DOCUMENT RESUME

ED 137 526 08 CE 010 383

AUTHOR Lawrence, John E. S.
TITLE Data Availability in Vocational Education. Final Report. Volume I. Comparisons of Collected with Needed Information.
INSTITUTION North Carolina State Univ., Raleigh. Center for Occupational Education.
SPONS AGENCY Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C.
BUREAU NO 498-AH-50165
PUB DATE 76
GRANT G00-75-00319
NOTE 181p.; For related documents see CE 010 383-386

EDRS PRICE MF-$0.83 HC-$10.03 Plus Postage.
DESCRIPTORS Comparative Analysis; Data Analysis; Data Bases; *Data Collection; *Information Needs; *Information Utilization; National Surveys; Needs Assessment; Program Descriptions; Research Projects; *State Agencies; *Vocational Education
IDENTIFIERS *Project EDNEED II; United States

ABSTRACT

Project EDNEED II (Empirical Determination of Nationally Essential Educational Data), conducted from July 1975 to September 1976, was designed to document the extent to which data currently collected by State vocational education agencies could be used to answer prioritized Project EDNEED I questions. (Project EDNEED I identified and prioritized vocational education informational needs of users at the national, State, local levels.) The first phase of EDNEED II focused on the gathering and cataloging of all State vocational education agency data collection forms. Each item of information on a data collection form was classified in relation to the most appropriate Project EDNEED question(s). In the second phase, field visits were made to 10 States to gather more information on alternative approaches to answering the top priority EDNEED I questions. The field visits provided information on the problems that would be encountered in collecting the necessary data and aggregating them to the appropriate levels. In this first of a four-volume final report of Project EDNEED II, the informational needs identified in EDNEED I are discussed in relation to the data currently available at the State level as indicated by State agency data collection forms. The procedures used to derive and organize the vocational education data base are described, and an exemplary core of questions and data elements is presented which represents information that is both highly needed and widely collected. A procedure for empirically selecting alternative sets of questions is also described in detail. (SH)

DATA AVAILABILITY IN VOCATIONAL EDUCATION

Volume I Comparisons of Collected with Needed Information

John E. S. Lawrence

FINAL REPORT VOLUME I

Project No. 498 AH 50165

"An Assessment of Current Methods of Fulfilling Empirically Determined Educational Information Needs"

Grant No. GOO 75 00319

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

The research reported herein was performed pursuant to a grant from the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

D. S. Katz
John E. S. Lawrence

Project Co-Directors

CENTER FOR OCCUPATIONAL EDUCATION
North Carolina State University
Post Office Box 5096
Raleigh, North Carolina 27607

1976

THE CENTER

John K. Coster, Director

The Center for Occupational Education at North Carolina State University at Raleigh is a research and development center established in 1965 under the provisions of the Vocational Education Act of 1963. The Center has been established as an integral unit within the School of Education at North Carolina State University, and its major programs have been supported by contracts and grants with the National Institute of Education and the U. S. Office of Education. The Center has as its mission the provision—through research, development, and related activities—of a continuing contribution to the improvement of occupational education. The major research and development programs of the Center focus on the relationship of occupational education to its context or environment. The frame of reference for occupational education includes its relationship to regional economy, politics, and the employment or work environment. In addition the Center has a capability for flexible action within its overall mission through activities negotiated on a project-by-project basis with contracting agencies.

THE EDNEED SERIES IN VOCATIONAL EDUCATION

The EDNEED (Empirical Determination of Nationally Essential Educational Data) Series published by the Center for Occupational Education, North Carolina State University consists of a five volume final report entitled **Data Needs in Vocational Education** and a four volume final report entitled **Data Availability in Vocational Education.** The former is a product of Project EDNEED I, G. William Porter, Project Director; the latter is a product of EDNEED II, co-directed by Douglas Katz and John E. S. Lawrence. Both EDNEED projects were funded by the U. S. Office of Education, Bureau of Occupational and Adult Education, under Part C Grants.

ADDITIONAL INFORMATION

For additional information regarding the program of the Center, please write to:

Dr. John K. Coster, Director
Center for Occupational Education
North Carolina State University at Raleigh
P. O. Box 5096
Raleigh, North Carolina 27607

ACKNOWLEDGEMENTS

The first phase of Project EDNEED II has been entirely dependent on the time and effort expended by the states and territories in their excellent (98.2%) response to the forms survey. Grateful appreciation is extended to all staff personnel in vocational education agencies throughout the states and territories who patiently responded to the initial survey and to subsequent follow-up and verification procedures. The project also gratefully acknowledges the assistance of Mr. Harold Duis of the U. S. Office of Education, Mr. William Nightwine, formerly of Project Baseline, and the Committee on Evaluation and Information Systems (CEIS) of the Council of Chief State School Officers in supplying material used in the study.

Numerous professional vocational educators, consultants and technical MIS personnel have helped with discussion, advice and critical appraisal during the span of this project. Particular mention, however, should be made of the expertise and counsel of Dr. Donald Drewes and Dr. Joseph Nerden of Conserva, Inc. The assistance throughout the project of Mr. Jack Wilson, Project Monitor, is especially appreciated.

Finally, grateful acknowledgement is extended to the former Project Director, Dr. Robert Morgan, and to the entire staff of the Center for Occupational Education for their commitment to the successful completion of the project.

D. S. Katz
John E. S. Lawrence

Project Co-Directors

PROJECT SUMMARY

Project EDNEED was conceived as an important first step toward the development of a basic information system for vocational education. Project EDNEED I (July, 1974 - December, 1975) focused on the identification and prioritization of the vocational education informational needs of users at the national, state and local levels. One product of that effort was a prioritized listing of data questions concerning vocational education which reflected the informational needs at all three levels. Those prioritized questions served as a primary input to the present study.

Project EDNEED II (July, 1975 - September, 1976) was designed to document the extent to which data currently collected by state vocational education agencies could be used to answer the prioritized Project EDNEED I questions. Two approaches were used to achieve this goal. The first phase focused on the gathering and cataloguing of all state vocational education agency data collection forms. Each item of information on a data collection form was classified in relation to the most appropriate Project EDNEED question(s). Subsequent analyses revealed the extent to which the available data corresponded to the informational needs of user groups at the national, state and local levels.

In the second phase of Project EDNEED II, field visits were made to ten states to gather more information on alternative approaches to answering the top-priority Project EDNEED I questions. Preliminary analyses of the states' data collection forms had raised numerous questions concerning the accessibility of the data being collected.

The field visits provided information on the problems that would be encountered in collecting the necessary data and aggregating them to the appropriate levels.

The results of Project EDNEED II are presented in four volumes. In Volume I the informational needs identified in Project EDNEED I are discussed in relation to the data currently available at the state level as indicated by state agency data collection forms. The procedures used to derive and organize the vocational education Data Base are described, and an exemplary core of questions and data elements is presented which represents information that is both highly needed and widely collected. A procedure for empirically selecting alternative sets of questions is also described in detail.

The Data Base that was developed is presented in its entirety in Volume II. Each EDNEED question and corresponding data elements are indexed in terms of relative need and current availability. The index of need reflects the combined ratings of federal, state and local data user groups, with each level receiving equal importance weightings in the analyses.

The state agency data collection forms that were coded and analyzed during the course of the project are listed in Volume III. Each form is categorized by its major subject areas, and a cross-index is included to enable the reader to locate the various states' forms according to content. In addition to documenting all the forms that were included in the Project EDNEED II analyses, Volume III is intended to assist state agencies in locating data collection instruments that might facilitate their own development of forms.

Volume IV presents the results of the field visits to ten states and focuses on the procedures those states would use to answer the 50 highest priority EDNEED questions. Alternative approaches to answering each question are presented, and problems relating to data aggregation, format and data element definitions are discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Summary of Phase I, Project EDNEED II

This is the first of four volumes that together constitute the final report of Project EDNEED II.* In recognition of the importance of accurate and timely information to every aspect of the vocational education enterprise, Project EDNEED II has documented the extent to which today's information needs are being met in the states and territories. Designed as a logical extension of Project EDNEED I, this study incorporates both the Classification Document and the similarity indices from Project EDNEED I into its methodology.

The initial phase of Project EDNEED II, reported in Volumes I, II and III of the Project EDNEED II Final Report, consisted of gathering and cataloguing vocational education information currently available at the state level, comparing information so obtained with constituency needs for information identified in Project EDNEED I (Vol. V, Drewes, Gabriel and Lawrence, 1976), and developing a data base that reflects the extent to which each unit of information is both needed and presently collected. Current vocational education data collection forms were gathered from all 50 states and five of the U. S. territories and analyzed, and the information was systematically compared with overall, national, state and local needs for information identified in Project EDNEED I. A vocational Data Base was constructed as a result

*EDNEED II - An Assessment of Current Methods of Fulfilling Empirically Determined Educational Information Needs. USOE Project #498 AH 50165.

of the comparison between needed and collected information in the form of the Project EDNEED I classification scheme of questions and data elements in Vol. II of the EDNEED I Final Report (Drewes, Nerden and Porter, 1976). Each question and element unit in the Data Base carries two indices--one representing the need for that piece of information, and the other the proportion of state vocational education agencies presently collecting the information. Questions, and elements within questions, are ranked in order of overall need, permitting rapid determination of the degree of need for a particular type of data and the extent to which it is currently being collected. Finally, the necessity was acknowledged for extracting an essential "core" of questions and elements from the larger Data Base, and alternative criteria for its selection were discussed. The emphasis of this report is on the utility of the Data Base in facilitating the selection of "cores" according to appropriate criteria, rather than on the content of one particular set of data. An exemplary "core" of questions and elements, however, was derived representing that information which is most highly needed over all constituencies and most widely collected at the present time in state vocational education agencies (SVEAs). The purpose of this high need/wide collection criterion was to reflect a balance between need and feasibility.

The Data Base is presented in its entirety in Volume II of this report (Lawrence, Childers and Gabriel, 1976). Volume I details the method and procedures by which data currently collected by SVEAs were catalogued, coded and compared with Project EDNEED I need estimates, and presents the results of the comparison. Volume I also describes

in detail the construction of the Data Base, its utility for decision-makers at all levels, and the derivation of an exemplary "core" of essential information from the Data Base. The "core" of questions and information elements is presented at the conclusion of this report.

The major findings of this study are as follows:

- Of 215 local-level questions prioritized as needed by at lease one agency in Project EDNEED I, 209 (97%) are being answered with at least one information element by at least one SVEA. These questions comprise the Data Base in Volume II.
- Of the 1434 local-level information elements prioritized as needed by at least one agency in Project EDNEED I, 1065 (75%) are being collected by at least one SVEA. These elements are included in the Data Base in Volume II.
- Six questions and 369 elements were prioritized as needed by at least one agency in Project EDNEED I, but are not currently answered or collected, respectively, by SVEAs.
- Fourteen of the 215 questions (6.5%) were below the median need (i.e., not highly needed) but are currently answered by a majority of SVEAs.
- Another 42 of the 215 questions (19.5%) were both highly needed (i.e., above the median need) and widely answered (i.e., by a majority of SVEAs).
- A further 66 questions (30.7%) were highly needed but not widely answered.
- The remaining 93 of the 215 questions (43.3%) were neither highly needed nor widely answered.
- Only 59 of the total 1065 elements are collected by a majority of SVEAs.
- Seventy-nine of the 215 questions and 307 information elements within those questions had both need and collection indices above the respective median values, forming an exemplary core of information presented in Volume I of this report.
- A statistically significant, though low positive, correlation was observed between overall information needs (collapsed across national, state and local levels) and information currently collected by SVEAs.

- Statistically significant, though low positive, correlations were observed between information needed at each level and information currently collected by SVEAs.
- The tendency is for information currently collected by SVEAs to be matched more closely with overall information needs than with national, state or local information needs.
- Information currently collected by SVEAs tends to match more closely the information needs at the state level than at either the national or local level.
- The only type of information for which there is an absence at any level of systematic relationships between needed and collected data is the follow-up of individual students.
- With regard to national-level needs for information, there is no relationship between needed and collected data in the areas of curriculum expenditures by object, follow-up, and local education agency characteristics.
- With regard to state-level needs for information, there is no need/collect relationship in the areas of follow-up and local education agency property characteristics.
- With regard to local-level needs for information, there is no need/collect relationship in the areas of student characteristics, follow-up, or staff characteristics.
- There is a marked absence of any significant negative correlations in the need/collect profiles generated by this study, implying that, in general, unnecessary information is unlikely to be routinely collected by SVEAs, and that important information is not likely to be disregarded by SVEAs.

Purpose

The purpose of the first phase of Project EDNEED II was to document the degree to which needed information is currently available and to identify which data are currently both needed and collected in vocational education. The project objectives were:

1. To obtain a complete set of vocational education forms from all 56 SVEAs.
2. To classify these forms by SVEA and content area.

3. To match the data from SVEA forms with information prioritized in Project EDNEED I and to report the results of this match.

4. To compile a Data Base consisting of information both needed and collected.

5. To illustrate how an essential "core" of data questions and elements can be extracted from the Data Base in (4) above.

Underlying the design of this phase of Project EDNEED II has been an awareness of the necessity to reduce the uncertainty surrounding management decisions in vocational education. Uncertainty as a factor in policy determination has often been identified, notably by Friend and Jessop (1969), and the concept was formally incorporated into a vocational education planning model by Lawrence and Dane (1974). Information is the key to the reduction of uncertainty, and the efficient management of information is, therefore, of vital concern to decision-makers. A major part of management information technology is the correct identification of, and concentration upon, the essential information elements of greatest utility to the user.

The EDNEED studies (Projects EDNEED I and II) exemplify a quantitative methodological approach toward the determination of essential data in vocational education. Project EDNEED I broke significant ground in providing detailed empirical data on information needs; but estimates of need alone, while invaluable, are practically translatable only in light of information presently being collected. By far the majority of SVEAs are now operating at least partially automated management information systems (MIS). The selection of any future "core" of standard data elements nationwide must consider the possible additional load on SVEAs and local education agencies (LEAs) as well as the

potential cost. By fusing what is needed with what is collected, Project EDNEED II adds the dimension of feasibility to the identification of an essential "core" of information elements based solely on need. However, an information "core" selected today may be out of tune with tomorrow's needs. Project EDNEED II, therefore, has developed a Data Base from which a number of possible "cores" could be selected according to various criteria. Instead of focusing on the content of one particular core to the exclusion of other possibilities, alternative uses of the Data Base are suggested in this report, and methods are illustrated for selection of an eventual "core" to satisfy future legislative and policy considerations.

Focus on the process rather than the content is intended to maximize the utility of the information Data Base to those responsible for vocational education policy and planning at all levels. While the EDNEED studies have clearly been national in scope, the methods used to determine needs, to prioritize information, to assess what data are available, to match needed with collected information, and to derive a core of vocational education information can be effected at the regional, state or school district levels. Decision-makers and planners at any level should be able to use the methodology outlined in this report to identify their unique units of essential information. The advantage of the national Data Base contained in Volume II, however, is that it permits individual users to compare their need/collect measurements with national estimates.

Individual SVEAs are not referenced by name or otherwise identified anywhere in this report. The focus of this phase of Project EDNEED

II was not on individual similarities or differences between states, nor was its purpose to generate interstate comparisons. Instead, the findings are presented as a nationwide profile of the extent to which needed information is currently collected in SVEAs.

Because of the interdependency of this project with Project EDNEED I, a summary of this earlier study is contained in Appendix A. A broad overview of the method used in collecting and analyzing the data for the first phase of Project EDNEED II is presented in the subsequent section, followed by a detailed technical account of the research design and techniques used. The research techniques are described in detail because they constitute a means by which information input to vocational education agencies can be measured and the utility of specific data units assessed and compared, thereby permitting decisions to be made concerning the essential or non-essential nature of different data questions and data elements. It is anticipated that these techniques will have utility to information system designers and planners at all levels. As procedures for measuring information utility, these techniques or their refinements should have potential application beyond the contractually delimited scope and time dependency of this study.

METHOD

Project EDNEED II sought to examine current information collected by SVEAs to determine how closely that information matched what is needed and to indicate ways in which an essential "core" of information might be extracted from the mass of data both needed and available. The method by which this assessment was achieved was threefold. First, a model of the SVEA information collection process was developed and used to define the types of information considered to be relevant to the study. Secondly, a means of measuring the input was derived so that units of information could be compared with respect to extent of collection by SVEAs. Thirdly, the results of these "collection" measurements were compared with independent estimates of needs for information, the Data Base was constructed, and a potential "core" was derived of essential data both needed and widely collected.

The Model

Because it was not the purpose of this study to make interstate comparisons in information collection procedures, it was necessary to lodge the analysis in the framework of a general model of an SVEA as representative of public agencies responsible for the administration of vocational education in the states and territories. The diversity in organizational structures of SVEAs and the lack of comparative research on SVEA organization made compiling an average "portrait" of the SVEA a difficult task. There was, however, enough of a commonality in structure to permit the use of a workable, though imperfect, generalized concept of "SVEA." Even though Koble and Coker (1973) employed six

separate structural models to characterize SVEAs, they found that 50 percent of existing agencies described themselves as falling into only two of the six models. Furthermore, Koble derived a single general model (p. 7) depicting the line and staff organizational pattern for SVEAs in the United States and territories. The typical SVEA is usually an integral part of the much broader state education agency (SEA), although there are some exceptions. The state director usually reports to the state board through the chief executive officer of the state education department or his assistant. Information processing in the typical SVEA has been characterized as primarily problem-oriented and dependent upon some form of centralized information storage system accessible to management (Lawrence and Dane, 1974). Information entering SVEAs can be classified as formal or informal and as solicited or unsolicited.

Project EDNEED II dealt only with formal information routinely solicited by SVEAs. Formal information routinely solicited by SVEAs was further classified into three different levels, i.e., national, state and local. It is convenient to think of the flow of information in an SVEA as horizontal at the state level and vertical at the national and local levels. Figure 1 diagrams this process and illustrates by a single unbroken arrow the type of information specifically addressed by this study. In the model depicted by Figure 1, formal information sought from the national level might include details of budgeting and fiscal allocations, guidelines, procedures and regulatory interpretations of legislation. The SVEA may routinely seek "horizontal" information from within the state education agency, e.g., policy guidelines

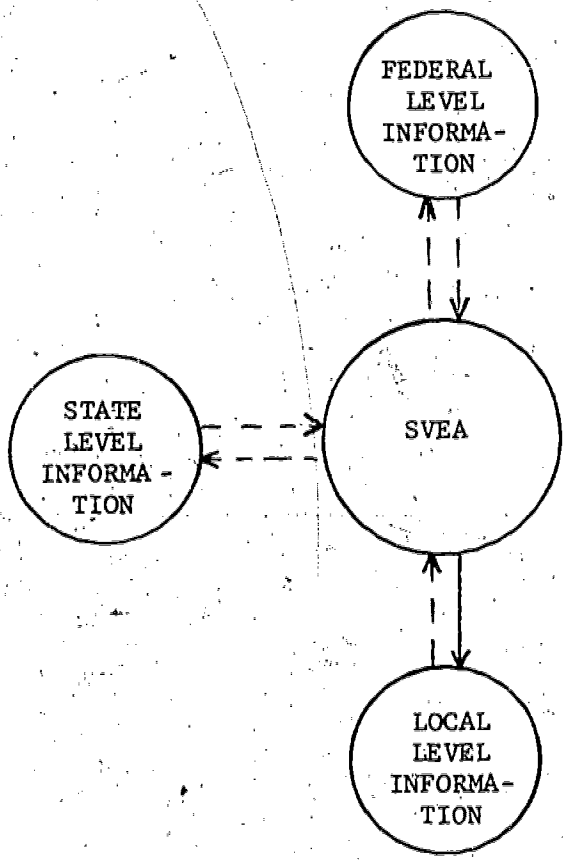


Figure 1. Three Levels of Formal Information Sought and Received by SVEAs

for personnel or fiscal procedures. It may also routinely seek information from other state agencies; for example, from legislative committees, advisory councils, or employment and training offices.

The channel of concern to this study was that by which formal information is routinely sought from the local education agency (LEA) through standardized forms associated with a particular class of data (i.e., enrollment, follow-up, expenditures, staff, facilities or

equipment). This flow of information is illustrated in Figure 1 by the unbroken vertical arrow from the SVEA to the local level. Only formal information regularly and routinely solicited by SVEAs was considered. No attempt was made to examine the content of information returned to the SVEA from the localities. Blank standard forms were considered to be sufficient evidence of information routinely requested from the LEA by the SVEA. It was assumed that if a data item appeared on a current SVEA form, it was "answered" by LEAs, and thus the item could be considered "collected." The emphasis is thus upon the LEA as the initiator of non-aggregate source data descriptive of the delivery of vocational education. The SVEA is seen as the essential link in the chain of information traffic between the national and local levels.

Because the process is dynamic, Project EDNEED II provides but a snapshot, or one frame only, of the continuous information-gathering picture. The study does not claim to be an exhaustive examination of the total information input available to an SVEA. It is felt, however, that the study does provide a rather thorough assessment of the formal information on vocational education that routinely passes up to the SVEA from the grass roots level at a particular point in time.

Measurement of Data Item Collection

Forms current as of July 1, 1975, were obtained from 55 of the 56 SVEAs. A classification scheme for data items was provided by the Project EDNEED I Classification Document (Drewes, Nerden and Porter, 1976). This document previously categorized 2340 data elements under 323 questions for which the elements could provide total or partial

answers. Questions and their corresponding data elements were further classified into 18 files representative of general MIS categories (e.g., curriculum data, student data, staff data). These files were ordered hierarchically, from the curriculum (Files 1 through 4) as the lowest file unit, through student and personnel (Files 5 through 7), to the school and district levels (Files 8 through 11), and finally up to the state level of information (Files 12 through 18). Only local-level files (1 through 11) were used since the study was restricted to information descriptive of the LEA delivery system as contained on standard SVEA forms. For a complete listing of the first 11 files in the Classification Document, with their component questions, see Appendix A, Table 21. Appendix A also contains an example of a complete file (File 4) with its component questions and elements. Individual data items* from the forms were (1) sorted according to the questions to which they could provide an answer and (2) where possible, directly matched with existing data elements associated with those questions. It was thus possible to score the elements in the Classification Document by the number of SVEAs collecting that element. Questions could be similarly scored by the number of SVEAs collecting one or more elements to answer each question. The result is an empirical estimate of the number of questions in the Classification Document capable of being answered by SVEAs and the data elements that can be used to answer them.

*For the sake of consistency, the word element is used to refer to an information element listed in the Classification Document, and the word item for a discrete and specific piece of information called for on a state form. The term unit of information is used throughout this report to refer collectively to both elements and questions.

