly the kinds of questions that need answers for the purposes of the Congress, and to then correlate the questions with the EDNEED Classification.

Findings and Recommendations--Local Employers' Conference

The meeting began with the presentation of a brief overview of Project EDNEED by the project director, followed by the discussion of the objectives of the mini-conference and the relatively unstructured procedures to be utilized.

Opening participant comments centered on the EDNEED Classification document which they had rated and checked prior to coming to Chicago. More specifically, the participants felt it was too long and that the questions contained in it had little relevance for people in industry. The phraseology employed was often "foreign" to the industry representatives. It was pointed out that the document was reflective of an historic communications gap between the users of the educational system and the system itself. The document was also reflective of the difference in approach utilized by education and industry, the methods of the latter being far more direct.

The participants realized, however, that although meetings between education and industry had not and probably would not solve all the problems between the two, such meetings were a necessary and often neglected first step. The participants also realized that the inapplicability of the EDNEED Classification to the information needs of industry was the prime reason for the mini-conference, along with the identification of those elements of data of most interest to industry in its role as a user of the products of the educational system. Nevertheless, there was understandable reluctance to discuss specific changes in the EDNEED Classification document until some of the larger issues of which the document was symptomatic were aired. Thus, the entire first session revolved around the general communications gap between education and industry and encompassed the following issues:

1. The objectives of the educational system, if not irrelevant to, are at least different from the objectives of industry.

In meetings with educators, industrial trainers have often experienced a tendency on the part of educators to be preoccupied with rigid semester time frames, curriculum requirements, and development of processes over time as opposed to concern for outcomes. Industry tends to look at potential employees in terms of their capabilities on the shop floor, rather than in terms of credentials specifying the number of hours they may have spent in a training situation. While exemplary "cells of cooperation" at the local level can be identified between industry and public vocational education, there appears to be in general, "no jellybeans to educators for meeting industry's objectives." In short, the requirements of the school often have little to do with the requirements of the factory.

2. Both education and industry have difficulties in keeping up with rapid technological advances, but such advances pose unique problems to educators.

Several participants noted that they had observed obsolete equipment being used in some instructional circumstances, as well as inappropriate and outdated teaching techniques. Newer concepts such as androgogy and performance-based education have apparently not been incorporated into a majority of classrooms and shops. Concomitantly, the industrial representatives were critical of their own role, acknowledging that industry has not done all that it could have in terms of disseminating information to educators about new techniques, nor in helping to provide the means for vocational educators to become updated. These observations served as the basis for recommendations (presented later in this report) to the effect that a national vocational education data system should be constructed in such a way that information on currency of equipment and techniques and the degree of diffusion and use of new techniques could be determined.

Although a lack of receptiveness of educators to change was seen as a problem, several examples of successful industry/education cooperation were cited. One involved a situation in which a top-notch industrial instructor was supplied to a university manufacturing and technology school at the university's request and at the expense of the company. Thus, for one year, education was provided with a "real world" instructor at industry expense. It was suggested that any national vocational education data system should include information on industries willing to cooperate in this way with schools.

Reference was also made to traditional education/business-industry exchange programs which have met with mixed results. There have been instances, for example, where instructors were brought into industry from educational settings and put to work in research areas rather than in manufacturing areas and/or may have been placed in fields other than those related to their teaching specialty. Despite these problems and some natural resistance on the parts of both education and industry, it was the consensus of the mini-conference that any attempt at communication between the two groups will more than likely be advantageous to both.

3. Forces which precipitate change in society affect public education and industry differently. Many of these forces appear to be moving industry and the schools farther apart.

Examples were provided in two areas, one relating to changes in the schools and the other to changes in government policies. Widespread "social promotion" through grade 12 has solved a number of problems for the schools and for individuals and their families. Thus it may be possible for students to move through school without being required to demonstrate a great deal of capability, something which does not often happen in industry, even in those where seniority is the prime consideration in promotion. Individuals in industry are usually not advanced

unless there is strong reason to believe they can do the job. A study was referenced in which 180 high school and two-year college graduate apprentices were found to have a mean reading level of grade 8. There was a feeling among the employer representatives "that we don't know what high school graduation means, anymore."

Government policy changes in the form of legislation, judicial action and/or administrative directive not only affect industry and the schools differently, but also have implications for data collection. Two examples related to civil rights legislation were cited. The first concerned a ruling by one part of the Justice Department that racial data should be collected to ensure fair treatment of minority groups while at the same time another branch ruled that to collect such data would be a violation of the Civil Rights Act. In the second example, it was recognized that while such legislation and resulting social change have created one set of problems for the schools (busing, discipline, etc.), they have created an entirely different set of problems for industry. New pressures which industry feels include those which require the provision of information such as precise job requirements and specific criteria for personnel selection in employment, training and promotion. Often industry is asked to implement new provisions immediately, while curriculum changes in the schools, for example, tend to be more gradual.

4. Vocational education programs (as do any training programs which take place primarily "off the job") have inherent difficulties in providing training specifically related to a given job situation.

It was recognized that cooperative programs, work experience programs, work/study programs and certain related special arrangements which involve between 1/2 and 1 million students are one way around this problem. Nevertheless, many vocational graduates find their way into industry who seem never to have been exposed to the flavor of a production shop, for example, nor to the time/quality constraints associated therewith. To provide such experience would be very expensive since a considerable quantity of valuable materials would have to be processed by each student before production speed and quality could be attained. It was noted that industry is often willing to provide such materials as well as machinery and/or space. Some public vocational education administrators and instructional personnel get far more than their share of such assistance from their local industries because they have developed profitable relationships with industry representatives and are aggressive about seeking such aid. Unfortunately, this is not always the case. Conversely, industrial representatives have often shown reticence in making the first contact with school personnel. The suggestion was made that both groups could do more in this area.

5. There is a paucity of "hard" data available nationally on both the costs and the benefits of vocational education.

The National Advisory Council on Vocational Education has estimated that the nation as a whole spends $3 billion annually on vocational education, 84% of which are state and local monies. Construction and equipment expenditures have exceeded 1.6 billion since 1971. Some 13 1/2 million students are currently being served. One of the participants recalled a study done by the University of Michigan which reported that private industry expends between 35 and 36 billion dollars per year on education and training in the United States and Canada. Some of this money is utilized to send people to established institutions in the public sector, but the greater share is spent on internal training programs in business and industry. No estimate was immediately available on the number of persons served.

This discussion of data and costs marked the end of the general discussion and prompted the group to turn their attention specifically to those areas in the EDNEED Classification where the industry representatives might have suggestions for its improvement. Most of the second and virtually all of the third mini-conference sessions were devoted to a page-by-page consideration of the EDNEED Classification document in terms of its adequacy as a vehicle for meeting the vocational education data needs of industry. Scores of practical and useful suggestions regarding additions, deletions and changes in specific questions and information elements were recorded by the project staff and will not be recounted here. An attempt will be made, however, in the remainder of the report to capture the essence of these suggestions through a presentation of the general categories into which they could be classified with examples provided for clarity where necessary.

1. The EDNEED Classification document and any information system which might be based on it would be far more effective as a device for the justification of expenditures than as a mechanism for providing data useful for program planning and evaluation.

2. The Classification was characterized as being a "cold," "mechanistic," accounting-type administrative tool with an historical rather than futuristic orientation. Although the document is far more process than product-oriented, it approaches process in a quantitative rather than a qualitative manner. One participant noted that two school systems could be identical in numbers of staff, types of staff, credentials of staff, monies expended, facilities, equipment, etc. and still be widely different in the quality of students turned out. It would be difficult to discriminate between the two in terms of effectiveness of instruction on the basis of the items in the Classification.

The document could be improved by supplementing the present approach with some questions and information elements which would be concerned with the quality of the relationships among students, faculty and those persons in the community who serve and are served by the school. More specifically: How do these three groups collaborate? What methods do they use to solve problems? Make decisions? Resolve conflicts? How do they ensure that solved problems stay solved? What concepts are employed to integrate the needs of temporary groups of students and the more permanent faculty and administration?

3. Questions relating to professional development for local staff (i.e., the extent to which teachers kept pace with new technological and industrial developments) were of great interest to the group and received a disproportionate share of comments. Examples for additions have included: How active is the school in soliciting business and industry toward developing more professional exchange programs? Is there a program for teacher updating and upgrading of skills through direct participation in industry? If so, how often do teachers go back to industry? What do they do there? What degree of industrial proficiency did they attain?

More data on staff career development in LEAs and SEAs need to be obtained as a way to help determine organizational efficiency. An organization can improve its productivity through encouragement of staff professional development and through feedback and suggestions from employees to management.

Information about staff career development should include data on staff interpersonal skills, e.g., How well does he/she analyze problems, identify key issues, propose/evaluate alternative solutions? Communicate, listen, persuade? Set goals, identify priorities, develop plans for action? Make decisions? Handle conflicts? Deal and interact with subordinates, peers and superiors? Use time?

4. Modification of the Classification to emphasize "learning hours" rather than contact hours, performance or terminal objectives (TERMOBS) rather than credits and credentials, and validated skill tests and instructor observations rather than traditional school tests is necessary. Only a student's reading level and possibly his mathematical competence were of interest to the group. "We want to know what he can do, not what he knows."

5. The Classification should be altered to include information about learner-controlled instruction and student participation in curricula planning. "To what extent is the school student-centered?" In short, more emphasis on androgogy, less on pedagogy.

6. Provision should be made for the collection of information about the task structure of jobs so that such information can be used as a base for curricula development. "The curricula should be based on industry standards, not on what people think."

7. More information should be collected on the role, function and effectiveness of craft committees and local and state advisory councils. The group felt that such groups could be and were in many cases extremely effective, but that in other cases much improvement could be realized.

8. The Classification should include questions and information elements concerning the degree to which school curricula relate to local and regional manpower needs. Questions should also be devised to determine the impact of local advisory councils on the schools.

9. The lack of universal agreement on definitions of terms in vocational education is a problem which will have to be solved before a national information system can become a reality.

10. Improved techniques for ensuring that vocational educators maintain regular and profitable contacts with industry and with new industrial manufacturing and processing methods must be found. The EDNEED Classification provides for the collection of data about the frequency of such contacts, but not on their quality.

As the participants worked their way through the EDNEED Classification, their feelings toward the document and toward the entire EDNEED undertaking became increasingly more positive. It should be noted that many of the recommendations made in the latter part of this section are closely related to the more general issues and concerns discussed earlier. Comments made by the participants were candid, but were made in the spirit of genuine interest in and concern for the improvement of vocational education/industry communications and subsequently of vocational education itself.

Findings and Recommendations--Local Adminstrators' Conference

Adequacy of the EDNEED Data Classification Document--Secondary Group

1. The Classification is extremely comprehensive and global in nature. Before it can have any practical utilization by local administrators of vocational education, condensation or weeding out of many of the data items, and possibly some of the data files must occur. Further, it was noted that the design of the Classification made it possible for ratings of data items to change with the requirements and uses for the data. For example, in one case data might be used for compliance while in another instance by the same local administrator, the same data could be used for public information or reporting on the operation of a unit.

2. Of all 18 files in the Classification, files 12 - 18 are needed less than any of the others at the local level. For the most part, these files consist of data of usefulness to state education agencies and are needed little (if at all) on the local level. However, many of the data must be obtained and supplied to state officials, in order that the locals may be as helpful as possible to the agencies that are in position to be helpful to them. It was recognized further that state agencies have continuing requirements to provide legislators with answers to questions constantly being directed to those agencies; thus, reliable data must be supplied to the state by the local administrators if any kind of coordination and unified state operation is to result.

3. The ratings required in the Classification are confusing. The separations between the numerical checking indicators are arbitrary. A local administrator is active in all of the use categories from "planning and organization" to "public information" at the same time, and does not often need and use data for only one purpose. Hence, it was pointed out that any individual who rated the Classification at a particular time might supply quite different ratings a week later, if something else came to mind or if his attitude with regard to one part of his many administrative responsibilities appeared to have gained dominance.

4. Many data indicated in the first 12 files are in fact collected by some states at the present time. These data included in a state MIS can be of value to the state, and should certainly be made available for use by local administrators. There should be no problem in obtaining data where they are being collected. The problem that may be anticipated in the future is the organization of a national vocational education data system that would be compatible with the many different state systems that are already in operation.

5. The data Classification is a giant step in establishing a national system of vocational education data collection, with emphasis on uniformity of data and format. Such a system is critically needed in the nation, if the aggregation of the data is to be meaningful, and if one state is to have any relationship or basis for comparison with another state. Hopefully, the data system (when and if it is established) will provide opportunities for the local administrators to retrieve data quickly for local use.

6. With so much data indicated in the Classification document, steps should be taken early to establish the priority users of data, and then to move on from that point to the consideration of which of the data should be collected first and for which urgent purposes. This is a most important matter, and would possibly be a partial solution in moving from the vast collection of 18 data files and thousands of data items to something of a more manageable nature. Such a procedure would enable local administrators to note the priorities that have been established in terms of users of data, and to identify data which are readily retrievable and usable locally.

7. One of the major problems that was encountered in checking and rating the data items in the Classification document concerned the question of "Is this a matter of what is in vocational education, or is it a matter of what should be?" For example, in the data file which deals with curriculum choices, it is not clear whether a particular curriculum is needed.

8. A question that was of considerable concern to a number of the local administrators was that of the practical usability of the data. For example, the data item that deals with placement of graduates and early leavers was indicated as an issue that is not clearly defined. In some states, and even in some school districts, unless 51 percent of the completers of a curriculum are actually placed in jobs or in job-related activities to the curriculum completed, the curriculum must be terminated. A situation such as this might color the responses given in a nationally established vocational education data system, since the reporting of less than 51 percent placement of completers would require that the curriculum be terminated. The matter of decision-making based upon data alone might be unrealistic, the local administrators pointed out.

9. In File 1, there is room for additional data items, particularly those that deal with individuals who have expressed an interest and/or who wish to enroll in particular curricula, or in a particular series of courses. This is an important element in the planning and organization of vocational programs, since students' interests are of prime importance, even while planners consider manpower data as the basis in the region for skilled personnel.

10. There appears to be an urgent need in the Classification to provide data items for indicating whether curricula are short-term or long-term, and to what extent there is continuity and articulation between segments of short-term courses/curricula.

11. One of the major questions raised by the local administrators concerned the extent to which student interests and manpower demands within the school service area are coordinated or even related. The point was made that recognition of the influences which bear upon the "sociology of choice" are difficult to measure, and are certainly a difficult base upon which to collect and aggregate data. However, local administrators pointed out that the enrollments by student interest in vocational curricula often reflect manpower demands in the region. They suggested that one is a function of the other.

12. It would be of real advantage to vocational educators if all of the nonvocational aspects of File 1 were purged. While it was recognized that quality vocational education programs prepare individuals for participatory citizenship and with necessary social competencies, there was a feeling that vocational people might be out of their field in beginning to assess these variables.

13. Some of the data items indicated in the Classification would disclose information that should not be made available for purposes of public information, regardless of the manner in which the Classification was checked and rated prior to the conference. Many of the data, when not accompanied by back-up rationale and explanation, could unjustifiably be critical of the administration of a local program.

14. Some very early efforts should be made in defining defensible standards for outcomes in skills and knowledges acquired by individuals leaving or graduating from vocational education programs. It was pointed out that the data Classification deals almost entirely with inputs rather than outcomes and impacts. There is need for a sorting and sifting of data items in the process, which should result in a design to assure that the programs, curricula and courses reflect acquired competencies of the completers and the graduates.

15. The local administrators were impressed with the breadth of the Classification and particularly with its vocational education comprehensiveness. However, it was agreed by all of the conferees that all of the data would not be needed at all times. It was pointed out that some of the data would be needed only once for problems of planning and organization, while other items of data would be used regularly throughout the year for purposes of evaluation or even public information. The question was raised about how the data files and items would be shown in any final classification such that it would be clearly indicated that some data would be collected regularly while other data would be collected sporadically, only once, or periodically.

16. Uniformity of data definition is essential to meaningfulness, aggregation and understanding. It is dangerous to produce data that are not uniform by virtue of a lack of definition for the data items, and to then aggregate the data and use it broadly in the community, the state or the nation. Several of the local administrators pointed out that they would strongly oppose any procedure for the collection of data unless

clear definitions were provided for the purpose of collecting data. By way of illustration, it was pointed out that most states at the present time have an MIS, and that definitions used for the purpose of data collection in the respective states tend to vary. Hence, it is quite unlikely that data from the Management Information Systems in the states could be collated and used as the basis for a national vocational education information system. Confusion of definitions has resulted in no end of misunderstandings, and any proposed data system that will contribute to the perpetuation of the confusion should be opposed. Anything less than this would present a real danger to the programs of vocational education in the nation.

17. File 11 deals with the geographic areas served by vocational education, and questions were raised concerning the validity of the data items contained in File 11. It was stated that many of the data items are typical of those found in the usual publications of the Department of Labor and the Bureau of Labor Statistics. Used in the form that they are now, and with the implied understandings which they provide, the data when aggregated would be useless. Local administrators see little use for the broad BLS-published projections, and observed that many of the data questions raised in the Classification, particularly in File 11, were of a similar and useless type.

18. One of the local administrators pointed out that the state of Ohio through its Division of Vocational Education has developed a system of manpower data by school districts, available to any school district upon application to the Division of Vocational Education. This data system, supervised by Dr. Robert Balthaser of the Division of Vocational Education, provides many data similar to those which might be provided by a data system based on the EDNEED Classification.

19. There are a great many confusing data items in File 5. There is need for much more information on early leavers, completers, graduates, and even "late leavers." There is an urgency that these be kept separate, since in each case a different kind of end product is indicated. For example, the late leaver would indicate an individual who was slower in acquiring skills and technical knowledge in the school situation, and this kind of data would reveal to an employer or a user of the data that the competencies held by this individual were at some variance with competencies held by others who had completed the organized curriculum in less time, or within the usual stipulated length of time.

20. Files 12 through 18 contain a great deal of data relating to the state and its business in the field of vocational education. Care should be taken now to set the priorities on the uses that would be made of such data on a national level, on a state level and possibly on a regional level. The local administrators pointed out that the data aggregated in Files 12 through 18 would more than likely never be used on the local level. As indicated earlier in the morning session, several of the local administrators explained that the state director of vocational education becomes a facilitator between national users of data

and local providers of data. When the state director asks for specific items of local information which will subsequently be aggregated and used on the national level, his position as the state director needs to be understood and supported.

21. In several of the files there is evident or apparent duplication of data items, and some of these have been so indicated in the marked copies of the Classification that were checked and rated. For example, early leavers in a school system are mentioned in several files, particularly those which deal with curriculum, school information and local education agencies (LEAs). To a few of the conferees, there appeared to be a need to examine possible duplications, to rule out the possibility that duplication could be interpreted as cross-checking, and to reduce the volume of the overall document.

22. As an overall opinion, most of the local administrators felt that far too much information would be collected, should such a Classification be accepted as the basis for the core of information needed. Even on the basis of a national core of information, questions were raised with regard to the need for such information as that concerning marital matters, that relating to health, last physical examination, etc. Here was a place where space could be saved, and the volume of the Classification reduced.

23. Several of the conferees indicated that the EDNEED project is much too ambitious a project, until such time as other tasks have first been completed. Notwithstanding the value and uses which appropriate vocational education data would serve for national, regional, state and local administrators, the urgent need for a Lexicon (or dictionary of terms) and the establishment of standards of utilization of these terms should precede anything else planned. While it was recognized that "a giant step forward" had been taken in the initial development of the Lexicon (which was on exhibit at the conference) several of the local administrators of vocational education urged that the Lexicon be further developed and made available widely. The urgency for this particular instrument as a facet of data collection was reiterated by all in attendance at the morning session, when they reported that unless something of the Lexicon variety was available at the same time that the EDNEED Classification was adopted for a national system, nothing but confusion would be the result.

Adequacy of the EDNEED Data Classification Document--
Postsecondary Group

1. It was generally agreed that the Classification document overall was more adequate as a base for gathering data on secondary education than as a base for meeting the data needs of technical institutes, community colleges, proprietary schools, CETA programs, etc. There is a strong secondary bias, particularly in terminology, definitions and structural orientation. For example, the definitions of postsecondary

and adult are dated and do not adequately cover all of the types of students now served by postsecondary education, particularly those who may never have been to high school or who are interested only in updating or upgrading skills.

2. Many of the data suggested for collection on students were found to be irrelevant for postsecondary and particularly for adult students. For example, birthplace, socioeconomic data about parents, etc., may not need to be asked. Other questions not included, however, may need to be asked, and some that are included may need to be asked differently out of respect to the age differences of the students. Specific examples for changes in the Classification were given by the group.

3. There was a general concern over the lack of standard definitions of terms throughout all of vocational and occupational education. Some conferees seriously doubted if the state-of-the-art in vocational education information systems can advance much further until the problem of non-standard definitions is solved. The Classification document not only reflected this concern, but also pointed up another: there may need to be different definitions of the same data elements, depending upon the collection or aggregation level.

4. Many of the terms in the Classification were somewhat foreign to postsecondary educators. "Pupils," used occasionally rather than students, was found to be particularly objectionable, for instance. Other terms familiar to postsecondary educators, representing items of information of usefulness to them, were not included; for example, ARC, impacted areas, Title 5, etc. More questions and information elements relevant to CETA programs would also have been helpful.

5. There was concern that the EDNEED Classification is accounting oriented rather than people oriented. It tends to be more reflective of the preoccupation with inputs and "nose counting" that has perhaps characterized vocational education in the past than of the "open door policy," androgogy and other more up-to-date notions associated with postsecondary education today.

6. Much time was devoted to very specific changes in the wording of various items in the Classification as the postsecondary group moved through the document. These suggestions were recorded, but will not be recounted here. Some of the more general recommendations for changes in the structure of the Classification were:

a. Organize the files or index them in such a way that information concerning postsecondary and adult education can be readily identified or "pulled out."

b. Consider consolidating Files 2, 3 and 4.

c. Consider separating rather than grouping the use categories so that a rater could check all the planning questions, then all the operations questions, etc.

7. Those files of most interest to postsecondary, adult and proprietary school educators were 1 through 8, and 11. It was mentioned that some of the items in Files 9 and 10 were also of interest, however.

Problems and Solutions--
Full Conference

1. With additional data requirements being placed upon the local administrator of vocational education, the necessary funds to provide staff and data collection equipment and facilities should also be provided. It should be expected that if the bulk of the data are to be used on a national level; the source of support should come from a national agency. There was some discussion by other members of the group that a smoothly and efficiently operated system of vocational education data collection might, in the future, actually save time and money in the states.

2. At the present time there is no meaningful way for vocational education data currently being collected to be returned to the local user for his use in planning and organization, evaluation, public information or anything else. Hence, the local administrator must maintain his own files and system of data collection, in order that he may meet his local problems at a time when the use of the data is most needed. It was stated that in some cases when data are finally returned from the collection systems now in operation, they are often eighteen months out of phase with reality, and are of little if any use to the local administrator.

3. One of the major problems that should be anticipated in the future is the manner in which data are to be categorized. It was suggested that data should be separated by purpose. Then, those data needed for planning and organization would be quite different from those needed for public information, evaluation or other purposes. For example, program characteristics need not be obtained every year; hence this type of information for public information purposes should be categorized separately from other kinds of information. Also, as an example, it was pointed out that in inaugurating an automobile mechanics program, certain data would need to be available for that purpose as an initial matter, but they would not be needed for succeeding years.

4. Vocational educators should no longer measure fitness for employment of graduates, completers, late leavers and early leavers in terms of courses taken and hours spent in classrooms, laboratories and shops. Rather, individuals should be measured in terms of their acquired and demonstrable competencies in order that a position can be taken when the returns of placing persons in employment are scaled off against the costs of instruction. Further, employers, taxpayers and other concerned individuals could be assured of receiving far more usable information concerning the outcomes of the vocational education program than is presently available.

5. Definitions represent the most important problem to be faced by the EDNEED project. It was pointed out that South Carolina has initiated COPE (Community and Occupational Programs of Education). With a national system of vocational education data, it should be possible to interface activities such as COPE with the national system and to make certain that the definitions contained in each system are compatible.