Because data elements have tangible costs associated with their acquisition and should, therefore, be collected only for a defensible purpose (i.e., to answer a particular question or questions), the question was the central unit of analysis. Elements were not considered apart from the questions they were presumed to answer.

Only those forms on which SVEAs routinely sought information from LEAs were analyzed. The analysis was focused on those items which requested specific information. Narrative reports or other open-ended items were ignored for analysis purposes unless the precise nature of the information content could be inferred from the form and associated instructions. Assuming standardized forms are the chief conduit for basic information flow from the vocational education delivery process to the SVEA, the level of specificity requested by the SVEA defines the extent of information it will eventually possess. Enrollment data by individual students, for example, cannot generally exist at the state level if only aggregated data are routinely requested from LEAs. Specific exceptions to this can occur (e.g., a state may make a special request for non-aggregate data). A study of SVEA forms, however, can provide an overall profile of vocational education information at its source. It was for these reasons, and because SVEAs' routinized forms deal almost exclusively with local data, that Files 12-18 in the Classification Document dealing with "horizontal" state-level information (e.g., on SVEA administrative personnel and SVEA operations) were not used.

Comparison of Needed with Collected Information

The medium for comparison of data from SVEA forms with information already prioritized as needed by Project EDNEED I was the Classification Document. Figure 2 illustrates this matching process. Each

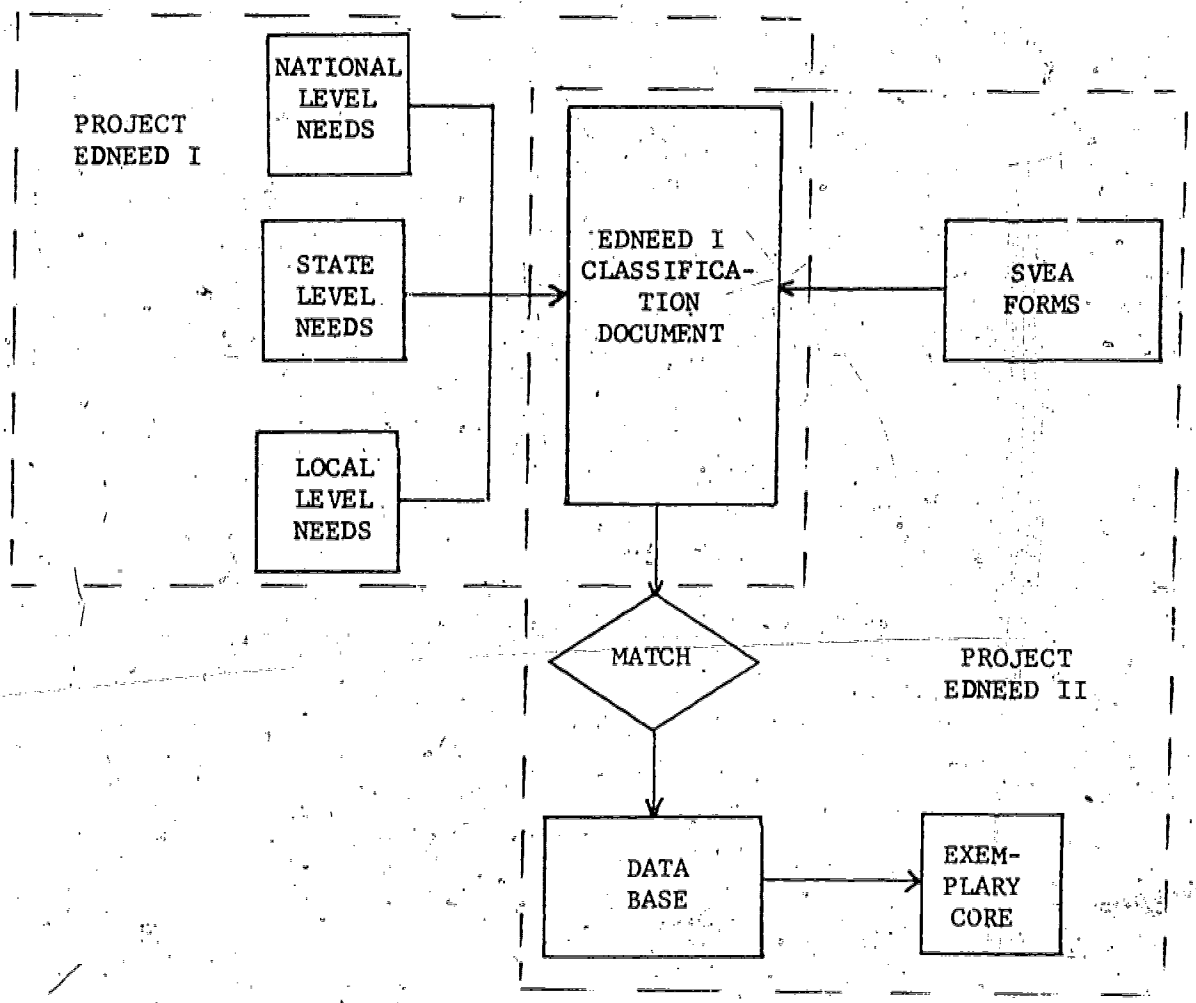


Figure 2. Diagrammatic Relationship Between Projects EDNEED I and EDNEED II and the Classification Document

element in the Classification Document carried a unique priority score from the Project EDNEED I analysis. The priority scores for questions reflected national, state and local needs for information. Items from SVEA forms were matched to the question(s) in the Classification Document the items were judged to be answering and, where possible, to the specific data element that described the data item.

It was thus possible to assess the degree to which all questions in Files 1 through 11 of the Classification Document were being currently answered in SVEAs, and by which specific elements. As a result of the matching process, all units of information in the 11 relevant files carried numerical indices of both need (already assigned in Project EDNEED I) and collection (i.e., the proportion of SVEAs collecting each piece of information). It is convenient to consider this information as being distributed over the five possible categories represented in Figure 3. The left-hand large circle in Figure 3 represents the class of information contained on SVEA forms. The right-hand large

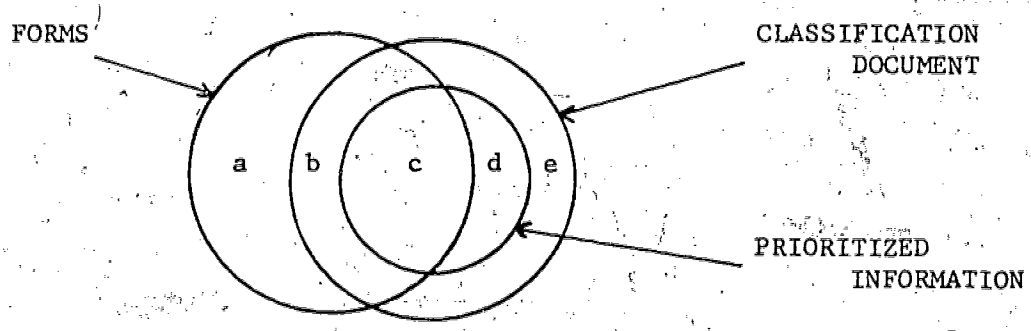


Figure 3. Five Categories into Which Information Can Be Distributed by the Extent to Which It Is Needed and/or Collected

circle represents all the information described in the Classification Document, and the smaller inner circle represents those priority questions in the Classification Document judged to be needed by participating agencies in the Project EDNEED I study. The intersections of these three circles (sets of information) create the following categories of information:

a. Information currently collected on forms by SVEAs but not included in the Classification Document.

b. Information currently collected on forms and matched with the Classification Document but not judged to be needed by Project EDNEED I constituents.

c. Information collected, matched and also judged to be needed.

d. Information judged to be needed in Project EDNEED I but not presently collected by SVEAs.

e. Information included in the Classification Document that is neither judged as needed nor currently collected.

The size of the subsets in the diagram in Figure 3 is not to be equated with their area, as the diagram is used merely to define the categories, not to illustrate comparative size. Subsets (a) and (e) are of least interest to this study. Subset (a) consists of items on SVEA forms not included in the Classification Document, and subset (e) represents information in the Classification Document that is neither needed nor collected. Subsets (c) and (d) are of particular concern since they represent information classified as needed by Project EDNEED I. Subset (b) has significance only in that it contains potentially superfluous information (by our measurements) presently collected in SVEAs. The subset of primary significance for the design of the content for any future MIS at the national level is subset (c). The

information contained in this subset is both needed and collected and, hence, is the most likely candidate for inclusion in any national MIS.

Membership of a particular unit of information in one of these subsets relies upon definitions of "needed" and "collected." This model was used to define two discrete collections of data, both based on subset (c) but both dependent upon different definitions of the two terms "needed" and "collected." The first collection of data is the Project EDNEED II Data Base, included in Volume II. This is a tabulation of the questions and elements in subset (c) where both the "need" and "collect" indices as previously defined were greater than zero. Only questions or elements with either a need or a collect index of zero were excluded from the Data Base, which therefore represents information (1) checked as needed by at least one agency in Project EDNEED I and (2) collected by at least one SVEA. While this is a particularly relaxed definition of the terms "needed" and "collected," the Data Base is nevertheless important for the comparative potential it contains.

An outline of the general format used in the Data Base as presented in Volume II is illustrated in Table 1. Associated with each question are the various need indices and the number of SVEAs currently collecting information on SVEA forms that could be used to answer that question. Below each question are the data elements used to answer that question, the need indices for each element, and the number of SVEAs currently collecting each element. Questions and elements within questions are rank-ordered by overall need index.

Table 1. Outline Format of Questions and Elements in the Data Base

Question Text				
Need Indices				Collection Index
Overall Levels	National Level	State Level	Local Level	(Proportion of SVEAs Collecting One or More Elements)
Need Index Over All Agencies	Number of SVEAs Collecting Element			
				Element Text

Operational definitions of "highly prioritized" and "widely collected" are then used to define the second collection of data, which is an exemplary "core" of questions and elements obtained from the Data Base and of principal relevance to the development of a national information system in vocational education. Procedures for the derivation of both the Data Base and the exemplary "core" will be defined in the following section of this report, as well as the procedures for data collection and analysis and for statistical profiles of the need/collect match.

PROCEDURES

The sequential flow of activities for Phase I of Project EDNEED II diagrammed in Figure 4 was conceptually divided into four subcomponent stages: forms collection, directory development, coding, and analysis and results.

Stage I - Forms Collection

Formal input was defined as each of the forms for collection of vocational education information used in each state. For purposes of our analysis, forms were defined as standardized printed pages for the collection of discrete and clearly identified data items from a specified class of respondents. More specifically, the definition given to all respondents was

> . . . a comprehensive and up-to-date set of all forms regularly and systematically used by [each] SVEA to collect information for state administrative purposes, i.e., planning, operating or evaluating vocational education programs, or for public information or reporting purposes.

Recording updates and revisions in state forms was an essential, though difficult, part of the present study. Because some states were either constantly, or at the time, revising their forms, it was possible only to approximate the concept of currency. July 1, 1975, was the date on which forms were considered "current" for the purposes of this project. Although some of the forms analyzed reflect changes made after that date, efforts were made to ensure that no forms were outdated as of that point in time. It is assumed, therefore, that every form used as input to this study was at least current at the outset of FY 1976.

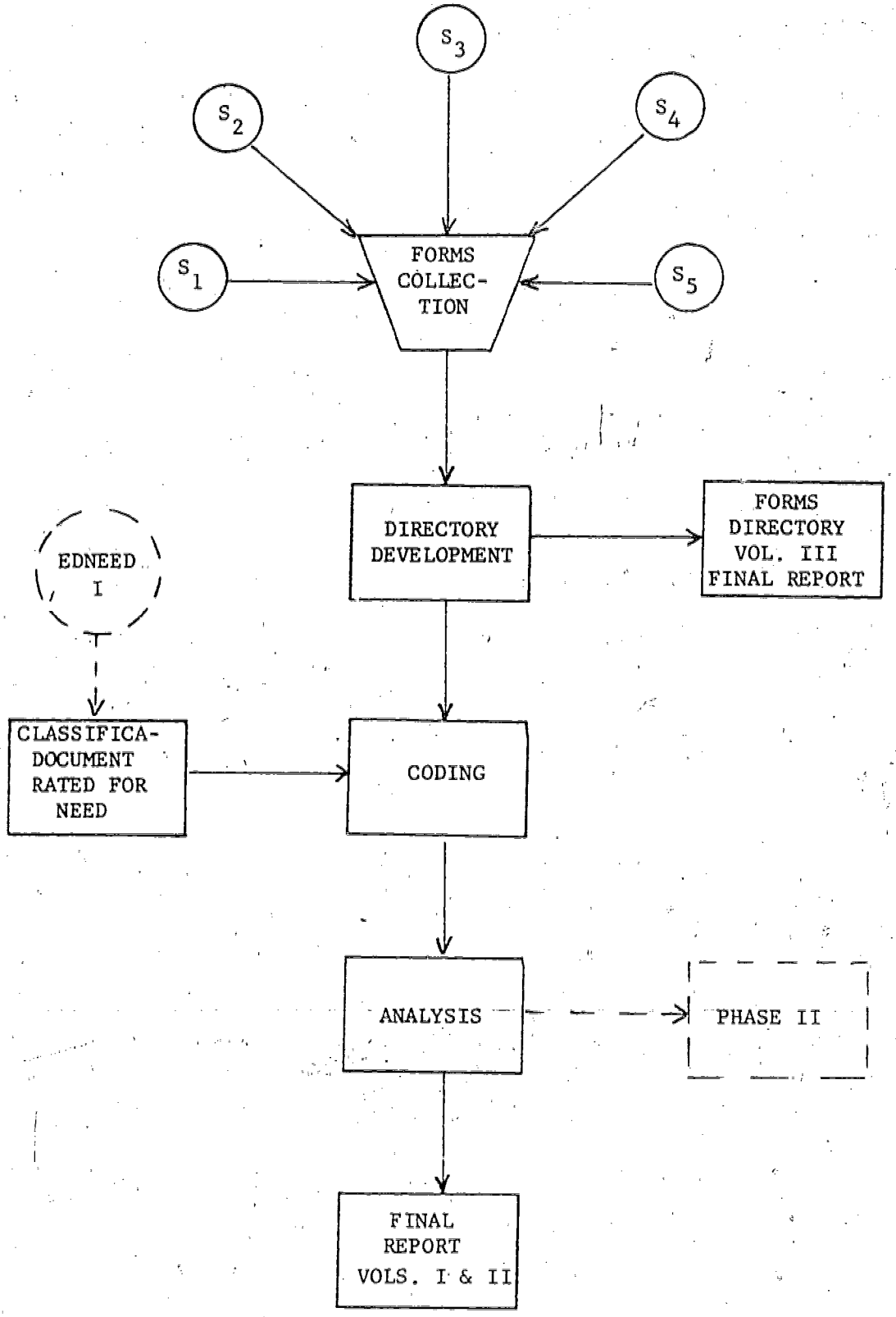


Figure 4. Sequential Flow of Activities, Project EDNEED II, Phase I

Forms were secured from five sources referred to below as Sources 1-5. Sources 1 and 2 were major sources; sources 3-5 were supplementary sources. Sources 1, 2 and 4 involved direct contacts with SVEAs.

Source 1: The Committee on Evaluation and Information Systems (CEIS) of the Council of Chief State School Officers

Initially, as part of the earlier Project EDNEED I (November, 1974, to January, 1975), CEIS representatives in all states and territories were contacted. The request was made for "each of the forms for collection of vocational education information" used by each SVEA or "a comprehensive list of data elements with their definitions" (see Appendix B). Thirty-two states and three territories responded with either forms or a list of data elements. These forms were used in Project EDNEED I in the development of the preliminary taxonomy and also became the basis for Project EDNEED II's empirical determination of data currently collected across the nation.

There were, however, limitations to these data which made it necessary to go to a second data collection effort later in 1975 (Source 2). Firstly, only 35 states and territories responded, leaving 37.5 percent of states and territories unaccounted for. Secondly, most of the forms received through CEIS were secondary level in orientation and lacked adequate coverage of data gathered at postsecondary and adult levels. Finally, in the year which had elapsed between the initial stages of Projects EDNEED I and II, many changes had taken place in various SVEA MIS. Thus, it was decided not only to seek inputs from

non-respondents to the earlier survey, but to resurvey all states and territories via a complementary, and in most cases, different, source.*

Prior to contacting the states again, in view of the repetitive nature of the request following so closely on the similar Project EDNEED I request just described, representative state vocational education administrators from six states in four regions were consulted. Four alternative methods for this second collection task were discussed:

1. For the states which already responded to the Project EDNEED I request (35 of 56), send a photocopy of all forms received back to the states for verification of comprehensive coverage and currency. For the remaining states, repeat the request of state directors rather than of CEIS representatives.

2. Same as (1), except substitute a printed list of form titles and numbers rather than photocopies.

3. Simply repeat the request, but of all state directors in the 56 SVEAs.

4. Give each state a choice of the above alternatives.

As a result of these consultations, and because of the problems of currency, comprehensiveness of coverage and sample size arising from the first survey, a combination of the second and third alternatives was chosen. All states and territories were, therefore, resurveyed de novo.

Source 2: State Directors of Vocational Education

In July, 1975, a request (see Appendix C) was mailed to all 56 directors of vocational education with a subsequent follow-up (see

*CEIS representatives were not always part of the SVEA but were in the state department of education. This time it was decided that all SVEAs should be contacted directly.

Appendix D) of non-respondents in September. The letters reacquainted the directors with Project EDNEED (they had already received a progress report at the Executive Session of State Directors at the 1974 AVA Convention in New Orleans), and requested a comprehensive and up-to-date set of all forms used to transmit information into the SVEA. The need was emphasized for extensive coverage across all levels of the delivery system--secondary, postsecondary and adult. In the case of four states, separate contacts were established with both secondary and postsecondary agencies. The non-respondents remaining after the two requests were contacted by telephone in October. Forms packages from responding SVEAs were supplemented by the other four sources, sent back to the agencies for verification, and subsequently used in the analysis.

Source 3: Reports and Data Program Support Branch, Division of Vocational and Technical Education, U. S. Office of Education

The updated set of 1975 OE vocational education data forms in the 344, 345 and 346 series was obtained from DVTE, and the forms are listed below:

OE Form 345, 7/75	Instructions for Preparing the Financial Status Report: (1 page) Financial Status Report: (8 pages) Supplementary Financial Status Report: (1 page)
OE Form 346-1, 4/74	Descriptive Report of Program Activities for Vocational Education: (1 page)
OE Form 346-2, 7/75	Number of Teachers, Status of Teacher Training, and Local Administrative Staff in Vocational Education: (2 pages with instructions)

OE Form 346-3, 7/75	Enrollments in Vocational Education Programs: (8 pages with instructions)
OE Form 346-4, 7/75	Placement of Program Completions in Vocational Education Programs: (2 pages with instructions)

Source 4: State Agencies

An earlier study by the Center for Occupational Education in FY 1975* had involved prolonged visits to one state in each of the ten federal regions. A considerable amount of valuable information on MIS and some forms were obtained during this project. Any forms or pertinent materials (e.g., instructions, MIS input listings, etc.) gathered as a result of these ten site visits were included in the final forms listing returned to SVEAs for verification.

Source 5: Project Baseline

Input documents collected by Project Baseline for the 1973-74 school year were obtained for 23 states. The forms included enrollment, follow-up, personnel and financial information, and varied in coverage across one or all of the secondary, postsecondary and adult levels of delivery systems.

---

*A National Study of the Availability and Use of Manpower Data in Vocational Education, National Institute of Education. NE-C-00-3-0069. For final report of this project see D. W. Drewes and D. S. Katz. Manpower Data and Vocational Education: A National Study of Availability and Use, Center for Occupational Education, North Carolina State University, 1975.

Forms collected from all five sources were matched and sifted for duplicates and updates, and an integrated listing was compiled for each SVEA. This listing was then sent back to most SVEAs with an accompanying letter (see Appendix E) asking for verification of comprehensiveness and currency from each state. This listing was sent to 46 of the 55 responding agencies. The exceptions had already sent us their own listing, had verified our list through personal contact, or had failed to return a complete package in time for our analysis. Some agencies responded to the listing with corrections and/or additions; the remainder were assumed, by their lack of response to the listings, to endorse the accuracy of our coverage according to the instructions in the accompanying letter. As indicated earlier in this report, currency proved to be a concept that could only be approximated. Some SVEAs made direct reference to major revisions in their forms packages that obviated "complete" or "current" responses to our survey. Often SVEAs indicated top management changes during the time of the survey. Still other states, in subsequent personal communication with COE staff, indicated the probability of further changes in their forms in FY 1976. However, it is estimated that we obtained as complete and current a forms package as it was possible to collect from SVEAs at this time.

Stage II - Directory Development

The simultaneous collection of instruments from 55 states and territories as of one point in time (July 1, 1975) provided a unique opportunity for cataloguing SVEA forms. Therefore, subsequent to (1)

the matching of forms from the five sources and (2) the states' and territories' viewing of the final listing, a national forms directory was compiled (Oglesby, Gabriel and Childers, 1976), which constitutes Vol. III of the Project EDNEED II Final Report. The directory consists of a cross-indexed listing of forms for each state and territory. (For the format design of the directory, see the sample page in Appendix F.) States and territories are in alphabetical order, and the forms are listed by the following characteristics across the page:

1. a unique index number;
2. the form number, if available;
3. the date or revision date, where available;
4. the full title (or explanatory reference where the form is untitled);
5. a coded listing of unit(s) by which data are collected (e.g., individual student, curriculum, school, etc.);
6. a coded determination of major content areas covered by the form; and
7. where possible, the title of those preparing, signing and/or approving the form.

The directory can serve two purposes: (1) it provides a compilation of vocational education forms in use (as of July 1, 1975) in 50 states and five territories, and (2) by cross-indexing on the unique index number, an additional categorization is available which groups forms together across states and territories by major content areas. This permits a comparison, for example, of forms presently covering fiscal or budgeting information in 55 SVEAs.

Stage III - Coding

This report has already referred to the close interdependency of the present study with Project EDNEED I. The process by which information needs were empirically derived from vocational education constituencies at all levels has been summarized in Appendix A and is explained in detail elsewhere (Porter, 1976). The Project EDNEED I product with which Project EDNEED II has been chiefly concerned is the Project EDNEED Classification Document (Drewes, Nerden and Porter, 1976) containing 323 questions, synthesized into 18 files, and 2340 information elements which could be used to answer the questions. A listing of the questions, their organization into files, and a sample file (File 4) are presented in Appendix A. The 18 files in the Project EDNEED Classification Document follow the hierarchical organization of public vocational education. For reasons already stated, only the first eleven files were used in this phase of Project EDNEED II.

Where Project EDNEED I documented the need for information, Project EDNEED II assessed the extent to which information is sought currently by SVEAs and how the information sought compares with the information needed. The common link between the two projects was the Project EDNEED Classification Document. The coding process of Project EDNEED II consisted of matching information items from the forms to questions and possible elements contained in the Classification Document. Items of information from the forms were thus matched judgmentally to the question(s) they might be used to answer.

The coding process consisted of (1) the identification of data items on a particular form and (2) the determination of the best fit of that item to one or more locations in the Classification Document. The procedure in detail was as follows:

1. Establish the general purpose (e.g., student follow-up) and level (e.g., secondary) of the form being coded. This was frequently indicated in the form title but occasionally necessitated careful reading of ancillary instructions, guidelines, etc.

2. On the basis of the form's purpose, determined in (1) above, locate the appropriate file or files in the Classification Document (e.g., Files 5 and 6 for student follow-up information).

3. Code the information item numerically to the question(s) in the Classification Document that the item could be used to answer. This was accomplished by using a seven-digit code, in which the first two digits represented the relevant file, the second two digits the question number, and the final three digits the element number. Where a form item clearly answered a question in the Classification Document but did not defensibly fit any element listed, the item was coded to only "four-digit specificity," i.e., file and question only, not element. A four-digit code indicated that the state concerned was seeking an information element other than those listed in the Classification Document in answer to a specific question. The appropriate code was marked directly onto the state form opposite the item. Each element was matched only once. If the same item appeared twice in a particular state's forms package and was judged to be answering the same question both times, the item was marked as "already coded." No record was kept,

therefore, of the number of times a particular state requested the same item on its forms. It was possible, however, to code the same item to one or more elements and/or questions in the Classification Document. For example, an item of information concerning curriculum expenditures by object would be codeable under File 1, Question 24, and also under the relevant question in File 4. In this example, the Classification Document expressly cross-references the information, but this is not true of all cases. Each data item was coded only at the specific level of aggregation called for on the form. The coders performed no operations on the data, i.e., made no assumptions regarding the collection, for example, of individual item data if the forms called only for aggregate totals. Personnel or student data, therefore, were coded into the files concerning individual staff (File 7) or students (Files 5 or 6) if, and only if, the particular staff member or student was individually identified on the form. Aggregate totals always involved different questions or files. This rule of strict adherence to the specific level of aggregation indicated on the form was followed not only for personnel, but for all information items (e.g., curricula, equipment). Furthermore, descriptive reports (e.g., narrative sections of new program proposals) were disregarded unless discrete data items were (1) clearly specified and (2) mandatory for inclusion on the completed form. This limited our attention to "hard" (i.e., well-defined) information items that could be fitted into the pre-existing Project EDNEED I Classification structure.

A dictionary of definitions, Volume III of the Project EDNEED I Final Report (Nerden, Oglesby, Childers 1976), was used to assist coders in determining the best fit in the Classification Document for data items from state forms. In many cases, definitions of forms items were available in ancillary guidelines in the forms packages. In other cases (e.g., USOE code, sex, school name), little variation in interpretation was possible. It should again be emphasized, however, that the coding process was a series of judgmental actions by project staff. Efforts were taken to ensure that (1) clear overt rules were enumerated for coding, (2) maximum intercommunication between coders was achieved regarding ambiguous items, and (3) the minimum possible number of coders was utilized. Although three coders were ultimately involved in the coding process, a single coder coded 42 forms packages, another coded nine and a third coded the remaining four. Because more than 75 percent of the forms packages were coded by the same individual, and because of the difficulties inherent in quantifying the total number of codeable items on every form, inter-coder reliability measures were not feasible. Every effort was made, however, through stated rules for coding and through lengthy trial coding sessions, to ensure similarity across coders.

Since the Project EDNEED I Classification Document was the vehicle by which information needs had been estimated, information on the forms was disregarded which did not, in the judgment of coders, fit the Classification Document. Creation of a potential "other" category of elements for each question reduced considerably the amount of

information in this area, but, although this was a small portion of the total information sought on all forms, it represented a significant area of inquiry unaddressed by the present study (subset (a) in Figure 3).

It is important to note some additional assumptions inherent in our approach. First, if a state or territory collected a data item for only one program area (e.g., T & I) or for only one level (e.g., post-secondary), it was nevertheless rated as collecting that item. Thus, the fact that an SVEA is represented as currently collecting enrollment data on individual students does not necessarily mean that all vocational education enrollment data in the state are collected on individual students. The only sure interpretation is that individual student enrollment data are collected for at least one program in that state, which permits the reasonable conclusion that the requisite technology exists for tracking individual students in that particular agency. Secondly, in general, it was assumed that disaggregated data (e.g., individual student information) were collected, compiled at the local level, and inputted to the SVEA for aggregation to statewide totals. Occasionally, however, the SVEA itself supplied disaggregated student data, as, for example, when the computer assigned unique student I. D. numbers to machine-readable student information forms sent in by the locals. While this item was coded as local disaggregated information for the purposes of this study, the assignment of the number was performed by the SVEA after the form had been received from the LEA. This exemplifies one of the difficulties in defining information input to an SVEA. Thirdly, at the conclusion of the coding process, it was

possible to state with some assurance that element (x) in the Classification Document was being collected currently by SVEA (y). It was considerably more difficult to state the converse of that statement--that SVEA (y) does not currently collect element (x)--with any confidence, for the following reasons. Assuming a complete forms package had been returned for analysis, two interpretations are possible if a given element was not coded as collected by a given SVEA. Either the SVEA does not currently collect that information, or an error was made in the coding process. If an incomplete forms package was sent for analysis, the negative match for the given element is still less conclusive. The emphasis in this study is, thus, on information coded as collected, rather than on uncollected information.

Stage IV - Analysis

The following is a step-by-step technical account of the analysis for the first phase of Project EDNEED II. A flow diagram of the analysis sequence is presented in Figure 5, showing the point of contact with the estimates of need from Project EDNEED I and the discrete products from the analysis which appear as terminal circles in the diagram. The numbers in the blocks refer to the steps in the analysis plan.

Step 1

As already described, data items from SVEA forms were coded to a question and, wherever possible, directly to an information element in the Classification Document. Where a precise item/element match was

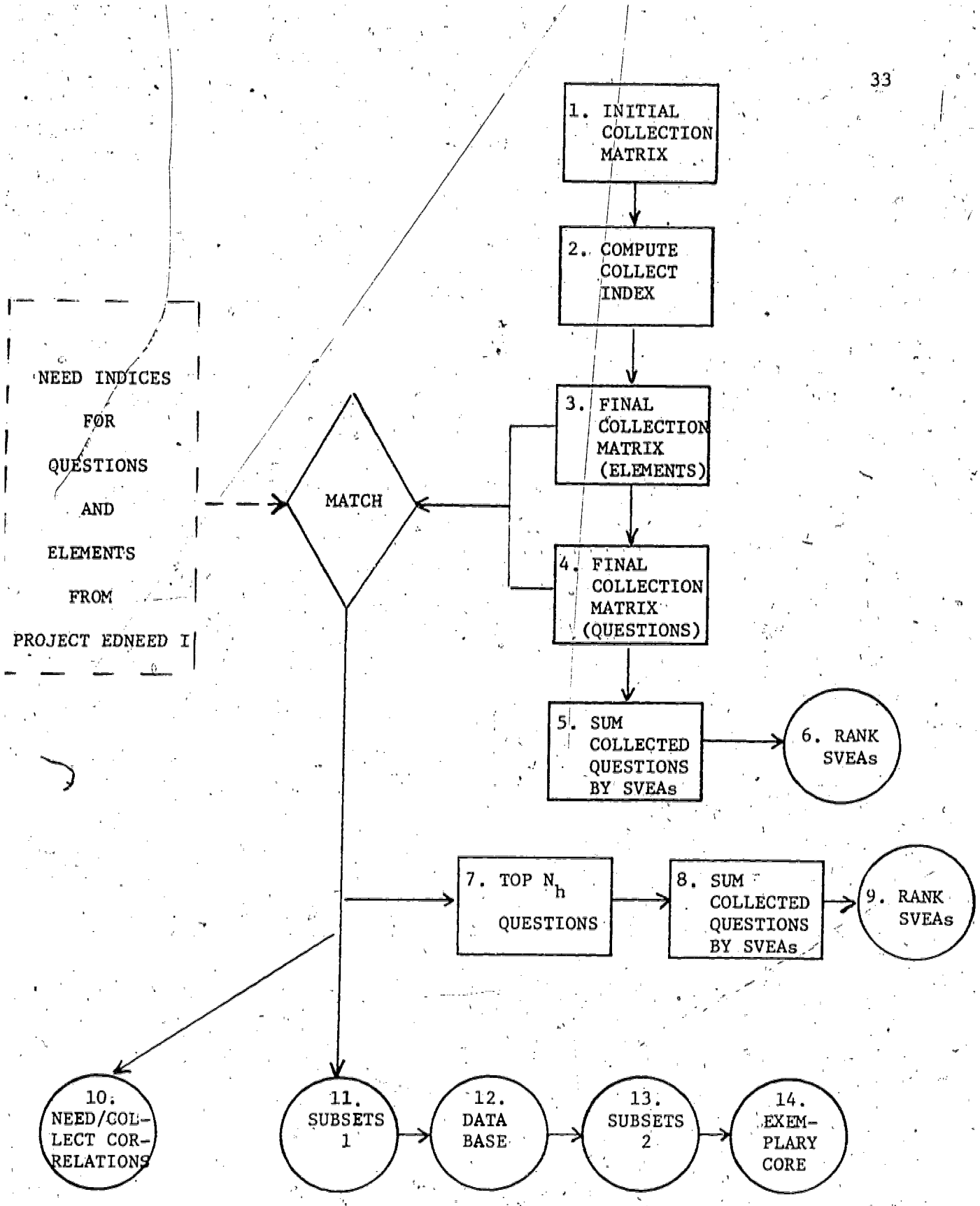


Figure 5. Sequence Diagram for Project EDNEED II, Phase I, Analysis

not possible, but an item was nevertheless judged to be capable of answering a particular question or questions, an "other" category was used in which to place the information item. The resultant sets of elements were keypunched and stored in an initial collection matrix (N x 55), in which information items were rows and SVEAs arranged alphabetically were columns. Cells X_{jk} in the matrix contained 1 if the j^{th} SVEA collected the k^{th} element, and 0 otherwise. An "other" category for each question was created, where $X_{n_i+1,j} = 1$ if SVEA (j) collected information to answer the i^{th} question, but which could not be classified according to the n_i informational elements in the Classification Document corresponding to the i^{th} question. The matrix (N x 55) then contained N rows (N = 1434 + a) where a equals the number of "other" categories created.

Step 2

Within each question i, the proportion, $_kP_i$, of SVEAs collecting the k^{th} information element was computed, where

$$_kP_i = \sum_{j=1}^{55} X_{ik} \Big/ 55$$

and k = 1, 2, . . . $n_i + 1$. This operation sums the rows of the matrix and divides the result by the total number of SVEAs, creating a collection index for elements which varies between 0 and 1. A convenient numeric is thereby provided for comparison with need indices (S_k) from Project EDNEED I which also varied between 0 and 1.

Step 3

The final collection matrix for elements had dimensions (E x 55) where E was the number of elements in Step 2 for which ${}_kp_i > 0$. This step eliminated all rows in the matrix with a zero sum. All elements in the final collection matrix, therefore, had collection indices greater than zero, indicating that each element in the final collection matrix was currently collected by at least one SVEA.

Step 4

The final collection matrix for questions had dimensions (N_m x 55), where N_m was the number of questions for which elements were included in Step 3. Entries were Y_{ji} (j = 1, 2, . . . 55; i = 1, 2, . . . N_m), where Y_{ji} was 1 if the j^{th} SVEA collected at least one information element to answer the i^{th} question, and 0 otherwise. By summing matrix rows and dividing by the total number of SVEAs, as in Step 2, it was possible to derive the proportion of SVEAs currently collecting at least one information element for each question. This proportion, p_i, served as the question "collection" index and provided a similar measurement comparison with Project EDNEED I need indices (S_i) at the question level as Step 2 permitted at the element level.

Step 5

The column sums Y_j were computed from the final question matrix in Step 4, where $Y_j = \sum_{i=1}^{N_m} Y_{ji}$. The results of this step were the number of questions currently answerable, of the N_m questions, by each SVEA.

Step 6

The column sums Y_j were ranked in descending order with j ranks where j = 1, 2, . . . 55. The ranked SVEAs obtained were part of the criteria for state selection visitation in the second phase of Project EDNEED II, described in Volume IV of the final report.

Step 7

For the N_h questions with the highest need indices (S_i) from Project EDNEED I, an (N_h x 55) matrix was constructed with entries Z_{ij} (i = 1, 2, . . . N_h; j = 1, 2, . . . 55) where Z_{ij} was 1 if the j^{th} SVEA collected at least one information element to answer the i^{th} question, and 0 otherwise. This step effectively collapsed the matrix to contain only the top N_h questions when all N questions were ranked by Project EDNEED I need indices for questions.

Step 8

The column sums Z_j were computed from the matrix in Step 7 where $Z_j = \sum_{i=1}^{N_h} Z_{ij}$. The results of this step were the number of "most important" questions currently answerable by each SVEA.

Step 9

The column sums Z_j were ranked in descending order with j ranks where j = 1, 2, . . . 55. The ranked SVEAs obtained in this step were again part of the criteria for state selection in the second phase of Project EDNEED II. The methods by which states were selected for in-depth site visits, the purpose of the visits, and the results are the subject of Volume IV of the Project EDNEED II Final Report (Katz, 1976).

Apart from the ranking of SVEAs by the number of important questions they could answer (Step 9 above), which was performed solely as input to the second phase of this project, the need/collect match for questions and elements resulted in four different products, each the subject of a separate step below.

Step 10

Pearson product-moment correlation coefficients were computed across all questions in the first 11 files of the Classification Document for each of the following:

(a) National need index NS_i with p_i

(b) State need index SS_i with p_i

(c) Local need index LS_i with p_i

(d) Overall need index S_i with p_i

Similar coefficients were derived across all elements in the first 11 files by correlating S_k with ${}_kP_i$. Finally, the computation of question and element need/collect correlations was again completed exactly as above, but for each of the 11 individual files.

Step 11

Using the subsets model already referred to in the Method section (see Figure 3), three subsets (b_1), (c_i) and (d_1) were defined operationally such that:

Subset (b_1) contained all questions in Files 1 through 11 for which $S_i = 0$, and $p_i > 0$, where S_i was the overall need index for each question and p_i was the collection index for questions defined in Step 7;

Subset (c_1) contained all questions in Files 1 through 11 for which $S_i > 0$ and $p_i > 0$; and

Subset (d_1) contained all questions in Files 1 through 11 where $S_i > 0$ but $p_i = 0$.

Step 12

All questions in the first 11 files of the Classification Document, for which S_i (need index) and p_i (collection index) were greater than zero (i.e., subset (c_1) from Step 11), were printed out in tabular format and ranked by S_i. Under each question, all information elements for which S_k (need index) and ${}_kp_i$ (collection index) were greater than zero, for that question, were printed out and ranked by S_k.

This tabular printout is known as the Data Base and is included in its entirety in Volume II. Both need and collect indices are presented for each question and element. The derivation of the Data Base and its utility for decision-makers are discussed in the Results section of this volume.

Step 13

Three further subsets (b_2), (c_2) and (d_2) were defined using more stringent criteria for membership, such that:

Subset (b_2) contained questions for which $S_i < MS_i$ and $p_i \geq M_{pi}$ where MS_i is the need index of the median question of the N_m questions ranked in Step 4 and M_{pi} is the median collect index for questions;

Subset (c_2) contained questions for which $S_i \geq MS_i$ and $p_i \geq M_{pi}$; and

Subset (d_2) contained questions for which $S_i \geq MS_i$ and $p_i < M_{pi}$.

"Highly needed" and "widely collected" questions were identified by the above definitions as those questions at or above the 50th percentile need index for questions and "collected" by a majority of SVEAs.

Step 14

Questions in subset (c_2) from Step 13 were printed out. Under each question, all elements for which S_k (need index) and $_kp_i$ (collect index) were at or above the median value were printed out as representing an exemplary core of data. There are two possible ways to define the median collect index. The first is to define the median collect index as that value at or above which a majority of SVEAs are collecting that piece of information. The second is to examine the distribution of collect indices and select the empirical median value. The former definition, referred to here as the majority median, results in a higher, more stringent delimiter for the subsets than the empirical median. Questions and elements in subset (c_2) were selected by using the majority median as the definition of "widely collected." All questions and elements in subset (c_2) were also at or above the median need, i.e., "highly needed." The empirical median collect index, however, was used to extend the Step 14 printout of questions and elements to include those both "highly needed" and collected at or above the empirical median index for reasons detailed later in the Derivation subsection.

RESULTS

With the exception of the subsection of this report dealing with the response to the forms survey, which is included immediately hereafter, the Results section is organized in the sequence followed by the analysis plan. Figure 5 in the previous section outlined the products in Steps 10, 12 and 14 as the need/collect correlations, the Data Base and the exemplary core, respectively. These three products are dealt with in that sequence. A great deal of information was gained in the derivation of these products and is discussed along with each product. The results of the need/collect match are presented by each level of need. The Data Base is considered the major output of Project EDNEED II. As already indicated, the printout of questions and elements forming the Data Base is contained in Volume II of this report. The derivation of the Data Base via the subsets model is presented in Volume I, however, as is a discussion of the utility of the Data Base for vocational education decision-making. The report concludes by demonstrating how the subsets model can again be used to select an essential "core" of information according to "high" need and "wide" collection criteria. Although the exemplary "core" presented in this volume has primary significance for a future national vocational education MIS, it is our intent that the method used will prove valuable to those concerned with policy decisions in vocational education information technology at all levels.

The following subsection of this report details the response to the Project EDNEED II forms survey. The foundation of the "collect"

estimates rested on the analysis and coding of SVEA forms. The importance of this part of the project, therefore, warrants separate treatment, particularly in regard to the additional light shed on MIS operation by forms analysis.

Response to Forms Survey

The response rate to the forms survey was 98.2 percent. All 50 states and four territories responded with forms packages. Of the two remaining territories one indicated that all information was gathered directly onto the USOE reporting forms, and the other did not respond. In our efforts to obtain as complete a forms package as possible from each SVEA, we communicated with most agencies several times. A listing of forms for each responding SVEA was compiled and sent back to the SVEAs for verification in 46 of the 55 cases. The other nine SVEAs provided clear evidence of completeness (five SVEAs), were contacted for questions about completeness by phone (two SVEAs), or clearly indicated incompleteness of coverage at the time of the study (two SVEAs).

A total of 15 SVEAs reacted to the forms list sent to them with suggested changes. Eleven sent additional forms, and five indicated errors or deletions. The remainder of the 46 SVEAs allowed the deadline for changes (see Appendix E) to pass without reaction, and were thus assumed to concur with the accuracy and completeness of the forms list.

One of the problems facing this project has been the changing format and procedures by which information is brought into SVEAs. Not only are these data structures and processes dynamic and responsive to

organizational and occasionally even individual local needs,* but SVEAs themselves are continually in the process of organizational change. During this study, three SVEAs informed us of a turnover in state directors. Fourteen SVEAs referred specifically to some sort of ongoing revision of forms, eight of which were major. In attempting to "freeze" the SVEA information gathering process to conform with our "snapshot" concept of currency, we have thus inevitably distorted reality in reference to some SVEAs. Rather than solving this particular problem by excluding data, it was decided to accept the fact that some of the forms from approximately 14 SVEAs would be outdated by the time the report went to press. Since our purpose was to provide an overall profile of information currently gathered across all SVEAs, rather than compare individual SVEA similarities and differences, the degree of imprecision due to updating was felt to be tolerable.

Another problem less easily sidestepped was the diversity of organizational structures of SVEAs and the corresponding differences in location (or locations, since more than one component of the agency is often involved) of the SVEA information gathering function. Our request to state directors of vocational education, as outlined in the Procedure section of this report and contained in Appendix C, referred to vocational education forms for secondary, postsecondary and adult students. In some states, a single agency (in some cases, an automated MIS) handles information at all these levels. Alternatively, secondary

*For example, specific local requests for additions or deletions to statewide forms.

and postsecondary information can be gathered separately by two entirely different agencies, involving quite dissimilar forms and data items. Furthermore, some data on finance, staff or students may be routed directly to the state education department and then come secondarily, possibly in aggregated form, to the SVEA. Thus, although an SVEA may have sent us a complete package of forms sent out by that SVEA to the locals, other vital sources of information (e.g., financial or personnel forms sent out from another division of the state education department) might not have been considered in our analysis. Five states sent separate forms packages from two or more agencies, and one state provided forms from three different agencies. There were, thus, a total of 61 agencies responding in 55 states and territories.

An indication of the diversity of organizational responsibility for the information management function within SVEAs was provided by the position title and organizational location of the respondents to the forms survey. The request for forms was mailed in all cases to the state director of vocational education and the equivalent position in the District of Columbia and the territories. Forms were returned to us from quite widely different personnel and organizational locations. Respondents had at least 22 clearly distinguishable position titles and were located in eight different organizational locations other than the office of the state director. Table 2 illustrates the relative frequencies of responses across organizational categories for all 55 SVEAs. These data are only a rough measure of structural differences in the

information management function across SVEAs, but they do offer some further evidence of the difficulties inherent in any interstate comparisons in information management.

Table 2. Organizational Location of Respondents to the Forms Survey

Organizational Location or Function	Number of States
No Identifiable Location	3
Office of the State Director	19
Planning	8
MIS	4
EPDA Coordinator	1
Research	8
Program Operations	4
Finance/Statistical	5
Exemplary Programs	1
Ancillary Services	1
Management Services	1

A total of 10,520 items of information were coded from almost 2,000 separate SVEA forms into the appropriate locations in Files 1 through 11 in the Classification Document. The forms directory--Volume III of the Project EDNEED II final report (Oglesby, 1976)--lists and cross-indexes all the forms by individual state and information content area. The directory also includes some forms not used in the analysis because they were inapplicable, redundant, too late or not sent at all.

The Need/Collect Relationship

A general measure of how well the information currently collected in SVEAs actually matches the need for that information is provided by correlating need with collect indices for each question. Table 3 shows the matrix of Pearson product-moment coefficients for all 215 questions in Files 1 through 11.