6. "It doesn't seem as though it is going to be possible ever to get to the point of standardization of definitions, especially since a wide variety of new definitions are continually appearing." At the present time terms such as career education, occupational education and vocational education are used separately and with different definitions in some education agencies in the nation, but in other agencies they are used synonymously. If such diverse practices are to continue, then vocational education data collection will be an impossibility, and nothing but increased confusion can result. It is quite possible that conformity and uniformity of definitions are too much to hope for inasmuch as several additional terms are beginning to enter common usage, further confusing the issue. Prepostsecondary education and prevocational education are examples of such terms that amplify the need for a good and usable Lexicon with definitions specifically directed to the terms in the Classification.

7. With definitions as the base of operations for the beginning of a national system of vocational education data, it was suggested that the American Vocational Association as the leading professional organization be the agency to lead activities in this problem area, and to involve in the effort the community colleges and others who are appropriately connected with data collection and aggregation. It was pointed out that the AVA is the most appropriate national agency for the task. However, it was also mentioned by some that a special and separate "blue ribbon" committee would be able to take on the responsibility and become the special agency for the purpose of data gathering in the context of the taxonomy. Further discussion pointed out that the comprehensive nature of the data system calls for the broadest possible participation of all vocational education groups in the country, regardless of level, curricula, or lengths of curricula. This matter appeared to be one which will require some additional study since it must be the first problem to be solved in connection with a national

vocational education data system. Suggestions were made that a resolution be prepared and placed with the American Vocational Assocation for consideration at the Anaheim, California, convention of the AVA in December. In connection with this, there was a minor disagreement apparent between several of the conferees, one of whom opposed the idea of the resulution. However, an accommodation was sought and appeared to have been obtained that definitions that would result from such a proposed study would be prefaced by "for the purposes of data gathering in the context of the Data Classification." There was agreement that regardless of which group took primary responsibility for developing definitions, all other relevant groups must be involved.

8. There is no apparent point in waiting for consensus on definitions in the country as a whole, before preceding futher with EDNEED. Steps should be taken now by the EDNEED project to develop its own Lexicon (or dictionary) and to proceed ahead at full speed to make decisions on the definitions that are needed in order that data may be collected and aggregated. Even with different definitions in the states and in the local communities, the definitions provided in an EDNEED Lexicon would guide the data provider with all of the information needed to record the data in accordance with an appropriate category.

9. Some of the kinds of references to people and programs that have been made in the EDNEED Classification will have to be revised or even eliminated. Recent action taken by the federal courts has indicated that certain information about students may not be recorded unless the information is provided by agreement with students. For example, interpretations of the Buckley Amendment would make it impossible to obtain full information with regard to the earnings of cooperative vocational education students. Under the provisions of the law, there is no need to divulge such information on the part of the student, and hence there is every likelihood that incomplete data would result. It was urged that care be taken to maintain the confidentiality of information that is guaranteed to all individuals (the Buckley Amendment).

10. Many local administrators expressed doubts concerning the possibility of coordinating data-gathering in the states. Much information is available in the operating data systems, and steps would have to be taken to codify these systems and organize the transferral of information. Care will have to be taken to make certain that any present information in present data systems (such as the one operated under HEFA "Higher Education Facilities Act") is made available via "crosswalks" in order that data will not be replicated. A further suggestion indicated that where such data are available they ought to be readily translatable.

11. The Classification as a whole will need greater emphasis upon program areas than upon levels. One of the problems that will be encountered in almost every state is the confusion that presently exists between vocational education curricula that are being offered in institutions and identified by levels. For example,

it was pointed out that in one state the public school system is responsible not only for secondary vocational education but also adult education, postsecondary education, apprenticeship training, public service training and many other aspects of the vocational education spectrum. In other states, the levels of education established under the usual academic pattern constrain the vocational education program and make the data collection process quite different.

12. The Classification should give considerably more attention to the amplification of the "people side" of vocational education, and should also provide opportunities to record data relating to "people problems." It was observed that there is some danger that the EDNEED Classification tends to reflect the existing systems, and is not forward-looking enough to provide data on programs needed and people needed for the future.

13. Another area in the Classification that will require immediate attention is that which deals with aspects of the Comprehensive Employment Training Act (CETA). CETA has a data production system which has its roots in the Department of Labor and its Bureau of Labor Statistics. Any data system planned and organized for vocational education should be cognizant of the data system already in use in CETA, but even more important, should place some reliance upon the need to coordinate the educational data system with any projected data system for the CETA operations. To do otherwise may result in considerable data duplication. Further consideration should be given to the matter of building "cross-walks" to the present and future CETA data systems.

14. Proprietary and private schools provide data to state approving agencies in almost all states, and frequently supply data to the Veterans Administration. These sources of information need not be duplicated in the EDNEED Classification or in any plan relating to a national system of vocational education information. The problem of identifying data sources should be anticipated early, and steps taken to interface with the state approving agency data system and the VA data system, in order that full information concerning student needs and manpower needs may be compared and appropriate data acquisition programs planned.

15. Every effort should be made to select an appropriate authority such as the Office of Education, the National Center for Educational Statistics or some other government-based agency to operate a national vocational education information system. Any attempt to establish a national data system for vocational education exterior to an authority-based agency will result in only partial participation by states, local agencies, and regional agencies. Further, wherever the data center is finally located may depend upon which data are needed, how frequently they are to be aggregated and the elapsed time between data collection and possible utilization on the national, state, regional or local levels.

DATA NEEDS IN VOCATIONAL EDUCATION

Volume V: Data Analysis: Procedures and Results--Project EDNEED I

Volume V of the EDNEED final report contains a detailed description of the data analysis procedures utilized in the project, the results of the application of those procedures, and a narrative interpretation of the results. Since the procedures themselves have been summarized in a previous section of the present volume, this section will deal with a description of the results but will present and interpret only prioritized question rankings over all levels and use categories.

Volume V contains the following priority rankings of the three hundred and twenty three (323) questions in the Classification document:

Table 1: Questions ranked by Similarity Index: all uses combined and all levels combined.

Table 2: Questions ranked by Similarity Index for planning: all levels combined.

Table 3: Questions ranked by Similarity Index for operations: all levels combined.

Table 4: Questions ranked by Similarity Index for evaluation: all levels combined.

Table 5: Questions ranked by Similarity Index for finance and budgeting: all levels combined.

Table 6: Questions ranked by Similarity Index for reporting requirements: all levels combined.

Table 7: Questions ranked by Similarity Index for public information: all levels combined.

Table 8: Questions ranked by Similarity Index: all uses combined national level.

Table 22: Questions ranked by Similarity Index for public information: state level.

Table 23: Questions ranked by Similarity Index for planning: local level.

Table 24: Questions ranked by Similarity Index for operations: local level.

Table 25: Questions ranked by Similarity Index for evaluation: local level.

Table 26: Questions ranked by Similarity Index for finance and budgeting: local level.

Table 27: Questions ranked by Similarity Index for reporting requirements: local level.

Table 28: Questions ranked by Similarity Index for public information: local level.

Table 1 of Volume V is included here in its entirety because: (1) it is the single most informative table in that all uses and all levels are combined and (2) it illustrates the format used for the remaining tables.

The FILE heading in Table 1 refers to the file in the Classification that contains the question. The QUESTION heading refers to the question identification number within that file. The RANK heading indicates the rank order of each question according to descending order of the similarity index. The SIMILARITY INDEX heading gives the value of the similarity index for each question. The QUESTION TEXT heading refers to the question as it appeared in the Classification document. Certain questions are repeated over files; e.g. the question "How is the curriculum identified?" appears in files 2,3, and 4. The reason for multiple inclusion is that the importance

Table 1.

QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
1	1	1.0	0.39462	HOW IS THE CURRICULUM IDENTIFIED WITHIN A SCHOOL?
1	6	2.0	0.35175	WHAT IS THE TIME SCHEDULE FOR THE CURRICULUM?
1	26	3.0	0.34064	WHAT IS THE CURRICULUM ENROLLMENT?
1	8	4.0	0.33340	WHAT ARE THE COMPLETION REQUIREMENTS FOR THE CURRICULUM?
1	10	5.0	0.32077	WHAT ARE THE PLANNED INSTRUCTIONAL TERMINAL STUDENT OUTCOMES FOR THE CURRICULUM?
1	7	6.0	0.29724	WHAT ARE THE ENTRANCE REQUIREMENTS FOR THE CURRICULUM?
1	22	7.0	0.29420	WHAT IS THE SOURCE(S) OF FUNDING FOR THE CURRICULUM?
1	5	8.0	0.29060	WHAT IS THE APPROVAL AGENCY FOR THE CURRICULUM?
2	2	9.0	0.27403	WHAT ARE THE EXPENDITURES FOR INSTRUCTIONAL ACTIVITIES ALLOCATED TO THE CURRICULUM?
6	5	10.0	0.27420	HOW RELATED IS THE CURRENT EMPLOYMENT TO THE OCCUPATION TRAINED FOR?
9	11	11.0	0.27338	WHAT ARE THE SCHOOL'S VOCATIONAL CURRICULAR OFFERINGS?
2	1	12.0	0.27060	HOW IS THE CURRICULUM IDENTIFIED?
1	4	13.0	0.26688	WHAT IS THE APPROVAL STATUS OF THE CURRICULUM?
1	24	14.0	0.25833	WHAT ARE THE CURRICULUM EXPENDITURES?
9	12	15.0	0.25738	WHAT ARE THE CHARACTERISTICS OF THE STUDENTS SERVED BY THE SCHOOL?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
4	2?	16.0	0.25[illegible]6	WHAT IS THE AMOUNT OF SCHOOL FUNDING FOR VOCATIONAL EDUCATION BY SOURCE?
1	20	17.0	0.25011	WHAT ASPECTS OF INSTRUCTIONAL AND SUPPORTING SERVICES ARE EVALUATED?
1	27	18.0	0.25479	WHAT ARE THE POST-SCHOOL OUTCOMES OF CURRICULUM COMPLETERS/EARLY LEAVERS?
1	11	19.0	0.25[illegible]19	WHAT IS THE STRUCTURE OF CURRICULUM?
3	1	20.0	0.25017	HOW IS THE CURRICULUM IDENTIFIED?
9	23	21.0	0.24720	WHAT IS THE FUNDING ALLOCATED TO THE SCHOOL UNDER THE VOCATIONAL EDUCATION ACT?
5	9	22.0	0.24367	WHAT IS THE PHYSICAL HANDICAP(S) OF THE STUDENT?
1	17	23.0	0.24272	WHAT PERSONS OR GROUPS ARE INVOLVED IN EVALUATION AND/OR CURRICULUM IMPROVEMENT?
4	7	24.0	0.23944	WHAT ARE EXPENDITURES FOR EQUIPMENT ALLOCATED TO THE CURRICULUM?
5	22	25.0	0.23514	WHAT ARE THE CHARACTERISTICS OF THE STUDENT COMPLETERS/EARLY LEAVERS?
4	2	26.0	0.23280	WHAT ARE EXPENDITURES FOR SALARIES ALLOCATED TO THE CURRICULUM?
1	23	27.0	0.23145	WHAT IS THE TYPE OF FUNDING ALLOCATED TO THE CURRICULUM FROM THE VOCATIONAL EDUCATION ACT?
12	2	28.0	0.23084	WHAT IS THE TOTAL STATE EXPENDITURE FOR VOCATIONAL EDUCATION?
12	5	29.0	0.22807	WHAT IS THE TOTAL VOCATIONAL EDUCATION REVENUE?
5	18	30.0	0.22612	WHAT IS THE STUDENT'S FULL-TIME/PART-TIME STATUS?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
10	17	31.0	0.22576	WHAT IS THE FUNDING ALLOCATED TO THE LEA UNDER THE VOCATIONAL EDUCATION ACT?
5	8	32.0	0.22323	WHAT IS THE CULTURAL HANDICAP(S) OF THE STUDENT?
5	24	33.0	0.22272	WHAT ARE THE STUDENT'S EDUCATIONAL AND CAREER INTENTIONS?
4	5	34.0	0.22233	WHAT ARE EXPENDITURES FOR SUPPLIES AND MATERIALS ALLOCATED TO THE CURRICULUM?
5	15	35.0	0.22057	IN WHAT CURRICULUM IS THE STUDENT CURRENTLY ENROLLED?
9	24	36.0	0.21887	WHAT ARE THE SCHOOL'S TOTAL EXPENDITURES AGGREGATED ACROSS CURRICULA FOR VOCATIONAL EDUCATION?
10	16	37.0	0.21881	WHAT ARE THE SOURCES OF FUNDING FOR VOCATIONAL EDUCATION AT THE LEA LEVEL?
9	1	38.0	0.21801	HOW IS THE SCHOOL IDENTIFIED?
4	1	39.0	0.21798	HOW IS THE CURRICULUM IDENTIFIED?
9	3	40.0	0.21699	WHAT IS THE TYPE OF SCHOOL ORGANIZATION BY GRADE LEVEL?
1	28	41.0	0.21699	WHAT STAFF ARE ASSIGNED TO THE CURRICULUM?
1	16	42.0	0.21595	WHERE IS THE LOCATION OF THE INSTRUCTION?
1	21	43.0	0.21541	WHAT ARE THE RELATED OCCUPATIONS FOR WHICH TRAINING IS PROVIDED IN THE CURRICULUM?
1	9	44.0	0.21523	WHAT CREDENTIALS ARE GRANTED IN RECOGNITION OF COMPLETION OF THE CURRICULUM?
5	2	45.0	0.21448	WHAT IS THE SEX OF THE STUDENT?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
2	5	46.0	0.21346	WHAT ARE THE EXPENDITURES FOR ADMINISTRATION SUPPORT SERVICES ACTIVITIES ALLOCATED TO THE CURRICULUM?
10	9	47.0	0.21219	WHAT ARE THE CHARACTERISTICS OF VOCATIONAL STUDENTS SERVED BY THE LEA AGGREGATED ACROSS SCHOOLS?
9	2	48.0	0.21036	WHAT ARE THE CHARACTERISTICS OF THE GEOGRAPHIC AREA IN WHICH THE SCHOOL IS LOCATED?
7	5	49.0	0.20970	WHAT IS THE WORK EXPERIENCE(S) OUTSIDE OF EDUCATION OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
2	4	50.0	0.20827	WHAT ARE THE EXPENDITURES FOR INSTRUCTION SUPPORT SERVICES ACTIVITIES ALLOCATED TO THE CURRICULUM?
6	3	51.0	0.20801	WHAT IS THE CURRENT EMPLOYMENT STATUS OF THE COMPLETER/EARLY LEAVER?
11	3	52.0	0.20697	WHAT ARE THE EMPLOYMENT PROSPECTS IN THE LEA SERVICE AREA?
9	25	53.0	0.20643	WHAT ARE THE SCHOOL EXPENDITURES BY CURRICULUM FOR VOCATIONAL EDUCATION?
1	12	54.0	0.20466	WHAT INSTRUCTION MEDIA ARE USED?
6	9	55.0	0.20301	HOW SATISFIED IS THE COMPLETER/EARLY LEAVER WITH HIS SCHOOL EXPERIENCES?
9	14	56.0	0.20233	WHAT ARE THE CHARACTERISTICS OF THE VOCATIONAL STAFF OF THE SCHOOL?
12	11	57.0	0.20193	WHAT IS THE TOTAL STATEWIDE ENROLLMENT IN VOCATIONAL EDUCATION?
1	31	58.0	0.20156	WHAT ARE THE CHARACTERISTICS OF THE CURRICULUM ADVISORY COMMITTEE?
12	12	59.0	0.20146	WHAT IS THE TOTAL ENROLLMENT IN VOCATIONAL EDUCATION?
2	3	60.0	0.19427	WHAT ARE THE EXPENDITURES FOR PUPIL SUPPORT SERVICES ACTIVITIES ALLOCATED TO THE CURRICULUM?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
9	4	61.0	0.19746	WHAT IS THE TYPE OF SCHOOL ORGANIZATION BY PROGRAM OFFERINGS?
7	18	62.0	0.19021	WHAT IS THE CURRENT POSITION ASSIGNMENT(S) (FTE ALLOCATION) OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
7	6	63.0	0.19013	WHAT CREDENTIALS ARE HELD BY THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
9	31	64.0	0.19545	WHAT ARE THE CHARACTERISTICS OF THE VOCATIONAL PROGRAM ADVISORY COMMITTEES?
11	7	65.0	0.19539	WHAT ARE THE CURRENT EMPLOYMENT OPPORTUNITIES IN THE LEA SERVICE AREA?
3	2	66.0	0.19485	WHAT ARE THE EXPENDITURES FOR INSTRUCTIONAL ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
5	1	67.0	0.19359	HOW IS THE STUDENT IDENTIFIED?
4	29	68.0	0.19355	WHAT ARE THE CHARACTERISTICS OF THE VOCATIONAL CURRICULUM ADVISORY COMMITTEES AGGREGATED ACROSS CURRICULA?
12	3	69.0	0.19249	WHAT IS THE TOTAL LOCAL EDUCATION AGENCY EXPENDITURE FOR VOCATIONAL EDUCATION AGGREGATED ACROSS LEAS?
1	14	70.0	0.19192	WHAT STUDENT EVALUATION PROCEDURES ARE USED?
12	7	71.0	0.19152	WHAT IS THE METHOD FOR DISTRIBUTION OF PART B VEA FUNDS TO LOCAL EDUCATION AGENCIES?
1	19	72.0	0.19130	WHAT ASPECTS OF THE CURRICULUM ARE EVALUATED?
6	10	73.0	0.19112	HOW RELEVANT DOES THE COMPLETER/EARLY LEAVER PERCEIVE THE SCHOOL CURRICULUM TO BE FOR THE CURRENT JOB?
5	19	74.0	0.19081	WHAT IS THE STUDENT' DAY/EVENING STATUS?
9	15	75.0	0.19069	WHAT ARE THE POST-SCHOOL OUTCOMES OF THE VOCATIONAL COMPLETERS/EARLY LEAVERS?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
5	3	78.0	0.18861	TO WHAT RACIAL OR ETHNIC GROUP DOES THE STUDENT BELONG?
1	13	77.0	0.18065	WHAT INSTRUCTIONAL METHODS AND TECHNIQUES ARE USED?
6	6	78.0	0.18646	WHAT WERE THE CHARACTERISTICS OF THE FIRST JOB OBTAINED AFTER COMPLETION/LEAVING?
1	7	79.0	0.18410	WHAT ARE THE VOCATIONAL CURRICULAR OFFERINGS AGGREGATED ACROSS SCHOOLS FOR THE LEA?
5	1	80.0	0.18365	HOW IS THE COMPLETER/EARLY LEAVER IDENTIFIED?
4	16	81.0	0.18201	WHAT ARE THE REQUIREMENTS FOR SCHOOL ENTRANCE?
4	17	82.0	0.18050	WHAT STUDENT PERSONNEL SERVICES ARE AVAILABLE IN THE SCHOOL?
1	2	83.0	0.18005	WHAT IS THE ACCREDITATION STATUS OF THE CURRICULUM?
7	2	84.0	0.17926	WHAT ARE THE EDUCATIONAL CHARACTERISTICS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
5	11	85.0	0.17820	WHAT IS THE SPECIAL CHARACTERISTIC(S) OF THE STUDENT?
7	20	86.0	0.17703	WHAT IS THE CURRENT ACTIVITY ALLOCATION(S) (FTE ALLOCATION) OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
12	8	87.0	0.17526	WHAT IS THE CRITERIA USED BY THE STATE IN THE DISTRIBUTION OF PART B VEA FUNDS?
4	28	88.0	0.17431	WHAT ARE COOPERATIVE ARRANGEMENTS WITH OTHER AGENCIES?
13	3	89.0	0.17274	WHAT IS THE STATE VOCATIONAL EDUCATION EXPENDITURE FOR PLANNING, RESEARCH, DEVELOPMENT, AND EVALUATION ACTIVITIES?
6	2	90.0	0.17245	HOW IS THE CURRICULUM OF THE COMPLETER/EARLY LEAVER IDENTIFIED?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
11	6	91.0	0.17029	WHAT ARE THE EMPLOYMENT CHARACTERISTICS OF THE POPULATION IN THE LEA SERVICE AREA?
1	18	92.0	0.17012	WHAT EVALUATION PROCEDURES ARE USED FOR CURRICULUM EVALUATION?
7	4	93.0	0.16966	WHAT ARE THE EDUCATION AND RELATED WORK EXPERIENCES OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
3	5	94.0	0.16959	WHAT ARE THE EXPENDITURES FOR ADMINISTRATIVE SUPPORT ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
9	5	95.0	0.16931	WHAT IS THE REGIONAL COVERAGE OF THE SCHOOL?
7	21	96.0	0.16902	WHAT IS THE POSITION ASSIGNMENT ALLOCATED BY VOCATIONAL CURRICULUM OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
1	29	97.0	0.16884	WHAT EQUIPMENT IS ASSIGNED TO THE CURRICULUM?
6	7	98.0	0.16857	WHAT IS THE CURRENT SALARY OR WAGE OF THE COMPLETER/EARLY LEAVER?
5	10	99.0	0.16792	WHAT IS THE SOCIAL AND/OR EMOTIONAL HANDICAP(S) OF THE STUDENT?
11	1	100.0	0.16717	HOW IS THE LEA IDENTIFIED?
11	3	101.0	0.16712	WHAT ARE THE GENERAL POPULATION CHARACTERISTICS OF THE LEA SERVICE AREA?
8	17	102.0	0.16645	WHAT ARE THE CHARACTERISTICS OF THE LARGE MOVABLE TOOLS AND EQUIPMENT USED IN VOCATIONAL EDUCATION INSTRUCTION?
5	4	103.0	0.16543	WHAT IS THE AGE OF THE STUDENT?
8	1	104.0	0.16348	WHAT ARE THE LOCATIONAL CHARACTERISTICS OF THE LOCAL SITE?
10	23	105.0	0.16326	WHAT ARE THE COOPERATIVE ARRANGEMENTS AT THE LEA LEVEL?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
4	10	106.0	0.16270	WHAT ARE THE TIME ELEMENTS IN THE SCHOOL OPERATION?
9	8	107.0	0.16256	WHAT IS THE APPROVAL STATUS AND AGENCY FOR THE SCHOOL?
15	9	108.0	0.16098	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR GRANTS AND SUBSIDIES?
10	19	109.0	0.16022	WHAT ARE THE LEA TOTAL EXPENDITURES AGGREGATED ACROSS SCHOOLS?
16	18	110.0	0.15995	WHAT ARE THE LEA EXPENDITURES BY SCHOOLS AGGREGATED ACROSS CURRICULA?
1	30	111.0	0.15861	WHAT IS THE UTILIZATION OF THE BUILDING BY THE CURRICULUM?
5	21	112.0	0.15828	WHAT ARE THE STUDENT'S ATTENDANCE CHARACTERISTICS?
7	3	113.0	0.15751	WHAT ARE THE INSERVICE EDUCATION/TRAINING EXPERIENCES OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
6	13	114.0	0.15697	WHAT IS THE EMPLOYER EVALUATION OF JOB PERFORMANCE OF THE COMPLETER/ EARLY LEAVER?
11	2	115.0	0.15670	WHAT IS THE GEOGRAPHIC COVERAGE OF THE LEA SERVICE AREA?
8	16	116.0	0.15629	WHAT ARE THE CHARACTERISTICS OF THE FIXED EQUIPMENT USED FOR INSTRUCTION IN VOCATIONAL EDUCATION?
10	5	117.0	0.15381	WHAT IS THE ORGANIZATIONAL STRUCTURE OF VOCATIONAL EDUCATION WITHIN THE LEA?
11	15	118.0	0.15380	WHAT ARE THE CETA PROGRAM CHARACTERISTICS IN THE LEA SERVICE AREA?
12	13	119.0	0.15171	WHAT IS THE PER PUPIL EXPENDITURE IN VOCATIONAL EDUCATION?
12	10	120.0	0.15102	WHAT IS THE BASIS FOR STATE DISTRIBUTION OF VEA FUNDS?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
3	4	121.0	0.15052	WHAT ARE THE EXPENDITURES FOR PUPIL SUPPORT ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
9	13	122.0	0.15036	WHAT ARE THE CHARACTERISTICS OF THE FACILITIES OF THE SCHOOL?
12	14	123.0	0.15001	WHAT IS THE TOTAL NUMBER OF STATEWIDE VOCATIONAL PROGRAM COMPLETERS/ EARLY LEAVERS AGGREGATED ACROSS LEAS?