Table 3. Correlation Coefficients for Comparison of Overall, National, State and Local Needs with SVEA Collection Indices for All Questions in Files 1 through 11

		Need (Overall)	Need (National)	Need (State)	Need (Local)	Collect (SVEAs)
Need	(Overall)	1.0	.8588	.9219	.9113	.5821
	(National)	.8588	1.0	.6837	.7120	.4724
	(State)	.9219	.6837	1.0	.7432	.5557
	(Local)	.9113	.7120	.7432	1.0	.5287
Collect	(SVEAs)	.5821	.4724	.5557	.5287	1.0

The data in the final column show a moderately positive relationship between what is needed and what is currently being collected by SVEAs. The collected information is most highly correlated with the overall need indices ($N = 215$, $r = .58$, $p < .01$), suggesting that the information needs across all levels of vocational education constituencies are being met more closely than at any one level by current information gathering practices. Furthermore, when individual constituent levels are broken out, collected information is more highly related

with state ($r = .56$, $p < .01$) than local needs for information ($r = .53$, $p < .01$), with national needs rating somewhat lower ($r = .47$, $p < .01$). A positive correlation was also observed when overall need indices for all elements were compared with the number of SVEAs collecting each element ($N = 1434$, $r = .47$, $p < .01$). Need indices for elements were not available by level from the Project EDNEED I analysis, so need/collect correlations for elements could be performed only over all three levels together.

Although these correlations are not particularly strong, the evidence suggests a significant match between information currently collected and that needed. There are, however, wide variations in the degree to which individual questions and elements are either needed or collected, as can be seen by examining the Data Base in Volume II. Need/collect relationships conform to a distinct ranking pattern; that is, the overall information needs of all levels are being met most closely by SVEAs, then state needs, with local needs next, and with national needs last. Bearing in mind that this analysis was performed on state-level forms, this ranking seems a logical one. The SVEA is obliged to collect that information which best satisfies the needs of all its constituencies, and this study offers evidence that SVEAs generally, in fact, do so. The organizational integrity of the SVEA, however, would necessitate that, of the three individual level needs (national, state and local), it would quite reasonable satisfy its own information needs first. The ordering of the remaining local and national levels also accords with intuitive reasoning. The somewhat lower correlation for the national need/collect relationship may be

partially accounted for by the fact that informational needs to satisfy a national-level constituency are different than the informational needs of state and local vocational education agencies.

A more detailed picture of the need/collect relationship is obtained when examined separately for each of the element files. The 44 coefficients for questions by four levels of need with collected information are included in Table 4, along with the 11 coefficients for elements. By scanning the columns, it is possible to determine where the need/collect relationship fluctuates across classes of information. A generally positive relationship is clearly demonstrable, particularly for information elements (last column). The clear exception is in File 6, which deals with follow-up information on the individual student.

The highest level of correspondence in need/collect is evidenced by the correlation coefficient of .58 in Table 3 between the overall need for answers to questions across the three levels and the extent to which answers are currently being sought to these questions by SVEAs. When broken out by individual files, as in the third column of Table 4, the highest degree of need/collect relationship is in File 2 ($r = .86$, $p < .003$) and File 3 ($r = .90$, $p < .001$). This suggests a high degree of similarity between what is needed and collected regarding the fiscal information in Files 2 and 3.

It is important to note that high correlations can mean either that information is needed and therefore collected or that it is not needed and therefore not collected. The determination of the need/collect relationship within files is possible only through examination of need and collect indices for each question. The Data Base in Volume

Table 8. Need/Collect Correlation Coefficients by Levels of Need for Questions and by Overall Need For Elements, Within Files 1 through 11

File Number	File Title	Questions Overall Need	National Need	State Need	Local Need	Elements Overall Need
1 (31)	Curriculum	.51	.30[ns]	.61	.44	(226) .38
2 (9)	Curriculum Expenditures by Activities	.86	.80	.87	.83	(56) .40
3 (9)	Curriculum Expenditures by Assignment	.90	.83	.87	.80	(63) .75
4 (9)	Curriculum Expenditures by Object	.89	.55[ns]	.82	.78	(35) .66
5 (25)	Student Characteristics[a]	.56	.53	.47[*]	.39[ns]	(102) .54
6 (13)	Completer/Early Leaver Characteristics	.27[ns]	.05[ns]	.35[ns]	.20[ns]	(56) .56
7 (23)	Staff Member Characteristics	.66	.54	.72	.36[ns]	(214) .52
8 (25)	LEA Property Characteristics	.57	.61	.16[ns]	.71	(177) .34
9 (31)	School Characteristics	.69	.57	.62	.58	(180) .50
10 (25)	LEA Characteristics	.53	.38[ns]	.51	.41[*]	(119) .46
11 (15)	LEA Service Area Characteristics	.74	.63	.71	.71	(206) .45

[*]Significant only at the .05 level.

[ns]Non-significant correlations.

Note: Numbers in parentheses in the file column refer to the total number of questions in the file, and in the element column, to the total number of elements in the file.

II of this report records need and collect indices for each question and element, as explained in the next subsection. The weakest area in the relationship of overall need to collect is in the completer/early leaver File 6 ($r = .27$, $p < .38$).

The fourth column in Table 4 indicates the degree of correspondence between national needs for information and what is currently being collected by SVEAs. This is clearly the level of need for information that is being the least adequately satisfied, according to our data. Four of the files have insignificant need/collect correlations, implying that some national information needs are not presently being satisfied in the areas of curriculum information (File 1, $r = .30$), curriculum expenditures by object (File 4, $r = .55$), characteristics of the local education agency (File 10, $r = .38$), and, again, the completer/early leaver (File 6, $r = .05$). There is, however, a positive relationship between national needs for information and that presently collected by SVEAs in the other seven files, particularly again in Files 2 ($r = .80$, $p < .009$) and 3 ($r = .83$, $p < .005$).

The relationship by files between state-level needs and information collected in SVEAs is shown in column 5 of Table 4. As expected, of the three levels, SVEAs are conforming to theories of organizational survival and are meeting their own information needs somewhat better than either local or national needs. In only two files is there an absence of any statistical relationship between what SVEAs need and what they collect. One of those is, again, File 6 ($r = .20$), and the other is File 8, the LEA property file ($r = .16$). Furthermore, in File 5 the correlation, though positive, is not as strong as in most of the

other files ($r = .47$, $p < .018$). Information in this file is particularly notable because it concerns the central component of the educational process--namely, the student. As already noted for the overall and national levels, there is a similar high need/collect correlation at the state level for the expenditure information in Files 2 and 3 ($r = .87$).

The local-level need/collect relationship is not as strong, by our means of measurement, as the degree of correspondence at the state level. There is no significant need/collect relationship in the areas of student and staff information (File 5, $r = .39$, $p < .057$; File 6, $r = .20$, $p < .509$; File 7, $r = .36$, $p < .089$). The relationship is positive but surprisingly weak in the area of LEA characteristics (File 10, $r = .41$, $p < .042$). In line with the other three levels of analysis, there is a strong positive correlation between needed and collected fiscal information at the local level in File 2 ($r = .83$) and File 3 ($r = .80$).

It should be noted that there is a marked absence of negative correlations in any of the files in Table 4, supporting the conclusion that, in general, SVEAs collect needed information and do not attend to unnecessary information. File 6, containing follow-up information, is the only file where no significant need/collect relationship appears at any level. Because such a consistent lack of relationship is confined to this file, the need indices for each question in the file, by level, are shown in Table 5, along with the proportion of SVEAs collecting information to answer each question (collection index).

Table 9. Need and Collect Indices by Level for the 13 Questions in the Completer/Early Leaver File (6)

Question Number	Question	Overall Need	Nat. Need	State Need	Local Need	Proportion of SVEAs Collecting
1	How is the completer/early leaver identified?	.184*	.142*	.151*	.258*	.47
2	How is the curriculum of the completer/early leaver identified?	.172*	.174*	.136	.207*	.44
3	What is the current employment status of the completer/early leaver?	.208*	.193*	.172*	.258*	.56*
4	What is the current educational status of the completer/early leaver?	.116	.146*	.063	.139	.40
5	How related is the current employment to occupation trained for?	.279*	.250*	.293*	.295*	.47
6	What were the characteristics of the first job obtained after completion/ early leave?	.185*	.182*	.197*	.177	.25
7	What is the current salary or wage of the completer/early leaver?	.169*	.176*	.141	.189	.36
8	How satisfied is the completer/early leaver with his current job?	.149	.187*	.073	.187	.13

Table 9 (continued)

Question Number	Question	Overall Need	Nat. Need	State Need	Local Need	Proportion of SVEAs Collecting
9	How satisfied is the completer/ early leaver with his school experiences?	.203*	.181*	.171*	.257*	.38
10	How relevant does the completer/ early leaver perceive the curriculum to be to his current job?	.191*	.186*	.145*	.241*	.36
11	What is the employment history of the completer/early leaver?	.139	.145*	.078	.194*	.36
12	What are the characteristics of the present employment?	.107	.139*	.049	.133	.47
13	What is the employer evaluation of job performance of the completer/ early leaver?	.157*	.166*	.076	.230*	.05

*Above the median value either for that level need ($med_{overall}$ = .154; med_{nat} = .121; med_{state} = .146; med_{local} = .194) or for proportion of SVEAs (med = .51).

National and local needs for this information are high. Every question in the file is above the median national need value (.121), and all but five are higher than the local median need value (.194). The state need for this information is somewhat less, with a majority of the questions being below the median need value (.146). The differential need for the information is reflected in a predominantly high overall need for the file; all but four questions are above the overall median need value. Yet only one question has a collection index of greater than the median value (.51), indicating that information to answer the remaining 12 questions in the file is not currently collected by the majority of SVEAs on forms.

The low collect index for almost all questions is supported by the fact that the state need for this information is lowest of the three levels. The question concerning employer evaluation of the completer's job performance (Question 13) has the lowest collect index of all and is considered of little importance to the state level, although of high importance to the other two levels. Furthermore, the only question with a high collect index (Question 3) is also highly needed at the state level. However, the one question upon which there is uniform consensus as being of the highest importance to all levels (Question 5) has a lower than median collect index (.47).

The inconsistencies in this file are striking, particularly the unique pattern of state-level needs for this information, i.e., rather lower than national or local. One possible reason for the low collection indices may be that information in Files 5 and 6 in the Classification Document was restricted to data on the individual student only.

Many states retain individual student records at the local level and send only aggregate information to the SVEA. Data called for in File 6, therefore, would not appear on the forms.

A Data Base of Vocational Education Information

Introduction to the Data Base

The Data Base is presented in Volume II and consists of 209 questions and 1,065 information elements. Their inclusion in the Data Base implies that each question and element satisfied two requirements:

1. The question/element has been identified as needed, and
2. The question has at least one element currently being collected on a form by at least one SVEA.

The selection of these questions and data elements for the Data Base was made through the use of the subsets model outlined previously in the Procedure section of this report. All the 215 questions and 1,434 data elements in Files 1 through 11 of the Classification Document were checked as needed by at least one constituent representative. In the language of our analysis, therefore, all questions and elements had a need index greater than zero.

Examination of the SVEA forms established that 1,065 of the 1,434 data elements in Files 1 through 11 were currently being collected by at least one SVEA and that 209 of the 215 questions contained at least one of the 1,065 elements. Application of the criteria for the derivation of subset (c_1), also explained in the Procedure section, resulted in 209/215 (97%) of the questions and 1065/1434 (75%) of the elements being included in the Data Base.

Distribution of the questions into the subsets (b_1), (c_1) and (d_1) by our definition of "needed" and "collected" is diagrammed in Figure 6.

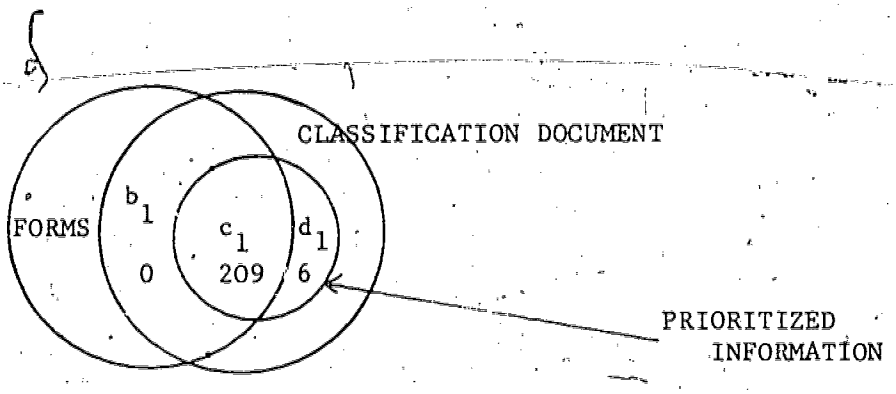


Figure 6. Number of Questions in Question Subsets (b_1), (c_1) and (d_1)

Of the total number of 215 questions in Files 1 through 11, all but six had collection indices greater than zero. In other words, information was being collected on a form in at least one SVEA that could be used to answer 209 of the 215 questions identified in Project EDNEED I as being needed by at least one agency. The Data Base, therefore, consists of the 209 questions that contain information (1) needed by at least one constituency and (2) collected by at least one SVEA.

The 1,434 elements in the first 11 files are distributed into the subsets as diagrammed in Figure 7. Of the 1,434 elements in Files 1 through 11 with need indices greater than zero, 1,065 had "collect" indices greater than zero.

The resultant Data Base can be viewed, therefore, as a catalog of information that is currently both needed and collected. The degree

to which the information is either needed or collected is measurable by the size of the indices, which all vary between zero and one.

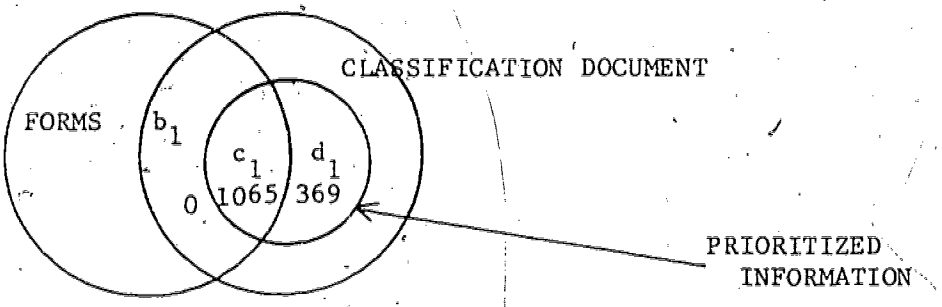


Figure 7. Number of Elements in Element Subsets (b_1), (c_1) and (d_1)

A sample page from the Data Base consisting of a sample question and its associated elements is shown in Table 6. The individual parameters for questions and elements contained in the Data Base are as follows.

Rank. Questions in the Data Base are ranked 1 through 209 by the value of the average need index over all levels. In the example, the question, "How related is the current employment to the occupation trained for?" was ranked 10th out of 209 in importance by Project EDNEED I raters. These ranks will differ from the Project EDNEED I ranks for questions because they are based on only 209 of the 323 questions contained in the Classification Document.

File. The file number refers to the particular file in the Classification Document in which the question can be found. Files 1 through 11 follow a hierarchical organization in order from the curriculum level (File 1) to the school district level (File 11) as follows:

File 1	Curriculum
Files 2-4	Curriculum Expenditures
Files 5-6	Student/Completer
File 7	Staff
File 8	Property
File 9	School
Files 10-11	LEA Characteristics

In some cases the same question appears in different files, but because of its file location, it concerns different information. For example, "How is the curriculum identified?" appears as Question 1 in Files 1 through 4, with identical elements. Each has different need and

Table 6. Sample Page of the Data Base

Questions and Elements--As Needed by Agencies and Collected by SVEAs (Ranked by Overall Need)

Rank 10 | File 6 | Question 5 | How related is the current employment to the occupation trained for?

Need Indices				Collection Index
Over All Levels	National Level	State Level	Local Level	(Proportion of SVEAs Collecting One or More Elements)
0.2792	0.2498	0.2927	0.2951	0.4727

Need Index Over All Agency Levels	Number of SVEAs Collecting Element	
0.7378	22	Employed in Occupation Trained for
0.7338	22	Employed in Related Occupation
0.6700	21	Employed in Unrelated Occupation
	7	Collected to Specifications Other than Taxonomy's

collect indices because in Files 2, 3 and 4 the question concerns the identification of curriculum in relation to expenditures by activities, assignments and objects, respectively. In the example given in Table 6 the question is from File 6, the completer/early leaver file, and concerns individual student follow-up data. Coding of form items into this file (and File 5) was strictly limited to information on a single student identified by name or some other unique identifier.

Question. The question number identifies the question within a file. In the case of the example, the question is #5 within File 6 in the Classification Document.

Question title. The text of the question is as it appears in the Classification Document. In this case, the text is, "How related is the current employment to the occupation trained for?"

Need indices. Four similarity indices (S) were computed for each question in Project EDNEED I and are termed "need" indices in this printout.

1. Over all levels--Referred to in Project EDNEED II as the overall need index or (S_i), this is the average of the other three need indices. The questions are ranked by this index, which represents the average priority placed on this question across national, state and local constituencies. For the question in this example, $S_i = .28$.
2. National level--Referred to in short as (NS_i), this index represents the composite rating of the importance of this question to national constituencies in Project EDNEED I; in this example $NS_i = .25$. To determine the ranking of all

questions by individual national, state or local need indices, see Volume V of the Project EDNEED I final report (Drewes et al., 1976).

3. State level--Referred to as (SS_i), this index represents the composite rating of the importance of this question to state-level constituencies, and in this example SS_i = .29.

4. Local level--Referred to as (LS_i), this index represents the composite rating of the importance of this question to local constituencies, which in this case is .30.

Collection index. Referred to in short as (P_i) this number indicates the proportion of the 55 SVEAs collecting at least one element that could be used to answer a question. In the example, 47.2 percent (or 26 SVEAs) of the 55 SVEAs surveyed collected information on one or more of the state forms that could be used in answer to this question. The remaining data presented under each question relate to the information elements providing potential answers to the question.

Need index over all agency levels. Separate need indices for elements were not generated for the national, state and local levels. One overall general need index across all levels (S_k) represents the priority attached to each element in EDNEED I. This numerical index is listed beside each element, and the elements are prioritized within questions by this index. In the example, three taxonomy elements currently appear on one or more state forms, the most highly prioritized of which has a need index of .7378. The need index for elements, like the need index for questions, varies between zero and one. This permits comparison in importance between elements in different

questions. It should be noted, however, that the element need indices were computed differently from question need indices. In the example in Table 6, the element indices are numerically much larger than the question indices, yet the question is very highly ranked in importance, i.e., tenth out of 209. The indices for questions and elements were computed according to different formulae and, hence, are not directly comparable with regard to degree of need. The element entitled "collected to specifications other than taxonomy's" is no more than an "other" category. It indicates that information was collected by at least one SVEA to answer this question, but the data item on the SVEA form could not be matched with any existing element in the Classification Document. The decimal point under the need index indicates that no raters in Project EDNEED I were able to check the element as needed (since it was not in the Classification Document). In the example in Table 6, seven SVEAs currently collect "other" information with which to answer the question. Because no ratings of need are available for these data, and the element cannot be specifically identified, the "other" categories in the Data Base serve only a limited function. They provide some estimate of the extent of data not listed in the Classification Document which are available to answer a question. Beyond that they have little relevance to this study.

Number of SVEAs collecting the element. The collection index for elements can be expressed as either a proportion (in short, ${}_{k}P_{i}$) or an absolute number of SVEAs. In the Volume II printout, to avoid confusion with the question collection index, the element collection index is the absolute number of SVEAs on whose forms this element currently

appears, rather than the proportion of SVEAs collecting this element. In the example in Table 6, the first two elements are each collected by 22 SVEAs, and the third by 21 SVEAs. Seven SVEAs are currently collecting "other" information to answer this question. The correspondence between the ranking by element need and collection indices in this example is not to be construed as representative of all elements. The elements associated with most questions do not conform so neatly by collect index, although they are, as indicated above, ranked within a question by element need index (S_k).

The Utility of the Data Base

The EDNEED II Data Base provides empirically derived quantitative indices for both the need and the extent of collection of each of the 209 questions and 1065 elements. Questions are ranked in order of overall importance in the Volume II printout; that is, the questions with the highest importance across national, state and local constituencies appear first. There are several ways in which the Data Base can be useful to vocational education planners and decision makers. By reading through the first few pages of the Data Base, for example, it is possible to get an impression of priority questions in vocational education, the information needed to answer these questions, and the degree to which the questions are currently answerable by SVEAs. To facilitate finding any particular question, since the ordering by need rank breaks up the hierarchical structuring of questions, an index of files and their questions by page number in the Data Base is included in the front of Volume II.

In addition to the overall indices of need by which the questions are ranked, separate national, state and local need indices are also given for each question. This permits further comparison of the need/collect match within any one of these levels. In the example shown previously in Table 6 (File 6, Question 5), the local needs for answers to this question (.2951) tend to be somewhat higher than the state needs (.2927) or national needs (.2498). Fewer than 50 percent of locals, however, are presently sending this information up to SVEAs on forms, as indicated by a collect index for this question of .4727. The three elements used to answer this question have relatively similar need and collection patterns. Each element is about equally important and is currently collected by almost the same number of SVEAs. Furthermore, only a few (7) SVEAs were collecting other information items to answer this question. One conclusion that might be drawn from this example is that the SVEA collection level is rather low for such an important question, particularly in view of the fact that the state and local needs are so similar. One explanation for the low collection index may be that this question is in the individual completer/early leaver file. Thus, only SVEAs who routinely receive information on individual students on their forms from the LEAs were considered for questions in this file. Many SVEAs as a matter of policy leave this information at the local level, preferring to obtain it on an as needed basis. Recent estimates suggest that 23 SVEAs in 1972 had individual student data at the state level (Lee, 1973). Our data show that in 1975, at least 26 (or 47.27 percent of 55) SVEAs are now able specifically to answer this question on individual students at the

state level. Stated another way, hard data on post-school training-related employment for individual students appeared in less than half the total number of SVEA forms packages analyzed.