7	23	124.0	0.14949	WHAT IS THE OPERATIONAL UNIT(S) ASSIGNED TO THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
10	12	125.0	0.14947	WHAT ARE THE VOCATIONAL STAFF OF THE LEA AGGREGATED ACROSS SCHOOLS?
1	25	126.0	0.14946	WHAT ARE THE UNOBLIGATED ALLOTMENTS CARRIED FORWARD?
6	8	127.0	0.14891	HOW SATISFIED IS THE COMPLETER/EARLY LEAVER WITH HIS CURRENT JOB?
12	18	128.0	0.14874	WHAT ARE THE STATEWIDE VOCATIONAL STUDENT POST-SCHOOL OUTCOMES AGGREGATED ACROSS LEAS?
8	8	129.0	0.14821	WHAT ARE THE CHARACTERISTICS OF EACH BUILDING ON THE LOCAL SITE?
7	19	130.0	0.14733	WHERE IS THE LOCATION OF THE CURRENT ASSIGNMENT(S) OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
9	27	131.0	0.14721	WHAT ARE THE CHARACTERISTICS OF SCHOOL-COMMUNITY RELATIONS?
5	23	132.0	0.14718	WHAT IS THE STUDENT'S EMPLOYMENT HISTORY DURING SCHOOL MEMBERSHIP?
12	4	133.0	0.14692	WHAT IS THE TOTAL LOCAL EDUCATION AGENCY EXPENDITURE AGGREGATED ACROSS CURRICULA?
4	3	134.0	0.14687	WHAT ARE EXPENDITURES FOR EMPLOYER BENEFITS ALLOCATED TO THE CURRICULUM?
15	7	135.0	0.14662	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR EQUIPMENT?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
5	14	136.0	0.14573	WHAT ARE THE RESULTS OF THE TESTS ADMINISTERED TO THE STUDENT?
1	3	137.0	0.14561	WHAT ACCREDITATION AGENCY SERVICES THE CURRICULUM?
7	22	138.0	0.14415	WHAT IS THE ACTIVITY ALLOCATION BY VOCATIONAL CURRICULUM OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
11	24	139.0	0.14411	WHAT ARE THE CHARACTERISTICS OF SCHOOL ADVISORY COMMITTEES AGGREGATED OVER SCHOOLS?
10	25	140.0	0.14390	WHAT ARE THE CHARACTERISTICS OF THE LEA ADVISORY COMMITTEE?
9	9	141.0	0.14339	WHAT IS THE ACCREDITATION STATUS AND ACCREDITATION AGENCY FOR THE SCHOOL?
5	17	142.0	0.14332	WHAT IS THE STUDENT'S SATISFACTION WITH THE PRESENT CURRICULUM?
12	16	143.0	0.14127	WHAT ARE THE STATEWIDE VOCATIONAL CURRICULAR OFFERINGS AGGREGATED ACROSS LEAS?
8	11	144.0	0.14008	WHAT ARE THE INSTRUCTIONAL CHARACTERISTICS OF EACH BUILDING ON THE LOCAL SITE?
12	9	145.0	0.14006	WHAT IS THE RELATIVE WEIGHT GIVEN TO CRITERIA USED IN STATE DISTRIBUTION OF PART B VEA FUNDS?
13	7	146.0	0.13977	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR AGENCY OPERATED SCHOOLS AND INSTITUTIONS ACTIVITIES?
6	11	147.0	0.13910	WHAT IS THE EMPLOYMENT HISTORY OF THE COMPLETER/EARLY LEAVER?
15	2	148.0	0.13771	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR SALARIES?
7	1	149.0	0.13756	WHAT IS THE PERSONAL IDENTIFICATION AND HEALTH INFORMATION FOR THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
10	1	150.0	0.13731	HOW IS THE LEA IDENTIFIED?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
7	10	151.0	0.13719	WHAT IS THE SALARY OR WAGE STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
5	6	152.0	0.13481	WHAT IS THE VETERAN BENEFIT STATUS OF THE STUDENT?
9	31	153.0	0.13424	WHAT ARE THE DECLARED INTENTIONS OF THE SCHOOL POPULATION?
12	1	154.0	0.13400	HOW IS THE STATE EDUCATION AGENCY IDENTIFIED?
1	15	155.0	0.13331	WHAT IS THE BASIS FOR GROUPING IN THE CURRICULUM?
13	1	156.0	0.13331	HOW IS THE STATE EDUCATION AGENCY IDENTIFIED?
8	2	157.0	0.13203	WHAT USE(S) ARE MADE OF THE LOCAL SITE FOR VOCATIONAL PURPOSES?
10	14	158.0	0.13146	WHAT ARE THE POST-SCHOOL OUTCOMES AGGREGATED ACROSS SCHOOLS?
5	13	159.0	0.13130	WHAT TESTS AND INVENTORIES HAVE BEEN ADMINISTERED (INCLUDING JOB SKILL COMPETENCY MEASURES)?
10	20	160.0	0.13064	WHAT ARE THE LEA EXPENDITURES BY CURRICULA AGGREGATED ACROSS SCHOOLS?
11	9	161.0	0.12979	WHAT ARE THE EDUCATIONAL CHARACTERISTICS OF THE POPULATION IN THE LEA SERVICE AREA?
10	2	162.0	0.12968	WHAT ARE THE CHARACTERISTICS OF THE SCHOOLS OPERATED BY THE LEA?
9	18	163.0	0.12881	WHAT INSTRUCTIONAL SUPPORT SERVICES ARE AVAILABLE IN THE SCHOOL?
15	5	164.0	0.12870	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR SUPPLIES AND MATERIALS?
7	14	165.0	0.12812	WHAT IS THE SERVICE STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
12	9	166.0	0.12794	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION AIDS AND EXPENDITURES?
13	2	167.0	0.12784	WHAT IS THE STATE VOCATIONAL EDUCATION EXPENDITURE FOR GENERAL MANAGEMENT ACTIVITIES?
9	6	168.0	0.12767	WHAT IS THE LOCUS OF CONTROL OF THE SCHOOL?
13	7	169.0	0.12744	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR CONSULTATIVE SERVICES ACTIVITIES?
12	15	170.0	0.12634	WHAT ARE THE CHARACTERISTICS OF STATEWIDE VOCATIONAL EDUCATION STAFF (STATE PLUS AGGREGATED LEA STAFF)?
18	7	171.0	0.12567	WHAT ARE THE CURRENT EMPLOYMENT OPPORTUNITIES AVAILABLE TO THE STATE POPULATION?
5	7	172.0	0.12554	WHAT IS THE SOCIOECONOMIC BACKGROUND OF THE STUDENT?
9	26	173.0	0.12550	WHAT ARE THE UNOBLIGATED SCHOOL ALLOTMENTS CARRIED FORWARD FOR VOCATIONAL EDUCATION?
7	11	174.0	0.12539	WHAT IS THE TYPE OF REMUNERATION FOR THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
18	8	175.0	0.12425	WHAT IS THE STATE EMPLOYMENT PROSPECT?
18	2	176.0	0.12359	HOW IS THE STATE DIVIDED GEOGRAPHICALLY?
18	6	177.0	0.12266	WHAT ARE THE EMPLOYMENT CHARACTERISTICS OF THE STATE POPULATION?
11	14	178.0	0.12272	WHAT ARE THE VOCATIONAL TRAINING RESOURCES IN THE LEA SERVICE AREA?
10	4	179.0	0.12178	WHAT IS THE LOCUS OF CONTROL FOR THE LEA?
13	6	180.0	0.12172	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR DIRECT ASSISTANCE ACTIVITIES?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
3	3	181.0	0.12159	WHAT ARE THE EXPENDITURES FOR INSTRUCTIONAL SUPPORT ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
10	3	182.0	0.12152	WHAT IS [illegible] OF THE CENTRAL ADMINISTRATION OF THE LEA?
18	9	183.0	0.12114	WHA[illegible]CATIONAL CHARACTERISTICS THE STATE POPULATION?
4	6	184.0	0.12049	WHAT ARE EXPENDITURES FOR LAND AND BUILDINGS ALLOCATED TO THE CURRICULUM?
7	7	185.0	0.12021	WHAT IS THE LEA EMPLOYMENT HISTORY OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
4	4	186.0	0.11950	WHAT ARE EXPENDITURES FOR PURCHASED SERVICES ALLOCATED TO THE CURRICULUM?
13	12	187.0	0.11906	WHAT IS THE TOTAL STATE FUNCTIONAL EXPENDITURE FOR VOCATIONAL EDUCATION BY COST CENTERS?
10	13	188.0	0.11905	WHAT ARE THE VOCATIONAL STAFF OF THE LEA ADMINISTRATIVE OFFICE(S)?
15	1	189.0	0.11886	HOW IS THE STATE EDUCATION AGENCY IDENTIFIED?
11	12	190.0	0.11732	WHAT IS THE REVENUE BASE(S) FOR PUBLIC EDUCATION IN THE LEA SERVICE AREA?
7	16	191.0	0.11729	WHAT ARE THE STAFF CAREER DEVELOPMENT CHARACTERISTICS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
5	15	192.0	0.11677	WHAT ARE THE ADMISSION CHARACTERISTICS OF THE STUDENT?
7	8	193.0	0.11666	WHAT IS THE EMPLOYMENT STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
6	4	194.0	0.11615	WHAT IS THE CURRENT EDUCATIONAL STATUS OF THE COMPLETER/EARLY LEAVER?
15	11	195.0	0.11467	WHAT ARE THE TOTAL STATE OBJECT EXPENDITURES BY VOCATIONAL EDUCATION COST CENTERS?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
4	19	196.0	0.11450	WHAT ARE THE CHARACTERISTICS OF THE SMALL TOOLS AND SMALL EQUIPMENT USED IN VOCATIONAL EDUCATION INSTRUCTION?
8	9	197.0	0.11425	WHAT IS THE GENERAL CONDITION OF EACH BUILDING ON THE LOCAL SITE?
9	7	198.0	0.11331	WHAT IS THE SPAN(S) CONTAINED IN SCHOOL?
15	4	199.0	0.11306	AT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR PURCHASED SERVICES?
5	25	200.0	0.1126	ARE THE VOCATIONAL EDUCATION RELATED CLUB MEMBERSHIPS HELD BY THE ENT?
13	5	201.0	0.10997	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR IMPROVEMENT AND APPROVAL OF PROGRAMS AND SERVICES ACTIVITIES?
14	15	202.0	0.10964	WHAT ARE THE CHARACTERISTICS OF THE CETA PROGRAM?
13	8	203.0	0.10936	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURES FOR DISTRIBUTION OF RESOURCES ACTIVITIES?
18	1	204.0	0.10900	HOW IS THE STATE IDENTIFIED?
8	19	205.0	0.10789	WHAT ARE THE CHARACTERISTICS OF OTHER EQUIPMENT REQUIRED FOR INSTRUCTION IN VOCATIONAL EDUCATION?
8	25	206.0	0.10783	WHAT ARE THE CHARACTERISTICS OF THE SUPPLIES USED IN VOCATIONAL EDUCATION?
10	21	207.0	0.10745	WHAT ARE THE UNOBLIGATED ALLOTMENTS CARRIED FORWARD FOR VOCATIONAL PROGRAMS?
3	6	208.0	0.10732	WHAT ARE THE EXPENDITURES FOR OTHER SUPPORT ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
6	12	209.0	0.10694	WHAT ARE THE CHARACTERISTICS OF THE PRESENT EMPLOYMENT?
14	5	210.0	0.10665	WHAT ARE THE EXPENDITURES FOR OTHER SUPPORT ASSIGNMENTS ALLOCATED TO THE SEA?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
14	1	211.0	0.10503	HOW IS THE STATE EDUCATION AGENCY IDENTIFIED?
8	24	212.0	0.10501	WHAT ARE THE CHARACTERISTICS OF THE MATERIALS USED IN VOCATIONAL EDUCATION?
18	3	213.0	0.10484	WHAT ARE THE GENERAL POPULATION CHARACTERISTICS OF THE STATE?
15	3	214.0	0.10481	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR EMPLOYER BENEFITS?
13	10	215.0	0.10475	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR NONPROGRAMMED CHARGES?
16	18	216.0	0.10467	WHAT IS THE CURRENT POSITION ASSIGNMENT OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
15	6	217.0	0.10463	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR LAND AND BUILDINGS?
10	22	218.0	0.10265	WHAT ARE THE COMMUNITY RELATIONS AT THE LEA LEVEL?
14	4	219.0	0.10251	WHAT ARE THE EXPENDITURES FOR ADMINISTRATIVE SUPPORT ASSIGNMENTS ALLOCATED TO THE SEA?
3	3	220.0	0.1	WHO OWNS THE LOCAL SITE?
10	3	221.0	0.99	HOW MANY LEAS ARE SERVED BY THE LEA?
9	20	222.0	0.99	WHAT DATA PROCESSING SERVICES ARE AVAILABLE IN THE SCHOOL?
10	6	223.0	0.99	WHAT IS THE LEGAL POWER OF THE LEA (APPLICABLE TO SEPARATE VOCATIONAL EDUCATION DISTRICT)?
10	10	224.0	0.99	WHAT ARE THE FACILITIES OF THE LEA AGGREGATED ACROSS SCHOOLS?
14	3	225.0	.9966	WHAT ARE THE EXPENDITURES FOR INSTRUCTIONAL SUPPORT ASSIGNMENTS ALLOCATED TO THE SEA?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
5	20	226.0	0.09043	WHAT ARE THE STUDENT'S MEMBERSHIP CHARACTERISTICS?
13	4	227.0	0.09540	WHAT IS THE STATE VOCATIONAL EDUCATION EXPENDITURE FOR INTERNAL AGENCY-WIDE SUPPORT SERVICES ACTIVITIES?
8	6	228.0	0.09436	WHAT IS THE AREA OF THE LOCAL SITE?
16	2	229.0	0.09219	WHAT ARE THE EDUCATIONAL CHARACTERISTICS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
11	4	230.0	0.09050	WHAT ARE THE VITAL STATISTICS OF THE LEA SERVICE AREA?
8	10	231.0	0.08999	WHAT ARE THE COSTS AND VALUES OF EACH BUILDING ON THE LOCAL SITE?
7	3	232.0	0.08964	WHAT IS THE CONTRACTUAL STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
16	20	233.0	0.08867	WHAT IS THE ACTIVITY ALLOCATION(S) OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
8	12	234.0	0.08814	HOW MUCH OF THE AREA OF EACH BUILDING IS USED FOR SUPPORT PURPOSES - SQUARE FOOTAGE?
8	5	235.0	0.08802	WHAT IS THE COST OF THE LOCAL SITE INCLUDING IMPROVEMENTS?
8	7	236.0	0.08756	WHAT IS THE NUMBER OF BUILDINGS ON THE LOCAL SITE?
5	12	237.0	0.08575	WHAT TRAINING RELATED INJURIES HAVE OCCURRED?
18	14	238.0	0.08479	WHAT IS THE STATEWIDE INVENTORY OF VOCATIONAL TRAINING RESOURCES?
8	20	239.0	0.08433	WHAT ARE THE CHARACTERISTICS OF THE EQUIPMENT FOR INSTRUCTIONAL SUPPORT USED IN VOCATIONAL EDUCATION?
9	19	240.0	0.08294	WHAT RESEARCH AND STATISTICAL SERVICES ARE AVAILABLE IN THE SCHOOL?