When used in conjunction with all the available data on need by use provided by Project EDNEED I, additional dimensions of comparison are possible. The six uses which composed the need ratings for Project EDNEED I were planning, operation, evaluation, finance and budgeting, reporting requirements, and public information. Examination of the Project EDNEED I data on use requirements for the question illustrated in Table 6 shows that, when averaged across national, state and local use ratings, the information is needed for reporting purposes, evaluation, and public information, in that order. When question rank by need is adjusted for the 215 questions in Files 1 through 11, this question ranked second, fifth, and eighth for the above three uses, respectively. When the high local-level need is broken down by use, this question is found to be ranked first out of the 215 for reporting purposes. For state-level uses, it ranked fifth and eighth, respectively, for evaluation and reporting. Clearly, the SVEAs collecting individual student information are meeting this need. Other SVEAs, however, may also be meeting the need by aggregate information of the same kind. File 9, Question 15, and File 10, Question 14, all refer to post-school outcomes of students in aggregate form. The Data Base indicates that answers to these two questions are being collected by 35 and 17 SVEAs, respectively.

The Data Base is thus useful for in-depth comparisons between needs for and availability of certain kinds of information. It can

also be used to test hypotheses about data collection at the SVEA level. It has been suggested, for example, that some national needs for data in FY 1973 went beyond anything at that time collected in the states (Lee, 1974, p. 63). In the Project EDNEED II analysis framework, that would suggest that some questions with non-zero national need indices would have zero collect indices. The data from this study actually required to confirm this hypothesis are not included in Volume II. Since only 209 of the 215 questions had non-zero collect indices, six questions were excluded as not having information currently collected to answer them. All six, in subset (d_1) in Figure 6, had positive need indices for the local, state and national but zero collect indices, indicating that our research supports Lee's earlier contention. However, it should be noted that the need for these data at the national level did not appear particularly high.

The six questions not appearing in the Data Base were distributed through five files (Curriculum Expenditures by Activities, File 2; Student Characteristics, File 5; LEA Vocational Property Characteristics, File 8; LEA Characteristics; File 10; and LEA Service Area Characteristics, File 11). The questions, with their overall need and collect indices and ranked by S_i, appear in Table 7. The highest S_i for any of the six questions is .132, which places it in only the 32nd percentile of overall need.

Table 7. Overall Indices of Need for the Six Questions in Subset (d_1)

Need Rank*	Need Index S_1	File	Question Number	Question	Collect Index
136	.132	8	2	What uses are made of the local site for vocational purposes?	0
148	.122	11	14	What are the vocational training resources in the LEA service area?	0
175	.098	10	6	What is the legal power of the LEA (applicable to separate vocational education district)?	0
185	.086	5	12	What training related injuries have occurred (to the student)?	0
211	.046	2	9	What are the expenditures for debt services allocated to the curriculum?	0
213	.044	11	13	What is the political support for public education in the LEA service area?	0

*Ranks are scaled for the 215 questions in Files 1 through 11.

While the overall need index (S_i) used in Table 7 is a good measure of shared needs across national, state and local constituencies, it is instructive to break out the three levels of need separately for these six questions. Table 8 provides this breakout. It might be expected that since no information to answer these questions was coded as collected on state forms, the state-level need for these questions would

be lowest of all constituencies. Our data show this to be the case. The lowest need for any of the six questions was recorded for the state level (File 11, Question 13), which was not checked by any of the state level constituents as needed. Furthermore, the mean SS_i of .061 across the six questions is lower than that of either national or local level mean indices.

Table 8. National, State and Local Needs for the Six Questions in Subset (d_1)

File	Question Number	NS_i	Nat. Rank	SS_i	State Rank	LS_i	Local Rank
8	2	.098	142*	.097	147.5	.202	96
11	14	.129	96	.091	154.5	.146	170
10	6	.044	104	.102	143	.148	166
5	12	.088	159	.039	192	.130	180
2	9	.055	193	.036	193.5	.046	214
11	13	.042	206	.000	214	.091	199
		$\bar{X}_{NS}$=.076		$\bar{X}_{SS}$=.061		$\bar{X}_{LS}$=.127	

*Ranks are scaled for the 215 questions in Files 1 through 11.

Of the six questions, File 11, Question 14, "What are the vocational training resources in the LEA service area?" is most remarkable for its low need/collect ratings, particularly in view of recent recommendations in this area. The 1974 GAO Report on Vocational Education found little evidence that potential resources for training in the

communities were inventoried in any systematic fashion. This lack of knowledge of the "training universe" has led to duplication of effort (p. 52) and was a major concern of the report (p. iii). Our data tend to support the GAO conclusions. Though this question was ranked highest of the six questions in subset (d_1) by national-level need, it was in only the 23rd percentile of need when ranked over all levels. No information was found to be collected in answer to the question by any SVEAs.

A second hypothesis testable through the Data Base in conjunction with need data from Project EDNEED I was proposed in another recent national report on vocational education (Ellis, 1975). Citing a 1968 National Advisory Council on Vocational Education statement which notes the lack of evaluative data at national, state and local levels, the author emphasized the relevance of this judgment to contemporary data collection (p. 21). Again, in conjunction with data on information uses available from Project EDNEED I, the Data Base permits examination of this contention. The 25 most highly ranked questions specifically for evaluation purposes across all levels in Project EDNEED I are listed in descending order of importance in Table 9 with collection indices beside them.

One measure of the extent to which data needed for evaluation are actually being collected is the correlation between the respective rankings of need and collect indices for these 25 questions. The obtained coefficient* of .10 indicates an absence of any systematic

*Kendall's Tau was used because of tied rankings in the collect indices (Kendall, 1963).

relationship between the rankings ($p < .23$). Moreover, the mean number of SVEAs collecting information to answer these questions is 24, less than a majority as shown in Table 9. The range of collect indices varies from 54 to 1. Conspicuously low are the collection indices of File 1, Question 14; File 6, Question 13; File 5, Question 17; File 1, Question 5; and File 1, Question 2. The mean number of SVEAs currently collecting information on forms to answer these five important evaluative questions is slightly in excess of three.

Table 9. The Twenty-Five Most Important Questions for Evaluation by Need Index and by Collect Index

Rank	File	Question Number	Question	Number and Proportion of SVEAs Collecting Information
1*	1	8	What are the completion requirements for the curriculum?	14 (.26)
2	1	10	What are the planned instructional student outcomes for the curriculum?	36 (.66)
3	1	17	What persons or groups are involved in evaluation and/or curriculum improvement?	21 (.38)
4	1	20	What aspects of instruction and supporting services are evaluated?	24 (.43)
5	6	5	How related is the current employment to the occupation trained for?	26 (.47)
6	1	14	What student evaluation procedures are used?	7 (.13)
7	1	18	What evaluation procedures are used for curriculum evaluation?	28 (.51)

Table 9 (continued)

Rank	File	Question Number	Question	Number and Proportion of SVEAs Collecting Information
8	1	27	What are the post-school outcomes of curriculum completers/early leavers?	33 (.60)
	1	1	How is the curriculum identified within a school?	54 (.98)
10	1	19	What aspects of the curriculum are evaluated?	27 (.49)
11	1	26	What is the curriculum enrollment?	54 (.98)
12	6	10	How relevant does the completer/early leaver perceive the school curriculum to be for the current job?	20 (.36)
13	6	9	How satisfied is the completer/early leaver with his school experiences?	21 (.38)
14	6	6	What were the characteristics of the first job obtained after leaving school?	14 (.26)
15	5	22	What are the characteristics of the student completers/early leavers?	35 (.64)
16	6	3	What is the current employment status of the completers/early leavers?	31 (.56)
17	6	13	What is the employer evaluation of job performance of the completers/early leavers?	3 (.05)
18	1	11	What is the structure of the curriculum?	27 (.49)

Table 9 (continued)

Rank	File	Question Number	Question	Number and Proportion of SVEAs Collecting Information
19	5	17	What is the student's satisfaction with the present curriculum?	1 (.02)
20	6	2	How is the curriculum of the completers/ early leavers identified?	24 (.44)
21	1	6	What is the time schedule for the curriculum?	49 (.89)
22	1	5	What is the approval agency for the curriculum?	4 (.07)
23	1	31	What are the characteristics of the curriculum advisory committee?	29 (.53)
24	1	2	What is the accreditation status of the curriculum?	2 (.04)
25	7	5	What is the work experience(s) outside of education of the local vocational education staff member?	25 (.45)
				$\bar{X}$ = 24 (.44)

*Rank is scaled for 215 questions in Files 1 through 11.

When individual data elements are examined within each of the 25 questions in the Data Base, the data show that a majority of SVEAs collect the element with the highest need index in only three questions. The mean number of SVEAs collecting the highest needed element per question across all 25 questions is 14.

On the basis of this sample, therefore, our data tend to support the above hypothesis. Information prioritized most highly for evaluation across all levels is being collected, on the average, by a minority of SVEAs. In particular, very few data are currently collected on the forms we analyzed on student evaluation procedures, employer evaluations of program completers, and student satisfaction with vocational training.

In addition to permitting empirical tests of specific hypotheses, the Data Base provides a wealth of empirical information on what data are currently available at the state level. Files 5 and 6, for example, pertain only to data on individual students. The identification question, the first in each of these two files in the Classification Document, indicates the number of SVEAs currently collecting information on individual students and completers/early leavers. The collection index for File 5, Question 1, shows 46 SVEAs holding some data by individual student at the state level. The index for File 6, Question 1, indicates that 26 SVEAs currently have some data on completion or follow-up by individual student at the state level.

In some cases, the data can also illustrate the uniqueness of state information-gathering practices. In File 5, Question 2, for example, the collection indices for elements show 38 SVEAs obtaining data on sex by the identification of "male," and 39 SVEAs by "female." The explanation for this apparent inconsistency is that one SVEA currently asks for the sex of the student to be specified only for females.

The Data Base also identifies some information currently collected by SVEAs that not only has a low overall need index but was not identified as needed at all at the state level. Using the same conceptual division of the questions into the five subsets, Figure 8 shows the distribution using state-level need indices rather than overall need indices as used in previous derivations of the subsets.

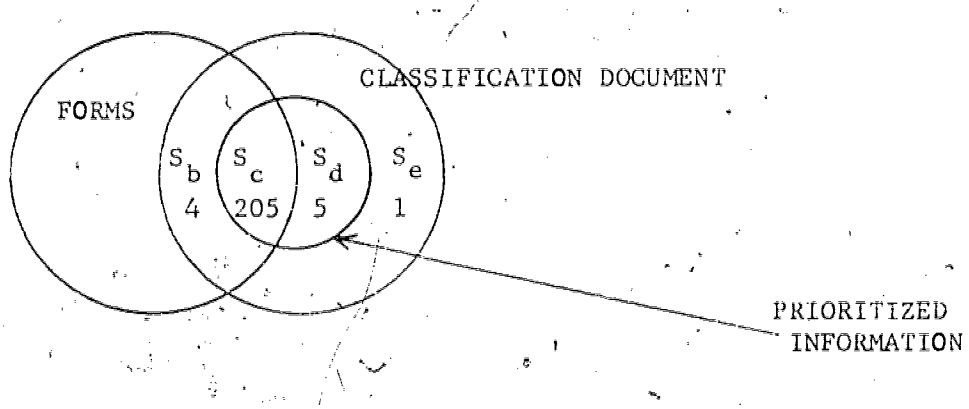


Figure 8. Number of Questions in Subsets (S_b), (S_c), (S_d) and (S_e) for State-Level Need Only

The Data Base shows that four questions have a zero state need index, though a positive collect index. These are in the "collected, not needed" subset (S_b) in Figure 8 and include File 2, Question 7; File 7, Question 15; File 8, Question 21; and File 10, Question 11. One question contained in subset (S_e) was not needed by any state-level agency, nor was any information currently being collected to answer it. This question was discussed earlier for these reasons. Subset (S_d) contains five of the six questions already referred to in subset (d_1) of Figure 6 as being "needed" though not "collected." The majority of questions,

the 205 in subset (S_c), however, fall into the "needed" and "collected" category.

Because the SVEA is the chief conduit for all vocational education information, it is important to note that the state-level need/collect profile by this measure is similar to the overall profile in Figure 6. However, these data imply that a very small amount of information is being collected by SVEAs that is not perceived as needed by state-level constituencies.

These questions are as follows:

File 2, Question 7.	What are the expenditures for community services activities allocated to the curriculum?
File 7, Question 15.	What is the leave status of the local vocational education staff member in terms of accrued days?
File 8, Question 21.	What are the characteristics of equipment for personnel services used in vocational education?
File 10, Question 11.	What are the facilities of the LEA administrative offices?

The national, state and local importance indices and the collection index for each question are shown in Table 10. At no level, national, state or local, is the need for any of this information higher than the 49th percentile, and, as already indicated, the state-level need is zero. The highest overall need index is .071 for File 7, Question 15, and the highest individual level need index is for File 10, Question 11, at the local level (.148). As expressed by a measure of mean ($\bar{X}$) need ratings across all four questions, it is clear that the highest need for the information contained in these questions is at

Table 10. Need and Collection Indices for the Four Questions in Subset (S_b)

File	Question Number	NS_i	National* Rank	SS_i	State Rank	LS_i	Local Rank	Overall S_i	Overall Rank	Collect Index
2	7	.058	189	0	319(211)	.065	210	.041	208	.036
7	15	.072	174	0	319(211)	.142	173	.071	192	.055
8	21	.039	209	0	319(211)	.106	195	.048	206	.200
10	11	.028	214	0	319(211)	.148	165	.059	202	.018
		$\bar{X}_{NS}$ = .049				$\bar{X}_{LS}$ = .115		$\bar{X}_S$ = .055		

*Overall ranks are scaled for the 215 questions in Files 1 through 11.

the local level ($\bar{X}_{LS}$ = .115), considerably below the local median need index for questions of .194.

The collection indices for these four questions are also uniformly low. One-fifth of SVEAs collected information to answer File 8, Question 21. The other three questions concerned still fewer SVEAs. The highest need index for any element in these four questions was .205, again well below the median need index for elements of .257. Although these data may have particular utility for a few individual SVEAs, the overall need/collect profile of this information is very low.

The foregoing are some illustrations of ways in which the Data Base can be utilized. There is, however, one further aspect to the utility of the Data Base which forms the basis for the remainder of this report. Recent recommendations for a national information system have often been accompanied by suggestions that some minimum data requirements be mandated for vocational education accounting and reporting. As already argued above, the selection of any data "core" will be dependent upon a number of factors, such as legislative and executive priorities, cost, and constituent needs. Project EDNEED I has provided detailed estimates of data needs by broad constituent levels and by purpose. One way to approach the selection of essential information at any level is to choose solely on the basis of need. By this method, only those questions and elements with the highest priority would qualify for inclusion. The cut-off point (i.e., how far down into the list of prioritized information to go) may be determined by cost considerations or by the anticipated technical capacity of the system to handle

the information. Although this approach is defensible on grounds of meeting needs, it ignores both the investment made in existing systems and the costs of change. It can be improved considerably by aligning what is needed with what is currently being collected. The determination to include or not include units of information may still be made primarily in light of need. The additional dimension of feasibiliy is, however, available as a result of Project EDNEED II. Neither of the EDNEED projects addressed the problem of costing individual data elements, and this is an area upon which future research should concentrate. Information on the extent to which a needed data element is currently collected may, however, assist those responsible for the selection of a "core" in judging whether cost estimates for collection of the data element are likely to be accessible. Possible ways in which the Data Base can be used in the selection of essential information are discussed in the following section, and a prototype "core" is derived.

Derivation of an Essential "Core" from the Data Base

The basic information issue facing vocational education policy-makers today is one of striking an adequate balance between, on the one hand, the amount and quality of data required, and the corresponding burden of collection on the other. The benefits to decision-makers of accessible, timely and accurate information must be weighed against the various costs of obtaining that information. Implicit in efficient information technology is that information sought be limited to only that for which the costs (financial or otherwise) are acceptable and for which a defensible need can be demonstrated. The fundamental

economic principle of cost/benefit thus underlies any consideration of whittling down data requirements to the minimum essentials.

As noted earlier in this report, numerous recommendations have been made for a national vocational education data system with specified elements and uniform definitions. Legislation currently pending before Congress [HR 12835] seeks to actuate such a system and to allocate resources for its development and maintenance. The eventual selection of information units and their definitions will depend upon the specifics of the legislation and subsequent executive interpretation. In the meantime, however, the more that is known about what information is currently both needed and collected, the more appropriate the subsequent national "core" is likely to be.

Although this report focuses on methods for selecting a national "core," the discussion and procedures also have relevance for state- or local-level decision-makers. It is an important premise of this research that methods used in this study and described in this report are potentially applicable to the derivation of information system content in general. Because the Project EDNEED II Data Base represents a nationwide profile of information both needed and collected, however, state or local selections on the basis of our estimates would need some adjustment for the specific needs of individual agencies.

The choice of a national "core" of vocational education data can be approached several ways. Previous efforts in this direction by both the National Center for Educational Statistics and Project Baseline have been oriented toward a "core" with specified content. The Project EDNEED II Data Base builds on these former accomplishments with

appreciation, but differs from them in that it supplies the data and the tools with which numerous "cores" can be chosen according to various criteria. Any methods, however, will result in a set of questions' being accepted, and another set's being rejected. Preferably, the more objective the criteria for this division, the better, though no method will preclude thorough subjective analysis of both sets.

One approach to the identification of essential national information from the Data Base is to proceed simply by the criterion of national needs, irrespective of what data are currently collected. Questions can be ordered by national need indices instead of by overall need as they are in the Data Base, and weighted for different uses if necessary. Data elements within these questions can then be examined, and the ones with the highest need indices chosen. Selection can continue in this manner down the prioritized questions and elements until a cut-off point, dictated by resources, is reached. The resultant list of data elements would form a reasonable starting point for filtering, addition, subtraction and review.

This method, however, neglects some important factors. Although the information may be nationally needed in most cases, it has to be provided by LEAs and collected and sorted by SVEAs. It is arguable, therefore, that, in the interest of feasibility, the overall need index may be more useful for prioritization than just the national index. Moreover, the presence of fully or partially automated MIS in most SVEAs should be taken into account. Selection of a national "core" ideally should acknowledge existing procedures, capabilities and priorities at the SVEA and local levels and should be based as much as

possible upon present MIS content. The fewer changes needed in currently operating MIS to accommodate national minimum requirements, the lower the overall cost of implementation is likely to be and the more cooperation is to be expected from SVEAs.

The Data Base meets most of these concerns. Subset (c_1), shown previously in Figures 6 and 7, represented information that is both needed and collected--that is, with overall need and collection indices greater than zero--and defined the content of the Data Base. In a sense, then, the Data Base is itself a "core" of existing state-level information (i.e., information currently collected by SVEAs) prioritized by overall need. The amount of information provided by the earlier definition of "need" and "collect," however, is indiscriminately large. "Essential" information necessitates a more stringent definition than merely being needed and collected by at least one agency. One way to narrow down the need/collect concept is to divide both "need" and "collect" into "high" and "low," and then to extract from the Data Base only that information which (a) has a "high" shared need over all levels and (b) is "widely" collected by SVEAs. Ranking the resulting information by overall need index would ensure that data needed most highly across all constituencies would head the list. Correspondingly, including only data with a relatively high "collect" index increases the feasibility of subsequent implementation at state and local levels. In order to accomplish this selection from the Data Base, definitions of "high" and "low" need/collect are required. Bisecting the need and collect indices in this fashion can be performed in several ways, each resulting in different categories of data. This use of criteria for

inclusion in set membership is roughly analogous to Thorndike's (1954) multiple cut-off procedure. The choice of cut-off points is necessarily arbitrary and cannot be determined by any analytical technique. For this analysis, the median overall need index for questions (.154) is used as explained earlier in the Analysis subsection. The two ways of defining the median collection index were also previously explained in that subsection. Use of the more stringent definition initially to determine the distribution of questions results in subsets (b_2), (c_2) and (d_2) shown in Figure 9.

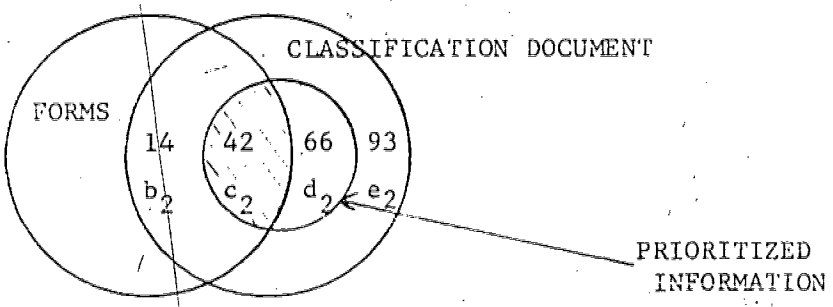


Figure 9. Number of Questions in Subsets (b_2), (c_2), (d_2) and (e_2)

Categorizing the Data Base by these criteria for "high" need and "wide" collect presents a rather different picture, with each subset having a different degree of relevance to a possible "core." A plurality (93) of the 215 questions fall into subset (c_2), representing information neither highly needed nor widely collected, and thus of little concern to the identification of essential data. The 66 questions in subset (d_2) would all be potentially admissable on the basis of high need but do not, by the present criterion, constitute widely

collected information. Following the assumptions outlined above regarding an ideal match between data needs and feasibility, subset (c_2), shaded in Figure 9, delineates a relatively non-controversial "core" of vocational education information. Questions in this category concern both highly needed and widely collected information. The 14 questions in (b_2) are of interest primarily because data elements to answer them are collected by a majority of SVEAs. Overall needs for data in this subset, however, are below the median need.

Because each of the three subsets (b_2), (c_2) and (d_2) is potentially relevant to an exemplary 'core' by these criteria, each subset is examined in some detail below. A tentative "core" is extracted from the Data Base, consisting of subset (c_2) and part of subset (d_2). Important elements within these components are enumerated, resulting in a final list of "essential" questions and elements.

Subset (b_2). The 14 questions in subset (b_2) are listed in Table 11. These deal with widely collected, though not highly needed, information and are notable for this imbalance. They are not considered as candidates for a "core" based on the present criteria, since they all have too low a need index ($< .154$). Their high "collect" index, however, merits closer attention.

One possible explanation for the fact that these questions have a low overall need index, while a majority of SVEAs are collecting information to answer them, is some disparity in the three separate levels of need. High state or local need might, for example, be offset by a low national need, resulting in a lower overall index of need.

Table 11. Subset (b_2): 14 Questions for Which Information Is Presently Widely Collected though Not Highly Needed

Need Rank*	File	Question	Number of SVEAs Collecting
112	7	23	35
113	10	12	38
117	7	19	34
119	5	23	32
130	7	1	51
131	10	1	49
132	7	10	39
138	10	20	31
140	10	2	35
142	7	14	38
152	4	4	39
153	10	13	33
159	8	18	30
163	8	19	30

*Ranks are scaled for the 215 questions in Files 1 through 11.