ntinued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

TION	RANK	SIMILARITY INDEX	QUESTION TEXT
4	241.0	0.08232	WHAT ARE THE VITAL STATISTICS OF THE STATE?
1	242.0	0.08222	WHAT COMMUNITY SERVICES UNDER[illegible]OOL PERSONNEL?
8	243.0	0.08191	WHAT A[illegible]E NONPROGRAMMED CHARGES ALLOCATED TO THE CURRICULUM?
1	244.0	0.08176	WHAT IS THE PERSONAL IDENTIFICATION AND HEALTH DATA OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
4	245.0	0.08045	WHAT ARE THE ROOM CHARACTERISTICS OF EACH BUILDING ON THE LOCAL SITE?
0	246.0	0.07759	WHAT ARE THE GENERAL ECONOMIC CHARACTERISTICS OF THE LEA SERVICE AREA?
1	247.0	0.07615	WHAT IS THE FUNCTIONAL ALLOCATION(S) BY PARTS OF VEA FOR THE STATE VOCATIONAL STAFF MEMBER?
2	248.0	0.07454	WHAT ARE THE EXPENDITURES FOR INSTRUCTIONAL ASSIGNMENTS ALLOCATED TO THE SEA?
7	249.0	0.07378	WHAT IS THE SEPARATION HISTORY OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
5	250.0	0.07363	WHAT ARE THE HOUSEHOLD CHARACTERISTICS OF THE STATE POPULATION?
4	251.0	0.07217	WHAT ARE THE EDUCATION AND RELATED WORK EXPERIENCES OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
8	252.0	0.07200	WHAT ARE OTHER EXPENDITURES ALLOCATED TO THE CURRICULUM?
8	253.0	0.07199	WHAT ARE THE EXPENDITURES FOR NONPROGRAMMED CHARGES ALLOCATED TO THE CURRICULUM?
12	254.0	0.07132	WHAT IS THE INSURANCE STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
15	255.0	0.07126	WHAT IS THE LEAVE STATUS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER IN TERMS OF ACCRUED DAYS?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
11	11	256.0	0.07108	WHAT ARE THE ECONOMIC CHARACTERISTICS OF LOCAL GOVERNMENT(S) IN THE LEA SERVICE AREA?
16	6	257.0	0.07085	WHAT CREDENTIALS ARE HELD BY THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	5	258.0	0.06944	WHAT IS THE WORK EXPERIENCE(S) OUTSIDE OF EDUCATION OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
10	15	259.0	0.06915	WHAT ARE THE CHARACTERISTICS OF THE SCHOOLS CONTAINED IN THE LEA AGGREGATED ACROSS SCHOOLS?
12	19	260.0	0.06874	WHAT IS THE STATEWIDE LEA INFORMATION AGGREGATED ACROSS LEAS?
7	13	261.0	0.06824	WHAT ARE THE RETIREMENT PROGRAM CHARACTERISTICS OF THE LOCAL VOCATIONAL EDUCATION STAFF MEMBER?
16	23	262.0	0.06753	WHAT IS THE FUNCTIONAL ALLOCATION(S) BY PROGRAM AREA(S) OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	16	263.0	0.06738	WHAT ARE THE STAFF CAREER DEVELOPMENT CHARACTERISTICS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
8	4	264.0	0.06733	WHEN WAS THE LOCAL SITE ACQUIRED?
16	22	265.0	0.06455	WHAT IS THE FUNCTIONAL ALLOCATION(S) BY PROGRAM LEVEL(S) OF THE VOCATIONAL EDUCATION STAFF MEMBER?
4	9	266.0	0.06392	WHAT IS THE AMOUNT OF TRANSFERS ALLOCATED TO THE CURRICULUM?
16	10	267.0	0.06383	WHAT IS THE SALARY OR WAGE STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
8	23	268.0	0.06346	WHAT ARE THE CHARACTERISTICS OF EQUIPMENT FOR DATA PROCESSING SERVICES USED IN VOCATIONAL EDUCATION?
5	5	269.0	0.06101	WHERE IS THE PLACE OF BIRTH OF THE STUDENT?
8	13	270.0	0.06080	HOW MUCH OF THE AREA OF EACH BUILDING IS USED FOR CIRCULATION AREAS IN AND BETWEEN BUILDINGS - SQUARE FOOTAGE?

Table I (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
13	10	271.0	0.05576	WHAT ARE THE GENERAL STATE ECONOMIC CHARACTERISTICS?
8	15	272.0	0.05616	WHAT ARE THE CHARACTERISTICS OF THE GENERAL TRANSPORTATION AND UTILITY EQUIPMENT USED IN VOCATIONAL EDUCATION?
16	7	273.0	0.05299	WHAT IS THE EMPLOYMENT HISTORY OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	11	274.0	0.05377	WHAT IS THE TYPE OF REMUNERATION OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
10	11	275.0	0.05384	WHAT ARE THE FACILITIES OF THE LEA ADMINISTRATIVE OFFICE(S)?
16	14	276.0	0.05382	WHAT IS THE STATE EMPLOYMENT SERVICE STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
11	5	277.0	0.05449	WHAT ARE THE HOUSEHOLD CHARACTERISTICS OF THE LEA SERVICE AREA?
18	12	278.0	0.05431	WHAT IS THE STATEWIDE REVENUE BASE FOR SCHOOLS?
16		279.0	0.05416	WHAT ARE THE INSERVICE EDUCATION/TRAINING EXPERIENCES OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	24	280.0	0.05411	WHAT IS THE FUNCTIONAL ALLOCATION BY SOURCE OF FUNDS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	19	281.0	0.05738	WHAT IS THE SCOPE OF THE CURRENT ASSIGNMENT(S) OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
15	8	282.0	0.05529	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR OTHER EXPENDITURES?
2	6	283.0	0.05524	WHAT ARE THE EXPENDITURES FOR OTHER SUPPORT SERVICES ACTIVITIES ALLOCATED TO THE CURRICULUM?
3	7	284.0	0.05377	WHAT ARE THE EXPENDITURES FOR COMMUNITY SUPPORT ASSIGNMENTS ALLOCATED TO THE CURRICULUM?
16	9	285.0	0.05305	WHAT IS THE CONTRACTUAL STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
18	11	286.0	0.05110	WHAT ARE THE ECONOMIC CHARACTERISTICS OF STATE GOVERNMENT?
15	10	287.0	0.05034	WHAT IS THE TOTAL STATE VOCATIONAL EXPENDITURE FOR TRANSFERS?
16	3	288.0	0.05003	WHAT IS THE CURRENT EMPLOYMENT STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
12	17	289.0	0.04896	WHAT ARE THE STATEWIDE CHARACTERISTICS OF VOCATIONAL PROPERTY (STATE PLUS AGGREGATE LEA PROPERTY)?
5	21	290.0	0.04841	WHAT ARE THE CHARACTERISTICS OF EQUIPMENT FOR PERSONNEL SERVICES USED IN VOCATIONAL EDUCATION?
17	2	291.0	0.04668	WHAT USES ARE MADE OF THE STATE SITE FOR VOCATIONAL PURPOSES?
2	9	292.0	0.04567	WHAT ARE THE EXPENDITURES FOR DEBT SERVICES ALLOCATED TO THE CURRICULUM?
16	15	293.0	0.04539	WHAT IS THE CURRENT LEAVE STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER IN TERMS OF ACCRUED DAYS?
14	6	294.0	0.04524	WHAT ARE THE NONPROGRAMMED CHARGES ALLOCATED TO THE SEA?
3	9	295.0	0.04476	WHAT ARE THE DEBT SERVICES ALLOCATED TO THE CURRICULUM?
11	13	296.0	0.04414	WHAT IS THE POLITICAL SUPPORT FOR PUBLIC EDUCATION IN THE LEA SERVICE AREA?
17	1	297.0	0.04116	WHERE IS THE STATE SITE LOCATED?
16	12	298.5	0.04107	WHAT IS THE INSURANCE STATUS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
16	13	298.5	0.04107	WHAT ARE THE RETIREMENT PROGRAM CHARACTERISTICS OF THE STATE VOCATIONAL EDUCATION STAFF MEMBER?
2	7	300.0	0.04100	WHAT ARE THE EXPENDITURES FOR COMMUNITY SERVICE ACTIVITIES ALLOCATED TO THE CURRICULUM?