Table 12 shows the breakout for national, state and local needs for this information. The data show that the local need for these questions is somewhat higher than either the state or national need. The mean local need index ($\bar{X}_{LS}$ = .174) is higher than the state ($\bar{X}_{SS}$ = .121) or national ($\bar{X}_{NS}$ = .103) mean need index, though still lower than the median need index for each of the three levels respectively. (The

Table 12. National, State and Local Needs for the 14 Questions in Subset (b_2)

File	Question Number	NS_i	National* Rank	SS_i	State Rank	LS_i	Local Rank
4	4	.053	197	.148	106	.158	159
5	23	.141	79	.138	114	.162	155
7	1	.108	128	.176	77	.129	181
7	10	.091	156	.122	126	.199	99
7	14	.118	114	.108	139	.158	158
7	19	.104	134	.146	108.5	.192	111
7	23	.128	100	.131	118	.189	119
8	18	.125	103	.042	190	.177	138
8	19	.118	115	.036	193.5	.170	144
10	1	.062	184	.187	68	.164	152
10	2	.092	153	.107	140	.190	117
10	12	.106	131	.156	100	.186	123
10	13	.077	170	.112	134	.169	146
10	20	.112	124	.092	153	.188	121
		$\bar{X}_{NS}$ = .103		$\bar{X}_{SS}$ = .121		$\bar{X}_{LS}$ = .174	
		Median NS = .121		Median SS = .146		Median LS = .194	

*Ranks are scaled for the 215 questions in Files 1 through 11.

median need index by levels shown in Table 12 refers to the median across all 215 questions, not just the 14 questions in the subset.) This suggests that these questions are of relatively low priority for all three levels, though of most interest to the local level. Half the questions pertain to staff characteristics, including salary information, personal identification, service status and instructional location. Two questions concern equipment, two expenditures, one student in-school employment status, and the remaining two, LEA identification and characteristics.

Because the mean local need is highest (.174) in Table 12, it is important to determine the purposes for which the local level finds this information necessary. Examination of the Project EDNEED I data on local uses for these questions (see Table 13) establishes that the information is sought mostly for operational and financial purposes. The highest need for any of the 14 questions at the local level was for File 7, Question 10 (.199). This question was ranked 19th in importance out of all 215 questions for fiscal accounting when Project EDNEED I ranks were adjusted for questions in the first 11 files only.

One reason, therefore, that the information in these 14 questions may be so widely collected by SVEAs is that LEAs need it for their own operational functioning. The low average overall need, however, makes the consideration of these questions unnecessary for any national "core."

Subset (c_2). Table 14 shows the 42 questions falling into subset (c_2) by need rank and number of SVEAs collecting information that could be used to answer them. These are the questions that, by the

Table 13. Local-Level Uses for Which Data Are Needed in the 14 Questions in Subset (b_2)

File	Question	Planning	Operations	Evaluation	Finance	Reporting	Public Information
4	4	.126	.193	.146	.303	.118	.061
5	23	.101	.290	.251	.077	.131	.124
7	1	.085	.178	.127	.028	.318	.038
7	10	.237	.246	.158	.359	.163	.028
7	14	.134	.269	.123	.280	.144	.000
7	19	.262	.273	.192	.206	.155	.065
7	23	.218	.213	.165	.245	.199	.096
8	18	.249	.311	.100	.263	.110	.029
8	19	.221	.271	.114	.221	.158	.034
10	1	.138	.193	.109	.109	.303	.130
10	2	.206	.238	.110	.151	.273	.161
10	12	.233	.203	.176	.216	.173	.118
10	13	.206	.163	.176	.193	.176	.098
10	20	.283	.189	.138	.283	.146	.090
		$\bar{X}$ = .193	$\bar{X}$ = .231	$\bar{X}$ = .149	$\bar{X}$ = .210	$\bar{X}$ = .183	$\bar{X}$ = .077

Table 14. Subset (c_2): 42 Questions for Which Information Is Presently Widely Collected and Highly Needed

Need Rank*	File	Question Number	Question	Number of SVEAs Collecting
1	1	1	How is the curriculum identified within a school?	54
2	1	6	What is the time schedule for the curriculum?	49
3	1	26	What is the curriculum enrollment?	54
5	1	10	What are the planned instructional terminal student outcomes for the curriculum?	36
7	1	22	What is the source(s) of funding for the curriculum?	39
11	9	11	What are the school's vocational curricular offerings?	52
14	1	24	What are the curriculum expenditures?	37
15	9	12	What are the characteristics of the student served by the school?	49
16	9	22	What is the amount of school funding for vocational education by source?	37
18	1	27	What are the post-school outcomes of curriculum completers/early leavers?	33
24	4	7	What are the expenditures for equipment allocated to the curriculum?	33
25	5	22	What are the characteristics of [individual] student completers/early leavers?	35
26	4	2	What are the expenditures for salaries allocated to the curriculum?	36
32	4	5	What are the expenditures for supplies and materials allocated to the curriculum?	32

Table 14 (continued)

Need Rank*	File	Question Number	Question	Number of SVEAs Collecting
33	5	16	In what curriculum is the [individual] student currently enrolled?	40
34	9	24	What are the school's total expenditures aggregated across curricula for vocational education?	39
35	10	16	What are the sources for funding for vocational education at the LEA level?	30
36	9	1	How is the school identified?	54
37	4	1	How is the curriculum identified [in connection with vocational curriculum expenditures by object]?	39
39	1	28	What staff are assigned to the curriculum?	49
40	1	16	Where is the location of the instruction?	30
43	5	2	What is the sex of the [individual] student?	39
45	10	9	What are the characteristics of vocational students served by the LEA aggregated across schools?	36
49	6	3	What is the current employment status of the [individual] completer early/ leaver?	31
51	9	25	What are the school expenditures by curriculum for vocational education?	40
54	9	14	What are the characteristics of the vocational staff of the school?	50
55	1	31	What are the characteristics of the curriculum advisory committee?	29

Table 14 (continued)

Need Rank*	File	Question Number	Question	Number of SVEAs Collecting
58	7	18	What is the current position assignment(s) (FTE allocation) of the local vocational education [individual] staff member?	37
59	7	6	What credentials are held by the [individual] local vocational education staff member?	32
63	5	1	How is the [individual] student identified?	46
69	9	15	What are the post-school outcomes of the vocational completers/early leavers?	35
73	10	7	What are the vocational curricula offerings aggregated across schools for the LEA?	39
78	7	2	What are the educational characteristics of the local vocational education [individual] staff member?	32
84	1	18	What evaluation procedures are used for curriculum evaluation?	28
85	7	4	What are the education and related work experiences of the [individual] local vocational education staff member?	28
89	1	29	What equipment is assigned to the curriculum?	34
94	8	17	What are the characteristics of the large movable tools and equipment used in vocational education instruction?	31
95	5	4	What is the age of the [individual] student?	31

Table 14 (continued)

Need Rank*	File	Question Number	Question	Number of SVEAs Collecting
96	8	1	What are the locational characteristics of the local site?	30
100	10	19	What are the LEA total expenditures aggregated across schools?	28
102	1	30	What is the utilization of the building by the curriculum?	29
107	8	16	What are the characteristics of the fixed equipment used for instruction in vocational education?	29

*Ranks are scaled for the 215 questions in Files 1 through 11.

criterion of "high need and high collect," are the basis of the essential national "core." They represent that part of the highly prioritized information identified by Project EDNEED I that is presently part of the information systems of a majority of SVEAs. These questions are distributed over eight of the 11 files, representing all major areas in the Classification Document except one--namely, information on vocational education service areas (File 11). Figure 10 diagrammatically illustrates the distribution of these questions across files.

As might be expected, this core of 42 questions clearly reflects the current USOE reporting requirements. The questions in Files 9 and 10, particularly 9:1, 9:14, 9:22, 9:24, 10:16 and 10:19, are questions relevant to OE Form 345, Financial Status Report and Supplementary Financial Report. The questions in File 4 also pertain to this

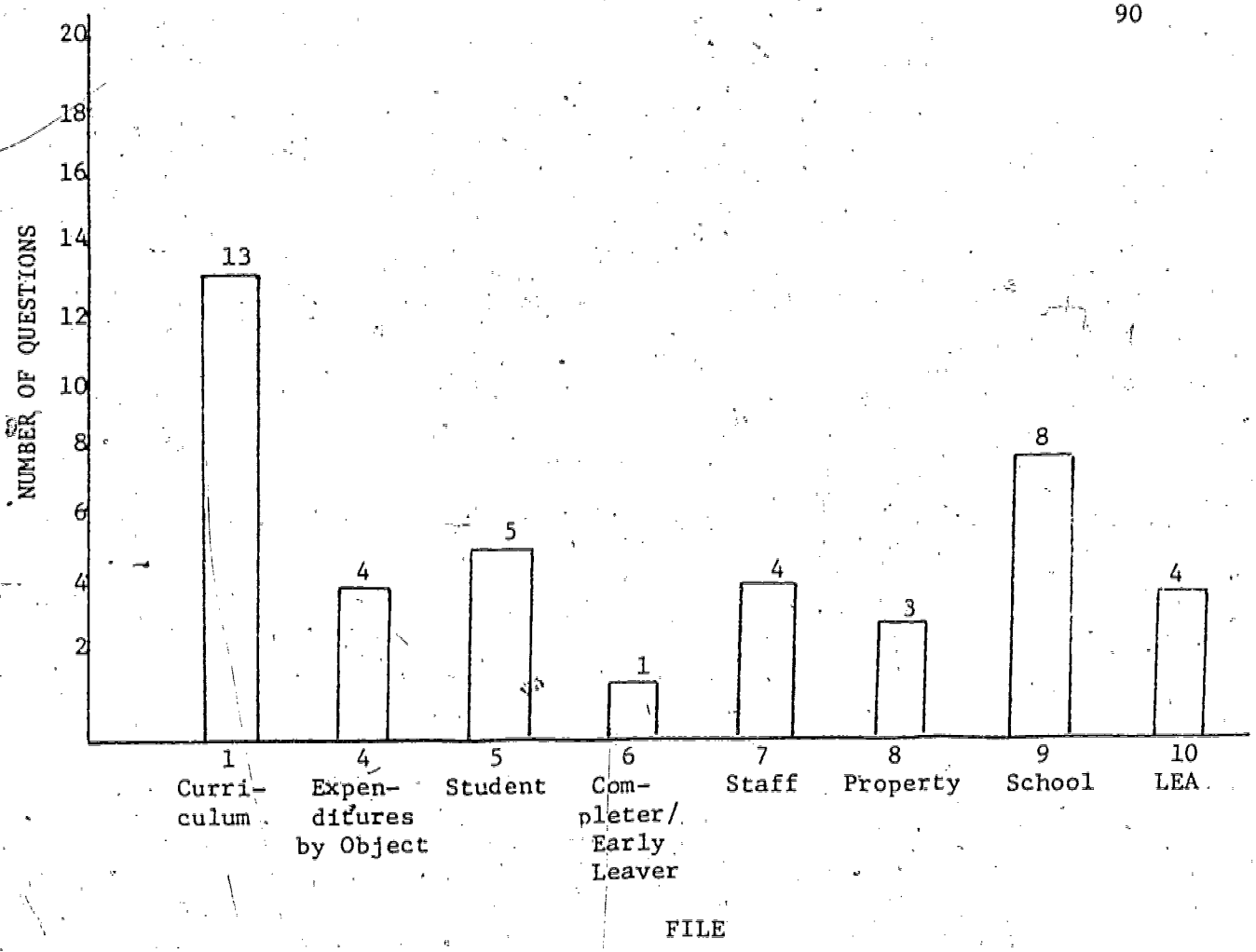


Figure 10. The Distribution of the 42 Questions in Subset (c_2) Across Files

form, but at a lower level of aggregation, i.e., curriculum expenditures for salaries, equipment, supplies and materials. OE Form 346-1, Descriptive Report of Program Activities for Vocational Education, calls for information on state programs (Part B of the Vocational Education Act), on special programs (Parts C, D, F, G and H of the Vocational Education Act), and other information on selected programs according to a listed outline. Most of these areas are reflected in the questions in this subset. The specified "other" information listed

in the descriptive outline is covered, for example, as follows:

Type of Program	- File 1, Question 1
Location	- File 1, Question 16 and File 8, Question 1
Funding Source	- File 1, Question 22 and File 9, Question 22 and File 10, Question 16
Persons Served	- File 9, Question 12 and File 10, Question 9
Intensity of Program	- File 1, Question 6
Program Effectiveness	- File 1, Question 27 and File 5, Question 22 and File 9, Question 15

Two of the three mandated areas clearly not covered by these questions are (1) instructional content and (2) method of instruction. This information concerns File 1, Questions 11-13, and will be discussed in connection with subset (d_2), where it is contained. The third area is cost per student, a derived variable not contained in the Classification Document and therefore not dealt with in this study.

OE Form 346-2, Number of Teachers, Status of Teacher Training and Local Administrative Staff in Vocational Education, calls for information contained in File 1, Questions 25 and 28, and File 7, Questions 2, 4, 6 and 13.

OE Form 346-3, Enrollments in Vocational Education Programs, calls for information contained in File 1, Question 26, and File 5, Question 16, on enrollment data. Completion data are provided under

File 1, Question 27; File 5, Question 22; and File 9, Question 15. The additional information on females (as of July, 1975) in column (c) on the form is contained under File 5, Question 2.

Finally, OE Form 346-4, Placements of Program Completions in Vocational Education Programs, calls for information asked by File 6, Question 3.

Data presently required for the annual report are thus predictably well represented in the core of information comprising this subset. As illustrated in Figure 10, the majority of questions (13) concern curriculum data, eight deal with school level data, and four questions cover each of the three areas of expenditures, staff, and school district. Five questions concern the vocational education student, three have to do with facilities, and one addresses the completer/early leaver. The questions constituting this subset clearly focus on information that is both highly needed and collected currently by a majority of SVEAs, while they also reflect the USOE reporting requirements.

An important consideration in estimating the impact of federal reporting requirements on the composition of information in this subset is the purpose for which the data are needed. A high level of need by state and local agencies for federally mandated information might reflect either the federal requirements or an independent need for the data on the part of state and local administrations for something other than reporting purposes. It is, therefore, necessary to examine the Project EDNEED I data to ascertain the uses for which these questions were most needed. Table 15 shows the needs by use and by level for the 42 questions in subset (c_2). The six uses are: (1) Planning, (2)

Table 15. Need Indices By Use and Level For the 42 Questions in Subset (C_2)

File	Question Number	National Uses						State Uses						Local Uses					
		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
1	1	.440	.318	.525	.169	.211	.365	.583	.266	.308	.540	.756	.234	.565	.415	.534	.225	.420	.318
1	6	.327	.210	.376	.118	.186	.243	.470	.423	.391	.591	.282	.188	.670	.569	.347	.378	.380	.183
1	26	.420	.110	.405	.185	.234	.299	.491	.167	.403	.511	.572	.134	.413	.413	.528	.288	.398	.162
1	10	.315	.995	.407	.076	.108	.289	.392	.473	.585	.101	.175	.230	.496	.578	.667	.104	.296	.384
1	22	.338	.095	.224	.315	.190	.246	.381	.323	.036	.552	.573	.137	.421	.291	.127	.605	.262	.179
9	11	.322	.132	.430	.045	.148	.264	.337	.188	.139	.399	.385	.300	.403	.375	.228	.205	.366	.255
1	24	.279	.055	.131	.308	.139	.143	.347	.188	.083	.608	.435	.036	.489	.323	.215	.566	.228	.077
9	12	.197	.128	.206	.044	.124	.177	.423	.089	.327	.335	.581	.067	.321	.350	.383	.267	.385	.226
9	22	.261	.037	.192	.126	.177	.215	.341	.121	.089	.516	.488	.202	.393	.366	.246	.400	.346	.108
1	27	.279	.028	.529	.051	.147	.195	.538	.032	.462	.206	.387	.234	.292	.142	.378	.155	.304	.227
4	7	.176	.064	.135	.110	.135	.076	.492	.136	.137	.556	.308	.000	.346	.402	.347	.525	.276	.091
5	22	.258	.102	.377	.006	.137	.218	.242	.171	.308	.161	.413	.067	.278	.321	.530	.097	.427	.121
4	2	.189	.051	.158	.138	.079	.098	.387	.230	.018	.609	.291	.018	.237	.441	.584	.320	.103	.320
4	5	.118	.073	.010	.125	.067	.070	.385	.246	.018	.474	.284	.018	.410	.389	.352	.552	.250	.071
5	16	.304	.106	.350	.002	.215	.230	.306	.135	.083	.274	.498	.071	.234	.260	.327	.123	.384	.068
9	24	.255	.088	.204	.202	.200	.138	.216	.121	.143	.363	.363	.071	.317	.293	.207	.354	.284	.121
10	16	.143	.011	.171	.119	.202	.160	.312	.121	.071	.427	.345	.089	.308	.358	.228	.400	.346	.128
9	1	.266	.149	.230	.043	.082	.208	.292	.323	.143	.337	.379	.107	.196	.293	.228	.184	.275	.189
4	1	.201	.051	.181	.097	.161	.055	.359	.131	.089	.516	.341	.018	.277	.304	.236	.442	.309	.155
1	28	.153	.060	.236	.193	.152	.144	.325	.224	.217	.322	.500	.045	.339	.351	.183	.270	.090	.101
1	16	.388	.258	.289	.067	.146	.251	.355	.198	.107	.171	.167	.050	.292	.379	.246	.184	.180	.160

Table 15 (continued)

File	Question Number	National Uses 1	2	3	4	5	6	State Uses 1	2	3	4	5	6	Local Uses 1	2	3	4	5	6
5	2	.339	.146	.351	.002	.244	.293	.290	.149	.167	.081	.508	.185	.101	.121	.234	.031	.445	.172
10	9	.154	.077	.198	.069	.138	.152	.377	.238	.107	.363	.313	.036	.339	.249	.228	.306	.319	.155
6	3	.253	.056	.387	.012	.188	.264	.252	.000	.323	.000	.377	.081	.233	.193	.477	.088	.375	.184
9	25	.208	.103	.180	.180	.136	.105	.234	.107	.210	.381	.435	.071	.266	.206	.262	.299	.208	.123
9	14	.229	.093	.268	.022	.143	.064	.266	.153	.153	.198	.417	.018	.304	.273	.380	.181	.321	.158
1	31	.159	.079	.226	.005	.068	.140	.321	.233	.439	.026	.032	.112	.447	.323	.414	.109	.265	.232
7	18	.198	.112	.240	.103	.138	.052	.176	.171	.222	.298	.347	.059	.269	.255	.219	.284	.269	.120
7	6	.155	.183	.408	.056	.170	.157	.264	.210	.256	.143	.169	.000	.154	.315	.366	.205	.254	.065
5	1	.239	.184	.248	.002	.224	.165	.113	.131	.153	.139	.234	.099	.166	.265	.303	.158	.465	.197
9	15	.185	.105	.331	.011	.092	.224	.313	.089	.331	.018	.210	.089	.228	.188	.361	.176	.261	.221
10	7	.174	.086	.196	.089	.091	.112	.310	.171	.121	.331	.228	.018	.325	.252	.224	.249	.191	.146
7	2	.171	.132	.382	.100	.179	.175	.189	.212	.290	.200	.166	.026	.165	.203	.173	.065	.319	.078
1	18	.114	.054	.430	.012	.102	.159	.284	.113	.506	.050	.000	.026	.238	.165	.434	.066	.201	.107
7	4	.136	.122	.316	.101	.159	.105	.270	.163	.276	.121	.141	.000	.240	.211	.261	.159	.170	.102
1	29	.106	.039	.159	.129	.066	.097	.220	.099	.216	.335	.018	.000	.466	.366	.157	.367	.148	.050
8	17	.156	.082	.229	.130	.118	.024	.171	.067	.000	.341	.242	.000	.324	.313	.193	.356	.211	.039
5	4	.302	.106	.358	.002	.199	.291	.161	.089	.018	.050	.310	.093	.144	.106	.122	.059	.434	.134
8	1	.152	.075	.199	.098	.122	.062	.224	.188	.058	.175	.260	.018	.261	.341	.105	.129	.265	.211
10	19	.171	.020	.143	.174	.155	.092	.274	.103	.121	.264	.292	.000	.216	.136	.148	.268	.183	.126
1	30	.241	.073	.101	.152	.016	.061	.341	.081	.266	.153	.097	.008	.367	.283	.155	.328	.051	.082
8	16	.159	.109	.183	.112	.135	.065	.151	.089	.032	.161	.071	.000	.386	.329	.205	.365	.213	.046
	$\bar{X}$	.229	.123	.269	.098	.146	.165	.314	.171	.201	.295	.319	.078	.318	.303	.299	.259	.283	.152

Operations, (3) Evaluation, (4) Finance and Budgeting, (5) Reporting Requirements, and (6) Public Information.

The means across questions for the national uses suggest that the 42 questions in subset (c_2) are most needed for information on evaluation ($\bar{X}_{NS}$ = .269) and planning ($\bar{X}_{NS}$ = .229). At the state level, although this information is important for reporting purposes ($\bar{X}_{SS}$ = .319), it is almost equally important for planning ($\bar{X}_{SS}$ = .314). At the local level, the need for these data is highest for planning ($\bar{X}_{LS}$ = .318) and higher for operations ($\bar{X}_{LS}$ = .318) and evaluation ($\bar{X}_{LS}$ = .299) than for reporting requirements ($\bar{X}_{LS}$ = .283).

While the "core" of data represented by subset (c_2) is relatively consistent with federal reporting requirements, this information is apparently valued by both states and localities as useful for planning. The localities in particular need this information for operations and evaluation more than for reporting requirements.

As already noted, the choice of the "majority" median as a cut-off point is arbitrary and is simply one way of defining the need/collect match for purposes of illustration. One disturbing factor in the distribution of questions diagrammed in Figure 9 is that all 108 questions in the inner circle (i.e., subsets (c_2) and (d_2)) are highly needed, a minority of which are also widely collected. The majority, therefore, of high-priority questions do not fall into subset (c_2). The "core" represented by subset (c_2) thus excludes 66 highly needed questions, suggesting the need to expand the selection of the "core" into subset (d_2) as explained below in connection with (d_2).

Subset (d_2). The 66 questions in subset (d_2) are listed in Table 16 and represent information highly needed but not widely collected. These questions failed to qualify for subset (c_2) only because information to answer them is not currently collected by at least a majority of SVEAs. However, because of their high priority, a case should be made for including some of them in an essential "core." One way to do this and maintain a high need/collect criterion is to accept another, less stringent definition of the median used to divide collection indices into high and low. "A majority of SVEAs" is a good intuitive measure of "widely collected" information, but it turns out to be rather harsh in regard to our actual data. As Figure 9 showed, only 56 of the 215 questions (i.e., subsets (b_2) and (c_2)) had "collect indices" of at least .51, indicating that 28 or more SVEAs collect information to answer them. The empirical median value of collect indices for all 215 questions was .309*, which represents 17 SVEAs. If this index value is used as a definition for the collection cut-off point, then part of subset (d_2) can be added to the "core." Figure 11 illustrates the relationship of this portion of subset (d_2) to subset (c_2).

Using these criteria, therefore, it is possible to view these two components of the "core" as follows: Subset (c_2) represents the relatively non-controversial portion of this core of questions, i.e., those questions most highly needed across all vocational education

*Mathematically, the empirical median question out of the 215 should be the 108th ranked question, but the collection index for the 104th to the 108th questions were identical. Therefore, the median cut was dropped to the 104th question.

Table 16. Subset (d_2): 66 Questions for Which Information Is Highly Needed though Not Widely Collected

Need Rank	File	Question	# SVEAs Collecting
4	1	8	14
6	1	7	11
8	1	5	4
9	2	2	18
10	6	5	26
12	2	1	26
13	1	4	17
17	1	20	24
19	1	11	27
20	3	1	16
21	9	23	22
22	5	9	25
23	1	17	21
27	1	23	6
28	5	18	9
29	10	17	24
30	5	8	23
31	5	24	15
38	9	3	17
41	1	21	27
42	1	9	13
44	2	5	20
46	9	2	7
47	7	5	25
48	2	4	10
50	11	8	17
52	1	12	14
53	6	9	21
56	2	3	12
57	9	4	20
60	9	30	12
61	11	7	16
62	3	2	16
64	9	29	11
65	1	14	7
66	1	19	27
67	6	10	20
68	5	19	6
70	5	3	27
71	1	13	26
72	6	6	14
74	6	1	26
75	9	16	6
76	9	17	23

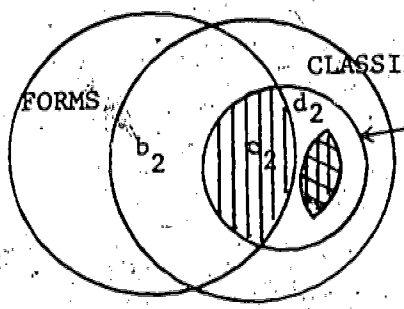
Table 16 (continued)

Need Rank*	File	Question	# SVEAs Collecting	Need Rank*	File	Question	# SVEAs Collecting
77	1	2	2	92	11	1	22
79	5	11	25	93	11	3	12
80	7	20	27	97	10	23	21
81	9	28	24	98	9	10	19
82	6	2	24	99	9	8	2
83	11	6	20	101	10	18	12
86	3	5	15	103	5	21	20
87	9	5	11	104	7	3	22
88	7	21	25	105	6	13	3
90	6	7	20	106	11	2	8
91	5	10	23	108	10	5	1

*Ranks are scaled for the 215 questions in Files 1 through 11.

constituencies and to answer which, information is presently collected by a majority of SVEAs. The section of subset (d_2) indicated by cross-hatching in Figure 11 can be considered to be a rather more controversial portion of this core, i.e., questions highly needed by constituencies, but to answer which, information is presently collected by as few as 17 SVEAs.

The questions in subset (d_2) with collection indices at or above the empirical median .309 are listed in Table 17. Details of need or collection indices for any particular question may be found by



Subset (c_2)

Those questions in subset (d_2) with collection index ≥ .309

Figure 11. Addition to "Core" as a Result of the Less Stringent Definition of "Median Collect"

reference to the Data Base in Volume II. The information addressed in these questions is almost evenly distributed over the curriculum,

Table 17. Subset (d_2): 37 Questions with Collection Indices at or above .309 Ranked by Overall Need

Need Rank*	File	Question Number	Question	# SVEAs Collecting
9	2	2	What are expenditures for instructional activity allocated to the curriculum?	18
10	6	5	How related is the current employment to the occupation trained for?	26
12	2	1	How is the curriculum identified [for curriculum expenditures by activities]?	26
13	1	4	What is the approval status of the curriculum?	17

Table 17 (continued)

Need Rank*	File	Question Number	Question	# SVEAs Collecting
17	1	20	What aspects of instructional and supporting services are evaluated?	24
19	1	11	What is the structure of the curriculum?	27
21	9	23	What is the funding allocated to the school under the Vocational Education Act?	22
22	5	9	What is the physical handicap(s) of the [individual] student?	25
23	1	17	What persons or groups are involved in evaluation and/or curriculum improvement?	21
29	10	17	What is the funding allocated to the LEA under the Vocational Education Act?	24
30	5	8	What is the cultural handicap(s) of the [individual] student?	23
38	9	3	What is the type of school organization by grade level?	17
41	1	21	What are the related occupations for which training is provided in the curriculum?	27
44	2	5	What are the expenditures for administration support services and activities allocated to the curriculum?	20
47	7	5	What is the work experience(s) outside education of the local vocational education [individual] staff member?	25
50	11	8	What are the employment prospects in the LEA service area?	17

Table 17 (continued)

Need Rank*	File	Question Number	Question	# SVEAs Collecting
53	6	9	How satisfied is the completer/ early leaver with his/her school experiences?	21
57	9	4	What is the type of school organization by program offerings?	20
66	1	19	What aspects of the curriculum are evaluated?	27
67	6	10	How relevant does the completer/ early leaver perceive the school curriculum to be for the current job?	20
70	5	3	To what racial or ethnic group does the [individual] student belong?	27
71	1	13	What instructional methods and techniques are used [in the curriculum]?	26
74	6	1	How is the [individual] completer/ early leaver identified?	26
76	9	17	What student personnel services are available in the school?	23
79	5	11	What is the special characteristic(s) of the [individual] student?	25
80	7	20	What is the current activity allocation(s) (FTE allocation) of the local vocational education [individual] staff member?	27
81	9	28	What are the cooperative arrangements [between the local school and] . . . other agencies?	24
82	6	2	How is the curriculum of the completer/early leaver identified?	24

Table 17 (continued)

Need Rank*	File	Question Number	Question	# SVEAs Collecting
83	11	6	What are the employment characteristics of the population in the LEA service area?	20
88	7	21	What is the position assignment allocated by vocational curricula of the local vocational education [individual] staff member?	25
90	6	7	What is the current salary or wage of the completer/early leaver?	20
91	5	10	What is the social and/or emotional handicap(s) of the [individual] student?	23
92	11	1	How is the LEA identified?	22
97	10	23	What are the cooperative arrangements at the LEA level?	21
98	9	10	What are the time elements in the school operation?	19
103	5	21	What are the [individual] student's attendance characteristics?	20
104	7	3	What are the inservice education/training experiences of the local vocational education [individual] staff member?	22

*Ranks are scaled for the 215 questions in Files 1 through 11.

student, staff and school files, as the histogram in Figure 12 shows. This contrasts with Figure 10 showing the distribution over files for subset (c_2), which contained predominantly curriculum information. In particular, some areas in the federal reporting requirements not

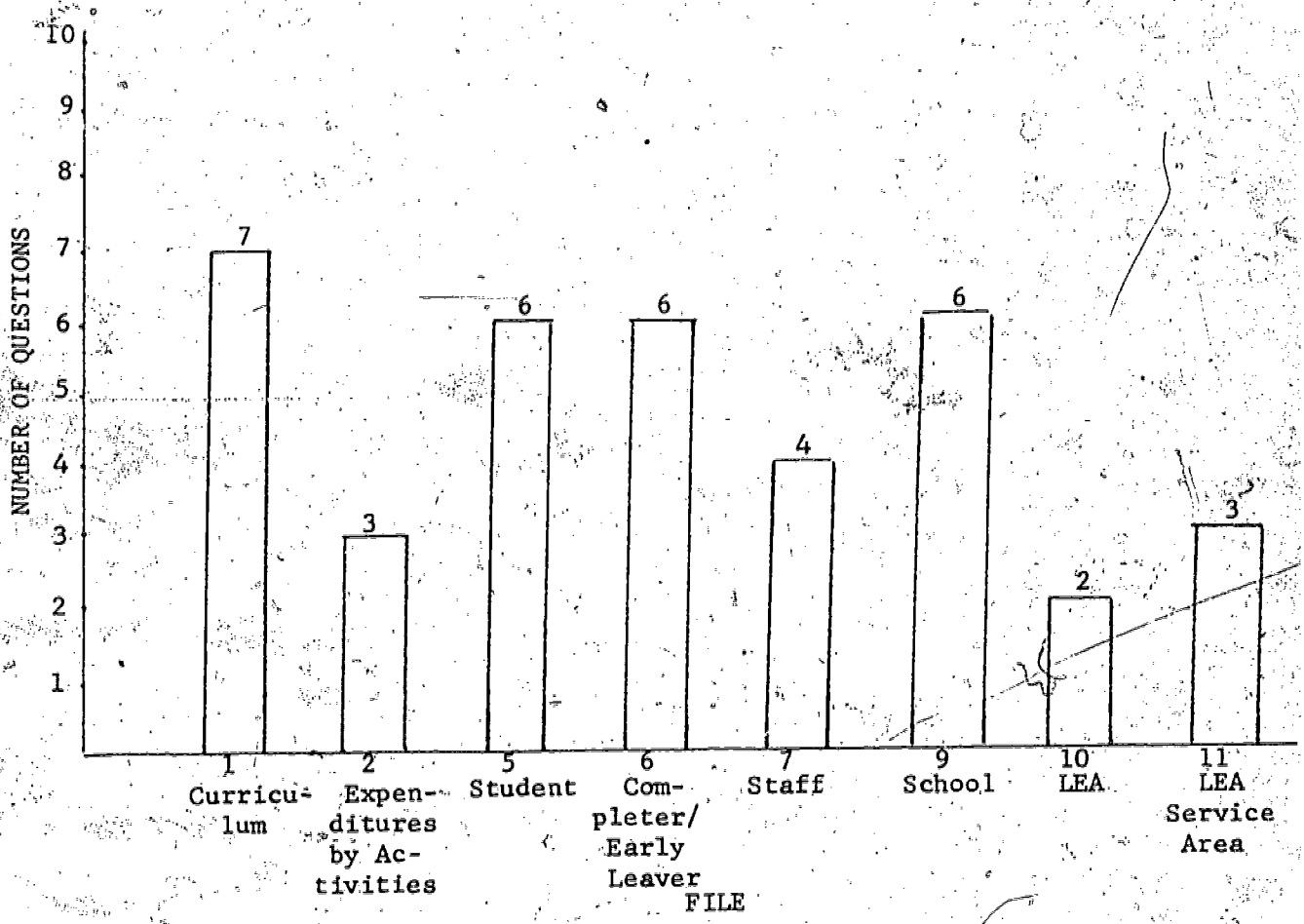


Figure 12. Distribution of the 37 Questions in Subset (d_2) with Collection Indices ≥ .309 Across Files

covered in subset (c_2) are found in this portion of (d_2)--for example, Questions 11 and 13 in File 1 concerning instructional content and method of instruction as called for in the USOE Annual Descriptive Report. Questions are also included on evaluation of the curriculum, approval status and occupations for which the curriculum trains its students. In overall coverage, this subset differs from (c_2) in that there is no information on property or expenditures by object, but three questions on expenditures by activities. In all other respects,

this subset complements subset (c_2) in expanding coverage of student, staff, school and LEA information. If these two subsets, (c_2) and a portion of (d_2), are combined, then, they form a comprehensive and representative collection of questions that not only reflect the current needs for information, but also take into account feasibility in terms of collection by SVEAs. These 79 questions together constitute a suggested essential "core" of questions, the answers to which are most needed across the widest number of vocational education constituencies and currently most likely to be available in SVEAs. The distribution across files of this pool of 79 questions is shown graphically in Figure 13.

The only local-level file not represented in this "core" of questions is File 3, Vocational Curriculum Expenditures by Local Assignments. With the exception of three of the nine questions in this file which appear in the remainder of subset (d_2) below, no questions were given a need rank of 110/215, and none were "collected" by more than six SVEAs, indicating that File 3 contained relatively unimportant information.

The remaining 29 questions in subset (d_2) at or above the median level of need but below the empirical median collect index appear in Table 18. Questions are ranked by need, and the collect index is shown for each. Although these questions are not included in the "core," the very high need as compared with relatively low "collect" index of some of them indicates possible directions for further expansion of the "core." The content of this part of (d_2) should, therefore, be examined more closely.

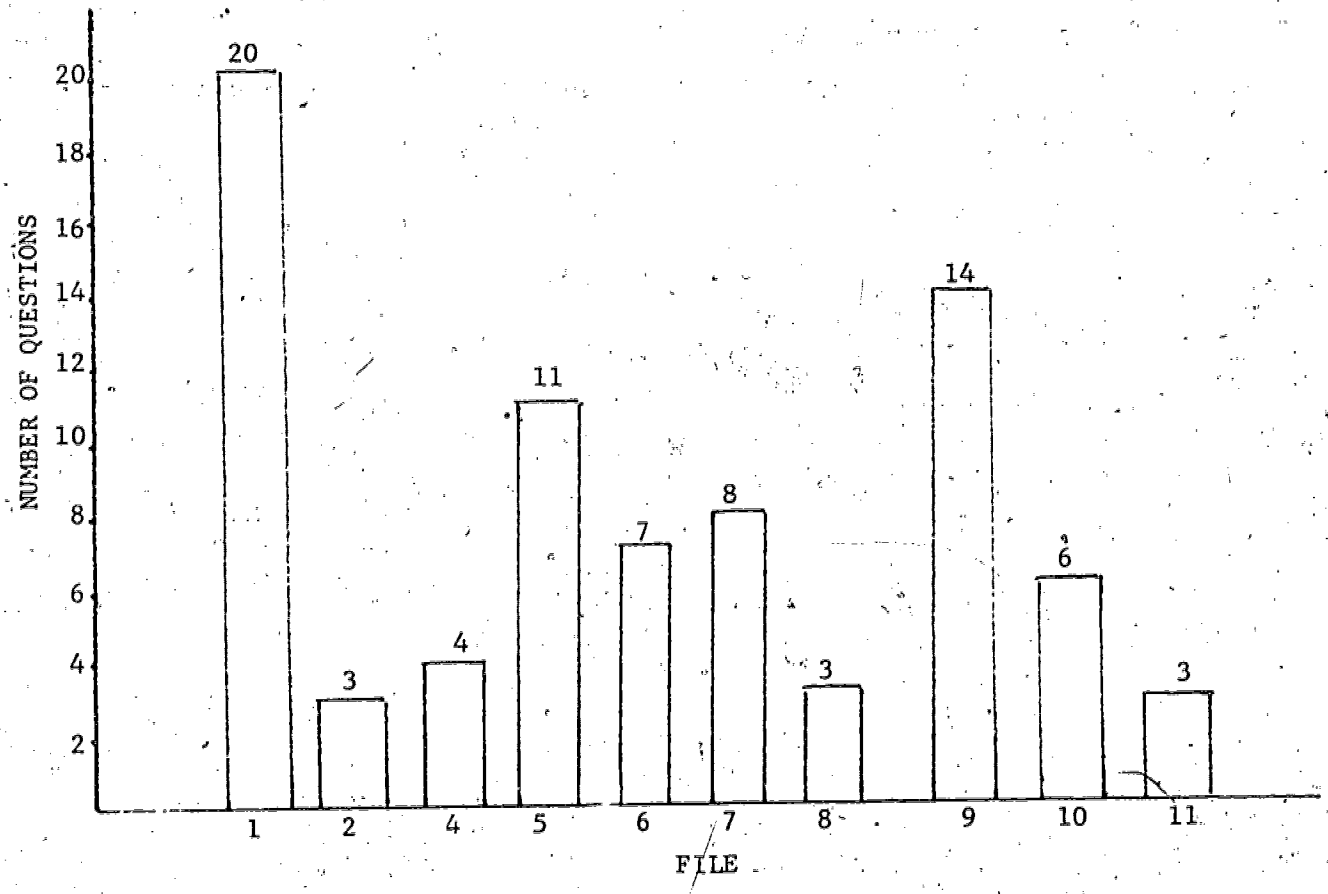


Figure 13. Distribution Across Files of the "Core" of 79 Questions from Subset (c_2) and Part of Subset (d_2) Which Are at or above the Median Overall Need and Are at or above the 50th Percentile Rank of "Collect" Indices

Many of the questions deal with information not likely to be routinely collected on forms. Approval agencies for curricula (File 1, Question 5) and school (File 9, Question 8), or credentials awarded on completion of a curriculum (File 1, Question 9), for example, might be expected to be on file in a policy manual in a state education department. They would be accessible to the state but would not appear anywhere on local forms coming into the SVEA. This may explain the low

Table 18. The Remaining 29 Questions in Subset (d_2) at or above the Median Need but below the Median Rank of Collected Questions

Need Rank*	File	Question Number	Question	# SVEAs Collecting
4	1	8	What are the completion requirements for the curriculum?	14
6	1	7	What are the entrance requirements for the curriculum?	11
8	1	5	What is the approval agency for the curriculum?	4
20	3	1	How is the curriculum identified for vocational curriculum expenditures by local assignments?	16
27	1	23	What is the type of funding allocated to the curriculum from the Vocational Education Act?	6
28	5	18	What is the [individual] student's full-time/part-time status?	9
31	5	24	What are the [individual] student's educational and career intentions?	15
42	1	9	What credentials are granted in recognition of completion of the curriculum?	13
46	9	2	What are the characteristics of the geographic area in which the school is located?	7
48	2	4	What are the expenditures for instruction support services activities allocated to the curriculum?	10
52	1	12	What instruction media are used [for the curriculum]?	14
56	2	3	What are the expenditures for pupil support service activity allocated to the curriculum?	12

Table 18. (continued)

Need Rank*	File	Question Number	Question	# SVEAs Collecting
60	9	30	What are the characteristics of the vocational program advisory committees?	12
61	11	7	What are the current employment activities in the LEA service area?	16
62	3	2	What are the expenditures for instructional assignment allocated to the curriculum?	16
64	9	29	What are the characteristics of the vocational curriculum advisory committees aggregated across curricula?	11
65	1	14	What student evaluation procedures are used [in the curriculum]?	7
68	5	19	What is the student's day/evening status?	6
72	6	6	What were the characteristics of the first job obtained after completion/leaving?	14
75	9	16	What are the requirements for school entrance?	6
77	1	2	What is the accreditation status of the curriculum?	2
86	3	5	What are the expenditures for administrative support assignments allocated to the curriculum?	15
87	9	5	What is the regional coverage of the school?	11
93	11	3	What are the general population characteristics of the LEA service area?	12

Table 18. (continued)

Need Rank*	File	Question Number	Question	# SVEAs Collecting
99	9	8	What is the approval status and agency for the school?	2
101	10	18	What are the LEA expenditures by schools aggregated across curricula?	12
105	6	13	What is the employer evaluation of job performance of the completer/ early leaver?	3
106	11	2	What is the geographic coverage of the LEA service area?	8
108	10	5	What is the organizational structure of vocational education within the LEA?	1

*Ranks are scaled for the 215 questions in Files 1 through 11.

"collect" index on these questions. The same may also be said for File 9, Questions 2 and 5; File 10, Question 5; and File 11, Questions 2 and 3. Although certain aspects of information to answer partially these questions clearly comes in to a few agencies on local forms (as evidenced by the non-zero "collect" index), in general the relevant data would likely be on file at the state level, and thus would not have been accessed by this study. File 11, Question 7, which concerns employment prospects at the local level, may call for some data on local forms, but it is more likely to be answered currently by other agencies at the state level (e.g., Department of Labor or Commerce) which again would help to explain the low number of SVEAs shown to be

collecting this information. The low collect index for File 1, Question 7, may be due to the existence in SVEAs of general entrance requirements in either individual school catalogs or State Department of Education policy manuals. The predominance of expenditure by activities (File 2) and by object (File 4) questions in subsets (c_2) and (d_2) indicates a tendency for SVEAs to account for expenditures more by activities and object than by assignment (File 3). The low collect index for File 3 questions in this portion of (d_2) is consistent with the other subsets already examined.

Questions that clearly would have to be answered from data routinely entering the SVEA are those concerning individual student data (Files 5 and 6). Information on a student's full-time/part-time status, schedule attendance record, career intentions while in school, and first job and employer's evaluation after completion/early leave is highly needed. Because of the relatively low number of SVEAs currently collecting this information and their high need indices, it is instructive to examine the needs for these data by level. The needs for these five questions by levels are shown in Table 19. The mean local need index ($\bar{X}_{LS}$ = .226) indicates a somewhat higher local need for this information than national (.188) or state (.175). The purposes for which each of the levels indicated the highest need are shown in Table 20.

Of the six uses categorized in the Classification Document (for which the specific need for information was classified by each respondent), only two were rated highest for any of the six questions by local constituencies. The in-school student information is needed at

Table 19. National, State and Local Needs for Five Questions on the Individual Student in Subset (d_2)

File	Question Number	NS_i	National Rank*	SS_i	State Rank	LS_i	Local Rank	$\overbrace{\text{Overall}}^{}$ S_i	Overall Rank
5	18	.200	23	.232	39	.247	51	.226	28
5	24	.213	16	.161	95	.294	22	.223	31
5	19	.181	38	.208	55	.183	130	.191	68
6	6	.182	35	.197	62	.177	137	.185	72
6	13	.166	54	.076	165	.230	72	.157	105
		$\bar{X}_{NS}$ = .188		$\bar{X}_{SS}$ = .175		$\bar{X}_{LS}$ = .226			

*Ranks are scaled for the 215 questions in Files 1 through 11.

Table 20. Uses with the Highest Need Rating by Level for Five Questions in Subset (d_2)

File	Question Number	National	State	Local
5	18	Operations	Reporting Requirements	Reporting Requirements
5	24	Planning	Evaluation	Reporting Requirements
5	19	Operations	Reporting Requirements	Reporting Requirements
6	6	Public Information	Evaluation	Evaluation
6	13	Public Information	Evaluation	Evaluation

the local level for reporting purposes, and the completer/early leaver information is needed for evaluation. A similar picture emerges at the state level, and the utilization of the aggregate data at the national level is for operations, planning and public information.

The central focus of these five questions in terms of need at state and local levels is toward either evaluation within levels or reporting to the next higher level. Furthermore, if "operations" at the national level can be assumed to involve dissemination of relevant vocational education information, the predominant national use for these data is also for the purpose of communication to constituents. Regarding inclusion of these questions in the "core," however, their importance for reporting and evaluation may diminish as a result of new reporting requirements. Any decision to expand the "core" to include these questions should take this factor into consideration.