Table 1 (continued) QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY INDEX	QUESTION TEXT
17	14	301.0	0.04006	WHAT ARE THE CHARACTERISTICS OF FIXED EQUIPMENT USED IN ATIONAL EDUCATION AT THE STATE LEVEL?
13	11	302.0	0.03366	WHAT IS THE TOTAL STATE VOCATIONAL EDUCATION EXPENDITURE FOR DEBT SERVICES?
8	22	303.0	0.03259	WHAT ARE THE CHARACTERISTICS OF EQUIPMENT FOR RESEARCH AND STATISTICAL SERVICES USED IN VOCATIONAL EDUCATION?
16	17	304.0	0.03149	WHAT IS THE SEPARATION HISTORY OF THE STATE VOCATIONAL CATION STAFF MEMBER?
18	13	305.0	0.02592	WHAT IS THE STATEWIDE LOCAL POLITICAL SUPPORT FOR EDUCATI
17	9	306.0	0.02571	WHAT IS THE GENERAL CONDITION OF EACH BUILDING ON THE S SITE?
17	3	307.0	0.02443	WHO OWNS THE STATE SITE?
17	8	308.0	0.02258	WHAT ARE THE CHARACTERISTICS OF EACH BUILDING ON THE STATE SITE?
17	16	309.0	0.01650	WHAT ARE THE CHARACTERISTICS OF THE BOOKS HELD IN LIBRARY FOR REFERENCE PURPOSES USED IN VOCATIONAL EDUCATION AT THE STATE LEVEL?
17	15	310.0	0.01632	WHAT ARE THE CHARACTERISTICS OF LARGE MOVABLE TOOLS AND EQUIPMENT USED IN VOCATIONAL EDUCATION AT THE STATE LEVEL?
17	13	311.0	0.01452	WHAT ARE THE CHARACTERISTICS OF GENERAL TRANSPORTATION AND UTILITY EQUIPMENT USED IN VOCATIONAL EDUCATION?
17	19	312.0	0.01364	WHAT ARE THE CHARACTERISTICS OF MATERIALS USED FOR VOCATIONAL EDUCATION AT THE STATE LEVEL?
14	7	313.0	0.01355	WHAT ARE THE DEBT SERVICES ALLOCATED TO THE SEA?
17	20	314.0	0.01329	WHAT ARE THE CHARACTERISTICS OF SUPPLIES USED FOR VOCATIONAL EDUCATION AT THE STATE LEVEL?
17	5	315.0	0.01299	WHAT IS THE COST OF THE STATE SITE INCLUDING IMPROVEMENTS?

Table 1 (continued QUESTIONS RANKED BY SIMILARITY INDEX: ALL USES COMBINED
ALL LEVELS COMBINED

FILE	QUESTION	RANK	SIMILARITY X	QUESTION TEXT
17	7	316.0	.027	WHAT IS THE NUMBER OF BUILDINGS ON THE STATE SITE?
17	10	317.0	.015	WHAT ARE THE COSTS AND VALUES OF EACH BUILDING ON THE STATE SITE?
17	12	318.0	.007	WHAT ARE THE ROOM CHARACTERISTICS WITHIN EACH BUILDING ON THE STATE SITE?
17	6	319.0	.000	WHAT IS THE AREA OF THE STATE SITE?
17	4	320.0		WHEN WAS THE STATE SITE ACQUIRED?
17	18	321.0		WHAT ARE THE CHARACTERISTICS OF OTHER EQUIPMENT REQUIRED FOR VOCATIONAL EDUCATION AT THE STATE LEVEL?
17	11	322.0	.000	HOW MUCH OF THE AREA OF EACH BUILDING IS USED FOR CIRCULATION AREAS IN AND BETWEEN BUILDINGS?
17	17	323.0	.000	WHAT ARE THE CHARACTERISTICS OF THE SMALL TOOLS AND SMALL EQUIPMENT USED IN VOCATIONAL EDUCATION AT THE STATE SITE?

of a given question may vary across the topical areas represented by the file organization

Because files represent topical organization of questions they provide a convenient means of summarizing and interpreting the priority rankings. For each of the twenty-eight (28) priority rankings, the following statistics are computed: (1) the mean rank of questions within each file; (2) the minimum rank and the maximum rank for questions within each file; (3) the range of the ranks within each file (4) the rank order of the files ranked according to the mean rank of each file; and (5) the Kruskal-Wallis H statistic which is used to test the hypothesis that the files differ according to mean importance of questions. These statistics for Table 1 (Vol. V) are presented in Table 2.

Examination of Table 2 indicates that questions pertaining to vocational curriculum and instructional characteristics (File 1) are the most needed and questions pertaining to the state educational agency vocational property characteristics (File 17) the least needed. Following in order of need are questions dealing with local school characteristics (File 9), characteristics of the vocational completer/early leaver (File 6), characteristics of the vocational student (File 5), vocational education characteristics of the state education agency (File 12) and vocational curriculum expenditures by subject (File 4). The relative importance of files can be determined by comparing the mean ranks for each file. For example, the mean rank of File 9 is more than twice the mean rank of File 1, whereas the mean rank of File 6 slightly exceeds that of File 9. The value of the range is indicative of the spread of the priority ranks of the questions within each file. A significant H-statistic indicates that the files can not be regarded as of equal importance.

Table [illegible]nalysis of Table [illegible] (Var. V)

File	Mean Rank	Rank by Mean Rank	Minimum Rank	Maximum Rank	Range
1	[illegible]	1	1	155	154
2	[illegible]	7	9	300	291
3	[illegible]	11	20	295	275
4	[illegible]	6	24	266	242
5	[illegible]	4	22	269	247
6	[illegible]	3	10	209	199
7	[illegible]	8	49	261	212
8	[illegible]	14	102	303	201
9	[illegible]	2	11	242	231
10	153.[illegible]	9	31	275	244
11	165.[illegible]	10	52	296	244
12	123.7	5	28	289	261
13	136.8	12	89	302	213
14	245.7	16	210	313	103
15	194.4	13	108	287	179
16	267.6	17	216	304	88
17	311.9	18	291	323	32
18	224.[illegible]	15	171	305	134

H = 181.25*

*Significant beyond .0001 level.

Similar analyses were performed for each of the remaining twenty-seven (27) tables in Volume V. In all cases, the H statistic was highly significant indicating that the files differ according to average priority ranking.

The rank order of the files for each of the twenty-eight (28) tables in Volume V is presented in Table 3.

As indicated by the values in Table 3, the importance of the files generally varies considerably depending upon level and use. File 1 for example is ranked first for planning use at the local level and ninth in order of need for financial budgeting use at the state level. An exception is File 17 which maintains a near-bottom position across all combinations of level and use.

Table 3 is divided into a number of grids to facilitate analysis and interpretation. Columns 11 - 16 represent national uses, 17 - 22 state uses and 23 - 28 local uses. Rows 1 - 4 represent files dealing with curriculum characteristics, rows 5 - 6 student characteristics, 7 - 11 local school/educational agency characteristics and 12 - 13 state characteristics. Thus, the intersection of these rows and columns can be used to analyze the importance placed by national, state and local level users on information regarding curriculum, student, school/LEA, and state characteristics.

This analysis is presented in Table 4 where the entries are the means of the ranks for the designated rows and columns of Table 3. For example, the mean of the ranks in the intersection of rows 5-6 and columns 11-16 of Table 3 (4, 3, 15, 2, 4, 1, 12, 1, 17, 3, 1) is 5.3.

The data in Table 4 indicate that the locals have a greater need for curriculum information as judged by the lower mean ranks than either

Table 3. Rankings of Files by Mean Rank of Similarity Indices of Questions Within Files

FILE NUMBER	Overall Uses & Levels	USES OVERALL						LEVELS OVERALL			USES NATIONAL LEVEL						USES STATE LEVEL						USES LOCAL LEVEL					
	*	Planning	Operations	Evaluation	Finance & Budgeting	Reporting Requirements	Public Information	National Level	State Level	Local Level	Planning	Operations	Evaluation	Finance & Budgeting	Reporting Requirements	Public Information	Planning	Operations	Evaluation	Finance & Budgeting	Reporting Requirements	Public Information	Planning	Operations	Evaluation	Finance & Budgeting	Reporting Requirements	Public Information
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
		RANKINGS																										
1	1	1	1	2	7	5	2	2	1	[illegible]	[illegible]	[illegible]	2	9	4	2	[illegible]	[illegible]	2	9	10	2	[illegible]	1	2	8	4	1
2	7	10	7	7	4	11	10	10	7	7	11	[illegible]	[illegible]	1	13	8	12	[illegible]	4	4	9	[illegible]	[illegible]	7	8	2	11	9
3	11	12	9	11	3	10	11	11	11	[illegible]	9	[illegible]	14	[illegible]	10	11	[illegible]	[illegible]	[illegible]	5	12	14	[illegible]	9	9	3	9	8
4	6	8	5	10	1	8	12	13	6	[illegible]	[illegible]	[illegible]	16	3	16	16	[illegible]	6	13	2	[illegible]	13	8	[illegible]	[illegible]	1	7	10
5	4	7	3	3	14	1	5	3	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	4	4	[illegible]	[illegible]	[illegible]	13	[illegible]	5	[illegible]	[illegible]	3	11	1	7
6	3	5	15	1	17	4	[illegible]	1	12	3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	18	[illegible]	[illegible]	[illegible]	[illegible]	1	12	2	4
7	8	[illegible]	4	5	[illegible]	6	[illegible]	[illegible]	14	8	[illegible]	[illegible]	[illegible]	7	[illegible]	[illegible]	[illegible]	[illegible]	6	12	7	[illegible]	[illegible]	[illegible]	5	5	6	12
8	14	15	8	13	11	14	[illegible]	13	17	[illegible]	[illegible]	[illegible]	12	6	12	17	[illegible]	[illegible]	14	15	[illegible]	[illegible]	[illegible]	[illegible]	11	7	10	11
9	2	3	2	4	10	3	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	13	[illegible]	[illegible]	[illegible]	[illegible]	3	11	3	[illegible]	[illegible]	2	[illegible]	6	3	2
10	9	9	6	6	9	7	[illegible]	12	10	6	[illegible]	[illegible]	[illegible]	11	[illegible]	12	[illegible]	[illegible]	7	10	6	[illegible]	[illegible]	[illegible]	7	4	5	3
11	10	2	14	9	13	13	[illegible]	9	15	9	[illegible]	[illegible]	7	14	[illegible]	9	[illegible]	[illegible]	12	14	17	7	[illegible]	[illegible]	10	9	8	5
12	5	6	11	8	6	2	[illegible]	4	2	12	6	[illegible]	6	8	[illegible]	3	[illegible]	[illegible]	5	6	2	4	[illegible]	[illegible]	12	10	12	6
13	12	11	12	12	5	12	9	8	[illegible]	13	[illegible]	[illegible]	8	5	[illegible]	6	[illegible]	[illegible]	9	3	8	[illegible]	[illegible]	13	14	14	14	14
14	16	16	17	16	12	15	15	14	13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]	15	16	16	16	16
15	13	14	10	17	2	9	13	16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	16	[illegible]	[illegible]	[illegible]	[illegible]	14	15	13	13	13
16	17	17	13	15	15	17	17	17	9	18	[illegible]	[illegible]	[illegible]	[illegible]	17	[illegible]	14	1	11	8	[illegible]	[illegible]	17.5	18	17	17.5	18	18
17	18	18	18	18	18	18	18	18	18	17	[illegible]	18	18	16	18	18	18	[illegible]	18	16	18	[illegible]	17.5	17	18	17.5	17	17
18	15	4	16	14	16	16	8	[illegible]	16	15	3	8	[illegible]	[illegible]	11	5	[illegible]	[illegible]	15	17	16	9	[illegible]	16	13	15	15	15

*These numbers refer to source tables 1-28 which are included Volume V.

Table —. Mean Ranks by Curriculum, Student, School/LEA and State Characteristics

	Columns 11-16 (National)	Columns 17-22 (State)	Columns 23-28 (Local)
Rows 1-4 (Curriculum Characteristics)	8.1	8.0	6.1
Rows 5-6 (Student Characteristics)	5.3	9.3	5.9
Rows 7-11 (Local Characteristics)	9.4	10.7	6.2
Rows 12-18 (State Characteristics)	11.5	9.6	14.8

national or state users. On the other hand, state users expressed less need for data on the characteristics of students than either the national or local users. As might be expected, states expressed the greatest need for information on state characteristics and locals the greatest need for data on local characteristics. In three of the four characteristics (student, local and state), needs expressed by national users were more similar to both state and local needs than were state to local needs.

This finding was further substantiated by intercorrelating the question priority rankings for Tables 8-28, Volume V. Examination of the intercorrelation matrix indicated that national priority rankings correlated more highly with local priority rankings than did state priority rankings with local priority rankings. Furthermore, national priorities tended to be more similar to local priorities than to state priorities.

The intercorrelation matrix of uses was cluster analyzed separately for each level to test the hypothesis that uses cluster into groupings that were more similar within than between. The cluster analysis was accomplished by computing and utilizing β-coefficients. Application of the clustering procedure produced the following clusters of uses for each level:

National level

Cluster I	Planning, Evaluation, Reporting Requirements and Public Information
Cluster II	Operations
Cluster III	Finance and Budgeting

State level

Cluster I Planning, Operations, Finance and Budgeting, and Reporting Requirements

Cluster II Evaluation and Public Information

Local level

Cluster I Planning, Operations, Evaluation, Finance and Budgeting, Reporting Requirements, Public Information

Principal axis factor analysis and Varimax rotation of the inter-correlation matrix extracted three factors. The major factors were identified as a local orientation, a state orientation and a national orientation. The local orientation factor tended to load heavily on local data needs and national needs which tended to support the hypothesis of similarity between local and national priorities. The state orientation factor loaded heavily on state data needs, moderately on national data and slightly on local data needs. The national orientation loaded heavily on national data needs and moderately on state and local data needs.

These findings indicate that (1) local needs are more congruent with a national orientation than a state orientation, (2) state data needs are more congruent with a national orientation than a local orientation, and (3) national data needs are more congruent with a local than a state orientation.

INTERPRETATION OF RESULTS

The assessment of the informational needs of national, state and local users indicates a distinct demand for data descriptive of the vocational education enterprise at the "grass roots" level. The demand is most pronounced for data dealing with the characteristics of vocational instruction and curriculum, the characteristics of vocational students, the characteristics of vocational completers/early leavers and the characteristics of the local school. This suggests that users of vocational education data are in general most interested in knowing "who" is being served, "what" they are being served, and "what happens" as a result of their being served.

Informational needs, however, are not to be interpreted as necessarily congruent across all levels of users and uses. One of the major findings of this study is the greater similarity of national to local informational needs than of state to local informational needs. This finding contravenes the commonly accepted belief that state needs are more congruent with local needs than are national needs. Rather than a linear ordering with state needs being closer to local needs and national needs more removed, the results suggest a triangular constellation with national needs more congruent with both local and state needs, and local and state needs being more disparate.

The results of the cluster analysis reveal a distinctive pattern of needs across the three user levels. The national need for information for planning, evaluation, reporting requirements and public information as separate from the need for information for operations and for finance reflects a need for information for accountability purposes that is

distinct from the need for information for operations and for financial reporting. State need for information for planning, operation, finance and budgeting and reporting and for evaluation and public information reflects a need for information for internal administrative purposes that differs in order of priority from their need for information for use in evaluation and public information. Local needs appear to be relatively consistent across all use categories.

The results of the factor analysis of the association between need prioritizations indicate that local needs for information reflect a strong local orientation. The fact that local operations has the highest loading suggests that local need for information is most highly motivated by the exigencies associated with the actual delivery of vocational education services. The lower loadings on public information usage supports the contention that information at the local level is needed more to support the delivery of educational services than for local public relations purposes. Local needs for information generally have relatively low state orientation. Interestingly enough, local information needs have a greater national than state orientation. A possible explanation is that a concern for the educational experience and the impact of that experience on the individual is a central theme of both national and local orientations.

State orientation, in constrast, tends to focus more on the administration function. State level demand for information for financial and budgetary purposes and for reporting requirements reflects a demand for information needed to fulfill the administrative function performed by state education agencies. Information needs for state level planning and operation has both a state and a national orientation which

suggests that state needs in these areas share a common demominator with national needs. State need for information for evaluation purposes has a larger local and national than state orientation. This may be explained by the fact that evaluation is concerned more with the programmatic delivery of education services than with financial considerations. The argument that the state orientation has a large financial component is supported by the fact that local finance has the largest loading of any of the local uses on state orientation and that national finance has the largest loading of any of the national uses on state orientation.

The national orientation is most directly characterized by the need for information for public relations and for evaluation and least characterized by the need for financial information. This finding suggests that the pressure toward accountability at the national level is more a concern for the process, the product and the impact of vocational education than with its costs per se.

IMPLICATIONS

Development of a National Data System

The EDNEED project provided information having implications for the development of a national vocational education data reporting and accounting system. An initial task in the development of a national data system is the selection of the constituent information elements. A logical approach to the selection of information elements is to select those elements that answer the most important questions as determined by an empirical assessment of the informational needs of the major users.

The selection of the core questions can be approached as a problem in benefit-cost analysis. What is required is a set of questions that result in maximum benefit (utility) to users of the data at minimum costs to producers of the data. Importance of the question as determined by the raters can be considered an indication of the utility of the question for user groups. Thus, the similarity index can be regarded as a measure of the utility of the question across user groups.

The final determination of importance of questions depends upon the relative weights assigned to levels and uses. As was done in this study, equal weights can be assigned to all levels and uses. The problem of combining levels and uses into a single importance (utility) measure, however, still remains. Questions can be prioritized according to the average of the similarity index over all uses and levels (Table 1), the average over levels for separate uses (Tables 2 through 7, Volume V), the average over uses for each level (Tables 8 through 10, Volume V), or the similarity index computed separately for each use at each level (Tables 11 through 28, Volume V).

An argument could be made that a national vocational education data system should serve the needs of a national constituency. National needs as shown by the results of this study are associated with both state and local needs. Since national needs are more closely associated with both state and local needs than are state needs with local needs, the national level could be regarded as the most representative needs level. If this premise were acceptable, only the needs of the national level need be considered in priority determination and the remaining problem to be resolved would be the determination of the weights to be assigned to the uses. One alternative would be to weight the uses equally and to prioritize the questions according to average similarity index across uses (Table 8, Volume V). Another alternative would be to weight the uses unequally. Weights might be assigned to each use by an application of Edwards' Multi-Attribute Utilities approach as described in Appendix B, Volume V. A simplification could be achieved by taking advantage of the fact that national uses tend to group into three clusters: (planning, evaluating, reporting requirements and public information), (operations) and (finance). Instead of applying the Multi-Attribute Utilities approach separately for each use, the technique could be applied to each cluster of uses.

Prioritization of questions according to importance can be easily expanded to handle constraints regarding the content mixture of questions. Suppose, for example, that the information system were required to provide information on students, programs, program completers and leavers, staff, facilities and expenditures. Questions pertaining to each of these areas could be prioritized separately for each content area. Since the comparative weighting of the uses may differ according to content area,

weighting for uses may have to be established separately for each content area. This could be readily accomplished by an application of the Multi-Attribute Utilities approach for each content area; e.g., student, program, etc.

Given that questions have been prioritized according to a suitably determined measure of utility, final selection depends upon consideration of the cost of collection. Ideally, an estimate of the collection costs required to answer each question is required. Unfortunately, such information is not generally available. Therefore, in order to apply benefit-cost procedures it is necessary to develop a surrogate cost measure.

One such measure is the number of states that currently collect the information needed to answer a particular question. The rationale for this measure is that the more states that have the capability to answer a question, the less the cost required to ensure that all states have the developed capability to collect information necessary to answer the question. Assessment of the current capacity of the states to answer the questions prioritized in this study will be reported in a subsequent study.

Given separate measures of utility and cost for each question, several options for the selection of questions are available. One such approach is to establish a cut-off point on the numbers of states currently able to answer the question as well as a minimum acceptable utility score. Questions are selected if their cost measure (number of states currently able to answer question) and utility measure (weighted similarity index) exceed the established cut-off scores. Number and content of questions selected by this scheme obviously depend upon the

scores. If desired, content can be controlled by first sorting the questions by content areas; e.g., students, programs, program completers and leavers, etc., and then selecting questions within each content area. Number of questions selected can be controlled by raising or lowering the cut-off until the desired numbers are selected.

Given that elements are prioritized within questions, similar cut-off points can be defined for elements, and those elements selected for which cost and utility measures are acceptable. Derivation of such cost estimates as to number of state agencies currently collecting particular elements, and the extent to which important questions are presently answerable, is the subject of an on-going research study (EDNEED II).

Once elements are identified, a next step is the design of a national information system in the development of a documented set of informational element specifications. These specifications would delimit each informational element according to such factors as: (1) title, (2) definition, (3) collection method, (4) level of aggregation, and (5) collection frequency. By so delineating each information element, a blueprint for the content of nationally uniform vocational education system could be produced and used to guide subsequent system development and implementation.

Needs Assessment Methodology

The EDNEED study has designed, developed, and demonstrated an application of needs assessment methodology to the determination of information needs. The methodology is readily transferable for use by state and local education agencies. The Classification document in its

entirety or portions thereof can serve as an assessment instrument for local or state use. The questions are a synthesis of the major needs for information as expressed by a broad sampling of constituency groups. As such, these questions are likely to encompass the majority of those asked of vocational education at state and local levels. Comments regarding suggested changes and improvements contained in Volume IV are a rich source of information for those wishing to apply the methodology at state and local levels.

Design of vocational education information systems to meet the documented needs for information of a prescribed constituency is a reasoned means of protecting against the tendency for haphazard growth that plagues many agency information systems. Additions of informational capability in response to assessed need of a defined service clientele is more cost effective than patchwork additions in an attempt to be responsive to infrequent and unique demands from influential sources.

The assessment methodology can readily be modified to include ratings of frequency as well as importance. Together, they would provide a measure of the incidence and severity (criticality) of the demand for information. Those demands that are both frequent and critical would provide the most defensible rationale for additions to information system capability. Conversely, infrequent demand for relatively unimportant information would seem to be sound justification for deletion of information thus mitigating the common tendency to retain elements regardless of use history.

Benefits

Project EDNEED I has provided an empirical basis for prioritization of the important questions in vocational education according to use and level of user. Needed data has been justified by users, not only in terms of whether or not it is needed, but also why it is needed, i.e., what use will be made of it.

The project has also provided a national forum for the discussion of critical issues related to production, storage, retrieval and use of vocational education data. Through the EDNEED conferences, a continuing dialogue has been established between data users and data producers which can only result in better understanding on both sides.

Perhaps the most critical of the issues identified and discussed was the necessity for the development of uniform definitions to support a national vocational education data system. The EDNEED Lexicon provides a step toward the solution of this problem of a lack of standardization of data across states.

A listing of data needs by level (national, state and local) and by use (planning, operations, evaluation, budgeting and finance, reporting requirements and public information) has been developed which can reduce redundancy in reporting, save organizational time in the dissemination process and result in more meaningful reports to information users. The listing will also allow for an internal comparison in an agency between the information presently being collected or produced and the information needs of user groups. Such a listing could be of benefit in helping to formulate agency information policy.

A logical next step in the development of a national vocational education information system would be the production of a documented set

of data specifications based on the information requirements of various user groups. Associated costs for each requirement by priority could be developed based on comparisons of needed data with those presently being collected.

Future Research

As is usual with research, the results of Project EDNEED raised more questions than they answered. Additional research is needed to:

1. Verify if national needs are more similar to local needs than are state needs; and, if replicated, to determine possible explanatory factors.
2. Determine why national and local level users appear to place more relative importance on characteristics of vocational students and the characteristics of completers and early leavers than do state level users.
3. Verify and account for, if replicated, the fact that national uses cluster into three clusters consisting of planning, evaluating, reporting requirements, and public information in Cluster I, operations in Cluster II, and finance in Cluster III.
4. Verify and account for, if replicated, the fact that state uses cluster into two clusters consisting of planning, operations, finance and reporting requirements in Cluster I and evaluation and public information in Cluster II.
5. Verify and account for, if replicated, the fact that local prioritizations are so internally consistent that all local needs cluster into one group.

6. Verify that the prioritization for state operational needs has almost no association with any local prioritizations, and, if replicated, determine possible explanatory factors.
7. Verify the factor structure, and, if replicated, to explain further (a) why local operations is most highly loaded on the local orientation factor, state finance is most highly loaded on the state orientation factor and public information is the most highly loaded national use on the national orientation factor; (b) finance was the highest loading within local, state and national uses on the state orientation factor; (c) public relations has the highest loading within local, state and national uses on the national orientation factor; and (d) operations has the highest loadings within the local and national but not state uses on the local orientation factor.

Much of the funded research effort to date with respect to management information systems has focused on their design, development, field testing and implementation with relatively little attention paid to what information is needed by what users for what purpose. The assumption appears to have been that the developed capacity to collect, store and retrieve information will ipso facto improve the quality of vocational education programs, services and activities. It is hoped that the present study will contribute to an increased likelihood that further development will be based on an assessment of user need and that user oriented information will increase the capability of management information systems to contribute to the improvement of vocational education at all levels.

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APPENDIX

SOURCE LIST

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