As indicated earlier in this section, methods that arbitrarily divide the questions, by some acceptable criterion, into subsets such as the above are only tools to assist the decision-maker. Use of these methodological tools must be accompanied by substantive analysis of the subsets so obtained. Examination of questions excluded from membership in the above "core" of questions is one important way of validating the utility of the "core," ensuring against loss of vital information, and suggesting directions for possible expansion. The remaining 93 questions in subset (e_2), for example, are too numerous to tabulate usefully here, but should also be looked at closely. Further possible refinements to the "core" of questions are:

1. rejection of questions that qualify for inclusion by overall need, but are relatively unimportant for national-level purposes;
2. addition of some questions in Files 12 through 18 of the Classification Document for which overall need is high, but no collection indices are available; and
3. rejection or addition of questions according to subject area (file) to ensure adequate coverage by category of information (e.g., student, curriculum, etc.).

Once the questions have been identified, it remains only to select those elements conforming to similar high need/collect criteria within each question. Elements for each of the 79 "core" questions are selected and listed below.

Elements

Choosing the most important elements under the 79 questions can be accomplished in several ways. One way is to select on the basis of need alone. Starting at the element with the highest need index, elements might be selected in rank order within questions. Resource capability, content considerations, or some other criteria can be used to establish cut-off points. In this project, however, the attempt to match need and feasibility in recommending selection methods made the principle of balancing need/collect factors paramount. The same criteria used to select the above 79 questions were, therefore, applied to elements within these questions. Each of the 1434 elements in Files 1 through 11 has a non-zero need index, as indicated earlier in the

Results section of this report. Only 1065 of these elements were coded as collected by SVEAs, i.e., had a non-zero collect index. The median need index for elements is defined as the need index value of the middlemost element in the rank of needed elements. Correspondingly, the median collect index is defined as the collect index value of the middlemost element in the rank of collected elements. As with questions, the elements qualifying for inclusion in this exemplary "core" are those which (1) are listed in the Classification Document under one of the 79 selected questions and (2) have both need and collect indices at or above the 50th percentile.

The median need index for elements is .257. The distribution of collect indices, while having a range of 54, has a rather low mean ($\bar{X}$ = 6) and median (mdn = 4). The majority of elements have much lower collect indices (i.e., number of SVEAs collecting) than do questions. Of course, more than one element can be used to answer the same question, and while SVEAs can be represented as collecting different elements, by our measures they are all concentrated into the question "collect" index. Thus, for example, a question may have a "collect" index of .36 (or 20 SVEAs), yet collect indices for elements may be no greater than .09 (or 5 SVEAs) for the four elements within the question. In that example, five different SVEAs would be currently collecting each element. The "other" category for elements is also computed into the question "collect" index to reflect those SVEAs that are currently collecting information not presently included in the Classification Document that can be used to answer the question. It is possible, then, to find a question with a "collect" index of .09 (five SVEAs)

and with only two elements, both with "collect" indices of .04 (or two SVEAs). The residual SVEA in this case can be found in the collect index for the "other" category for this question.

The relatively low size of collect indices for elements does suggest that the more stringent definition of the median (i.e., collected by a majority of SVEAs) has little use for elements. Only 59 of the total 1065 elements were collected by at least a majority of SVEAs, and only 40 of the 59 satisfied our criteria for inclusion in the exemplary "core." The empirical median of the distribution of collect indices for elements (i.e., .07 or four SVEAs) is, therefore, used as the cut-off point for element collect indices.

For inclusion in the exemplary "core," then, elements must have a need index of $\geq .257$ and a collect index of $\geq .07$. By these criteria, 307 elements qualify and are listed in order of need in the exemplary "core" below. The 40 elements and 42 questions that are both highly needed and presently being collected by a majority of SVEAs are marked by an asterisk. Where no element is currently collected to answer one of the "core" questions by more than three SVEAs, no elements are included for that question in the "core." In this case, references to the Data Base printout in Volume II will supply the existing need/collect statistics for that question in detail.

The exemplary "core" is listed by information category, or file according to the Classification Document, in the following order:

1. Curriculum and Instructional Characteristics (File 1)
2. Local School Characteristics (File 9)
3. Characteristics of the Vocational Completer/Early Leaver (File 6)

4. Vocational Student Characteristics (File 5)
5. Vocational Curriculum Expenditures by Object (File 4)
6. Vocational Curriculum Expenditures by Activities (File 2)
7. LEA Vocational Staff Member Characteristics (File 7)
8. LEA Characteristics (File 10)
9. Characteristics of the LEA Vocational Service Area (File 11)
10. LEA Vocational Property Characteristics (File 8).

Arrangement of the essential "core" data by information category (file) in this manner facilitates reference to specific areas of concern. Questions are ordered by need within these categories (files), and those that are "widely" collected, i.e., by 28 or more SVEAs, can be identified by their asterisk. Furthermore, the order of the categories (files) is also prioritized by overall importance. With the exception of Files 8 and 12, each of the ten files listed above is in order of priority as determined by Project EDNEED I, by the amount of needed information they contain. File 8 was ranked 14th in importance and is last of the 10 files presented in the exemplary "core." File 12 was ranked 5th in order of importance in the 18 files in Project EDNEED I but is not included in the Project EDNEED II analysis for reasons already given.

The composition of this "core" is fortuitously distributed over the other nine most important files, supporting the criteria used in selecting the 79 essential questions. All the most important local files are represented in the core, and in general, the more questions per file in the core, the more important the file, by Project EDNEED I measures of "importance."

Finally, it is emphasized again that the "core" derived by this method is exemplary and only one of numerous possible "cores" available. As previously explained, the multiple cut-off procedure employed for determining membership means that some questions and elements are excluded even though they may be either highly needed or widely collected. The information contained in the "core" does, however, represent a sound estimate of those data presently both needed and collected nationwide.

EXEMPLARY CORE

1 / Curriculum and Instructional Characteristics (File 1)

Question 1: How is the curriculum identified within a school?*

Elements:
- program level*
- curriculum and instructional code*
- title*
- program area*
- school code*
- type of student work program (if applicable)*
- academic year*
- LEA code*

Question 6: What is the time schedule for the curriculum?*

Elements:
- average contact hours required for completion
- total number of clock hours for instruction*
- duration in school months

Question 26: What is the curriculum enrollment?*

Elements:
- total enrollment by student characteristics*
- total number of withdrawals by type
- average daily attendance

Question 10: What are the planned instructional terminal student outcomes for the curriculum?*

Elements:
- job preparation (DOT numbers)
- manipulative skills and theory
- technical and auxiliary knowledge
- occupational information
- exploration

Question 22: What is the source(s) of funding for the curriculum?*

Elements:
- dollar amount - federal funding
- dollar amount - state funding
- dollar amount - local funding

*Questions and elements highly needed and widely collected, i.e., at or above the median need index and "collected" by a majority of SVEAs.

Question 4: What is the approval status of the curriculum?*

Elements: approved
not approved

Question 24: What are the curriculum expenditures?*

Elements: total expenditure*
by activities

Question 20: What aspects of instructional and supporting services are evaluated?

Elements: facilities
preparation of instructional staff
certificate status of instructional staff
experience of instructional staff
community needs
student needs
administration/supervision
post-school student outcomes
attainment of planned instructional outcome
method of instruction
characteristics of students served
completion rate
numerical adequacy of staffing
supplies
finances
student personnel services
community resources
nature of staff assignments
medium of instruction
staff performance in assignment
movable equipment
services for instructional staff
salaries and salary schedule
resource services for students
staff morale

Question 27: What are the post-school outcomes of curriculum completers/early leavers?*

Element: total number by post-school outcomes*

Question 11: What is the structure of the curriculum?

Elements: (All elements have above the median need index, but no elements are collected by more than three SVEAs.)

Question 17: What persons or groups are involved in evaluation and/or curriculum improvement?

Elements:
- school staff
- state education agency staff
- students
- central LEA staff
- representatives of community interests

Question 28: What staff are assigned to the curriculum?*

Elements:
- personnel identification*
- FTE allocated to curriculum
- total number by staff characteristics

Question 16: Where is the location of the instruction?*

Elements:
- school
- business, commercial or industrial
- hospital
- other non-school location
- governmental agencies
- home

Question 21: What are the related occupations for which training is provided in the curriculum?

Elements:
- titles of related occupations
- occupational classification code used

Question 31: What are the characteristics of the curriculum advisory committee?*

Elements:
- membership by agency, institutional or organizational representation
- functions of committee
- frequency of committee meetings
- total membership

Question 19: What aspects of the curriculum are evaluated?

Elements:
- scope of instructional content
- articulation of elements
- sequence of course and instructional units
- currency
- appropriateness in terms of age of learners (depth and breadth)

Question 13: What instructional methods and techniques are used?

Element:
- laboratory experience

Question 18: What evaluation procedures are used for curriculum evaluation?*

Elements:
- interpretation of outcomes
- use of data collection findings
- frequency of evaluation
- data collection media

Question 29: What equipment is assigned to the curriculum?*

Elements:
- equipment identification*
- total cost by equipment characteristics
- total number by equipment characteristics

Question 30: What is the utilization of the building by the curriculum?*

Elements:
- identification of buildings used
- identification of rooms used

2 Local School Characteristics (File 9)

Question 11: What are the school's vocational curricular offerings?*

Elements:
- total number of vocational curricular offerings by curriculum and instructional characteristics
- curriculum identification*

Question 12: What are the characteristics of students served by the school?*

Elements:
- total vocational enrollment by program area*
- total number of vocational student withdrawals
- total vocational enrollments by curriculum and instructional characteristics*
- total number of vocational early leavers by reason for leaving
- total vocational enrollment by student characteristics*
- anticipated number of vocational education enrollments in short run (long run)
- total vocational enrollment by program level*
- anticipated number of total enrollments in the short run (long run)

Question 22: What is the amount of school funding for vocational education by source?*

Elements:
- dollar amount - federal funding
- dollar amount - state funding
- dollar amount - local funding
- dollar amount - private funding
- dollar amount - other funding

Question 23: What is the funding allocated to the school under the Vocational Education Act?

Element:
- dollar allocation by VEA funding categories

Question 24: What are the school's total expenditures aggregated across curricula for vocational education?*

Elements:
- by activities
- by program area as a cost center
- by part of VEA as a cost center
- by assignment
- by program level as a cost center

Question 1: How is the school identified?*

Elements:
- name*
- geographic location*
- school number/code*
- administrative unit
- congressional district

Question 3: What is the type of school organization by grade level?

Elements:
- technical institute/technical college
- junior/community college
- four-year high school
- adult school or other adult education organization
- junior high school
- other secondary school

Question 25: What are the school expenditures by curriculum for vocational education?*

Elements:
- by activities
- by object*
- by assignment

Question 14: What are the characteristics of the vocational staff of the school?*

Elements: total number of staff
personnel identification*

Question 4: What is the type of school by program offerings?

Elements: area vocational school
comprehensive high school
complete vocational school
service center

Question 15: What are the post-school outcomes of vocational completers/early leavers?*

Elements: post-school outcomes by curricula*
leaver identification
total number by post-school outcomes*

Question 17: What student personnel services are available in the school?

Elements: placement services
follow-up and evaluation services
career counseling
educational counseling
information services
counseling with parents
personal/social counseling

Question 28: What are cooperative arrangements with other agencies?

Elements: (Three elements have above-median need indices, but no elements are collected by more than three SVEAs.)

Question 10: What are the time elements in the school operation?

Elements: (One element has above-median need index, but no elements are collected by more than two SVEAs.)

3 Characteristics of the Vocational Completer/Early Leaver (File 6)

Question 5: How related is the current employment to the occupation trained for?

Elements: employed in occupation trained for
employed in related occupation
employed in unrelated occupation

Question 3: What is the current employment status of the completer/early leaver?*

Elements:
- employed full-time (30 hours or more per week)
- employed part-time
- unemployed and available for work*
- not available for employment - military
- not available for employment - further education/ training
- not available for employment - household responsibilities
- not available for employment - illness
- not available for employment - pregnancy

Question 9: How satisfied is the completer/early leaver with his/her school experiences?

Elements:
- satisfaction with vocational instruction
- satisfaction with placement services
- satisfaction with vocational facilities
- satisfaction with student personnel services

Question 10: How relevant does the completer/early leaver perceive the school curriculum to be for the current job?

Elements:
- skills required on the job
- equipment used on the job

Question 1: How is the completer/early leaver identified?

Elements:
- Social Security number
- current legal name
- current address
- legal name when in school
- school number/code

Question 2: How is the curriculum of the completer/early leaver identified?

Elements:
- title and code of curriculum completed
- title(s) and code(s) of curriculum terminated prior to completion
- date of curriculum completion
- date of termination prior to completion

Question 7: What is the current salary or wage of the completer/early leaver?

Elements:
- hourly wage/weekly wage/annual salary
- hours worked per week

4 Vocational Student Characteristics (File 5)

Question 9: What is the physical handicap(s) of the student?

Elements:
- crippled
- special health problems
- deaf
- speech impaired
- hard of hearing
- blind
- partially seeing

Question 22: What are the characteristics of student completers/early leavers?*

Elements:
- reason for early leave
- completed curriculum requirements
- early leaver
- date of completion/early leave

Question 8: What is the cultural handicap(s) of the student?

Elements:
- culturally disadvantaged
- inability to speak language of instruction
- functionally illiterate
- migrant children
- other cultural handicaps

Question 16: In what curriculum is the student currently enrolled?*

Elements:
- title of curriculum*
- program level
- curriculum and instructional code
- school entered*

Question 2: What is the sex of the student?*

Elements:
- female*
- male*

Question 1: How is the student identified?*

Elements:
- student's legal name*
- Social Security number*
- student's address*
- name and address of parents
- student I. D. number
- school number/code

Question 3: To what racial or ethnic group does the student belong?

Elements: black/Negro
Caucasian
American Indian/Alaskan native
Hispanic
Asian (oriental) or Pacific Islands
other racial or ethnic groups

Question 11: What is the special characteristic(s) of the student?

Elements: mentally retarded
slow learner
underachiever
gifted and talented

Question 10: What is the social and/or emotional handicap(s) of the student?

Elements: emotionally disturbed
delinquency-prone

Question 4: What is the age of the student?*

Elements: age group of student
date of birth

Question 21: What are the student's attendance characteristics?

Elements: number of days of absence
number of days of attendance

5 Vocational Curriculum Expenditures by Object (File 4)

Question 7: What are expenditures for equipment allocated to the curriculum?*

Elements: instructional equipment
instructional support equipment
administrative equipment

Question 2: What are expenditures for salaries allocated to the curriculum?*

Elements: regular salaries*
temporary salaries
overtime (extended time) salaries

Question 5: What are expenditures for supplies and materials allocated to the curriculum?*

Elements: supplies
curriculum materials
expendable tools and shop items

Question 1: How is the curriculum identified (for expenditures by object)?*

Elements: program level
curriculum title*
OE instructional code
program area

6 Vocational Curriculum Expenditures by Activities (File 2)

Question 2: What are the expenditures for instructional activities allocated to the curriculum?

Elements: (All elements have above-median need indices, but no elements are collected by more than three SVEAs.)

Question 1: How is the curriculum identified (for expenditures by activities)?

Elements: program level
OE instructional code
curriculum title
program area
type of student work program
school code

Question 5: What are the expenditures for administration support services activities allocated to the curriculum?

Elements: program supervision and coordination services
evaluation activities
school general administration activities

8 LEA Vocational Staff Member Characteristics (File 7)

Question 5: What is the work experience(s) outside of education of the local vocational education staff member?

Elements: number of years work experience in specified vocational areas
number of years work experience

dates of work experience for each prior organization
name of organization(s) in which prior work experience was acquired
current employer (if dually employed)

Question 18: What is the current position assignment(s) (FTE allocation) of the local vocational education staff member?*

Elements: teaching assignment
supervisor/director/coordinator assignment
counseling/guidance assignment
director/dean assignment

Question 6: What credentials are held by the local vocational education staff member?*

Elements: name of certificate/license held
grade/class of teaching certificate held
occupation(s) licensed
type(s) of license(s) held
date of expiration
program level authorized by credentials
date of issuance of certificate/license
curricula authorized by credentials

Question 2: What are the educational characteristics of the local vocational education staff member?*

Elements: type and name of certificate(s), diploma(s) and/or degree(s) earned
highest year of education completed
additional credits earned beyond last degree
date each certificate, diploma or degree earned
major field of undergraduate study
institution at which each certificate, diploma and/or degree was earned
number of credit hours in professional education
number of credit hours in planning and organizing of vocational education

Question 20: What is the current activity allocation(s) (FTE allocation) of the local vocational education staff member?

Elements: regular secondary curricula instructional activity
disadvantaged secondary curricula instructional activity
handicapped secondary curricula instructional activity

regular adult curricula instructional activity
regular postsecondary curricula instructional activity
program supervision and coordination activities

Question 4: What are the education and related work experiences of the local vocational education staff member?*

Elements: number of years prior vocational education teaching experience
number of years prior teaching experience
area(s) of vocational education experience
name of agency or institution in which prior experience was acquired
area(s) of other education experience
name of agency or institution in which prior experience was acquired
grade levels taught
dates of employment for each prior agency/institution

Question 21: What is the position assignment allocated by vocational curriculum of the local vocational education staff member?

Elements: curriculum title(s)
instructional code(s)

Question 3: What are the inservice education/training experiences of the local vocational education staff member?

Elements: type of inservice activity
institution/agency offering activity
award certificate or credit received on completion

8. LEA Characteristics (File 10)

Question 17: What is the funding allocated to the LEA under the Vocational Education Act?

Element: dollar allocations by Vocational Education Act funding categories

Question 16: What are the sources of funding for vocational education at the LEA level?*

Elements: dollar amount - local funds
dollar amount - state funds
dollar amount - federal funds

Question 9: What are the characteristics of vocational students served by the LEA aggregated across schools?*

Elements:
- total enrollment by program area
- total enrollment by curriculum and instructional characteristics
- total enrollment by program level
- total enrollment by student characteristics

Question 7: What are the vocational curricula offerings aggregated across schools for the LEA?*

Elements:
- curriculum identification*
- total number by curriculum and instructional characteristics

Question 23: What are the cooperative arrangements at the LEA level?

Elements: (Three elements have above-median need, but no elements selected by more than one SVEA.)

Question 19: What are the LEA total expenditures aggregated across schools?*

Elements:
- by program area as a cost center
- by part of the VEA as a cost center
- by program level as a cost center

9 Characteristics of the LEA Vocational Service Area (File 11)

Question 8: What are the employment prospects in the LEA service area?

Elements:
- anticipated long-term (five years) labor demand by occupation
- anticipated short-term (one year) labor demand by occupation
- anticipated short-term (one year) labor supply by occupation

Question 6: What are the employment characteristics of the population in the LEA service area?

Elements:
- employment by occupations
- unemployment rate by age, sex and race

Question 1: How is the LEA identified?

Elements:
- LEA name
- LEA code

10 LEA Vocational Property Characteristics (File 8)

Question 17: What are the characteristics of the large movable tools and equipment used in vocational education instruction?*

Elements:
- equipment item identification*
- equipment cost*
- acquisition date
- equipment condition
- curriculum allocation
- building location

Question 1: What are the locational characteristics of the local site?*

Elements:
- geographic location
- school name
- school number/code

Question 16: What are the characteristics of the fixed equipment used for instruction in vocational education?*

Elements:
- equipment item identification (including description)*
- equipment cost
- equipment condition
- acquisition date

LIST OF REFERENCES

Drewes, D. W., Gabriel, B. R., and Lawrence, J. E. S. Data Needs in Vocational Education. Vol. V: Data Analysis--Procedures and Results. Final Report of Project EDNEED I. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Drewes, D. W., Nerden, J. T., and Porter, G. W. Data Needs in Vocational Education. Vol. II: Project EDNEED Classification of Information. Final Report of Project EDNEED I. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Ellis, M. L. A Report to the Nation on Vocational Education. Flagstaff: Northern Arizona University, 1975.

Friend, J. K., and Jessop, W. N. Local Government and Strategic Choice. London: Tavistock Publications, 1969.

Katz, D. S. Data Availability in Vocational Education. Vol. IV: Alternative Procedures for Meeting Informational Needs. Final Report of Project EDNEED II. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Kendall, M. G. Rank Correlation Methods, 3rd edition. London: Griffin Publishers, 1963.

Koble, D. E., and Coker, R. U. Demographic Characteristics of State Level Vocational Education Agencies. Columbus: Center for Vocational Education, The Ohio State University, 1973.

Lawrence, J. E. S., Childers, F. L., and Gabriel, B. R. Data Availability in Vocational Education. Vol. II: Data Base of Needed and Collected Information. Final Report of Project EDNEED II. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Lawrence, J. E. S., and Dane, J. K. State Vocational Education Planning: An Assessment of Issues and Problems. Raleigh: Center for Occupational Education, North Carolina State University, 1974.

Lee, A. M. A Data Base for Vocational Education and Manpower Training. Project Baseline Supplementary Report. Flagstaff: Northern Arizona University, 1974.

Lee, A. M., and Sartin, R. Learning a Living Across the Nation. Vol. II. Project Baseline Second National Report. Flagstaff: Northern Arizona University, 1973.

Nerden, J. T., Oglesby, E. H., and Childers, F. L. Data Needs in Vocational Education. Vol. III: Project EDNEED Lexicon. Final Report of Project EDNEED I. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Oglesby, E. H., Gabriel, B. R., and Childers, F. L. Data Availability in Vocational Education. Vol. III: Directory of Data Collection Forms. Final Report of Project EDNEED II. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Porter, G. W. Data Needs in Vocational Education. Vol. I: Summary of Procedures and Results. Final Report of Project EDNEED I. Raleigh: Center for Occupational Education, North Carolina State University, 1976.

Thorndike, R. L. Personnel Selection: Test and Measurement Techniques, 2nd edition. New York: John Wiley and Sons, 1954.

U. S. General Accounting Office. What Is the Role of Federal Assistance for Vocational Education? Report to the Congress. Washington, D. C.: U. S. Government Printing Office, 1974.

APPENDICES

APPENDIX A

PROJECT EDNEED I SUMMARY

Purpose and Objectives

Project 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, operations, 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 were 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, operations, 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 14. In phase I, two approaches to the identification of sources were utilized--first, a literature review and, second, direct visitations 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 participation in Phase II. To facilitate this purpose, a 35mm slide presentation was developed and used widely to disseminate information about the project.

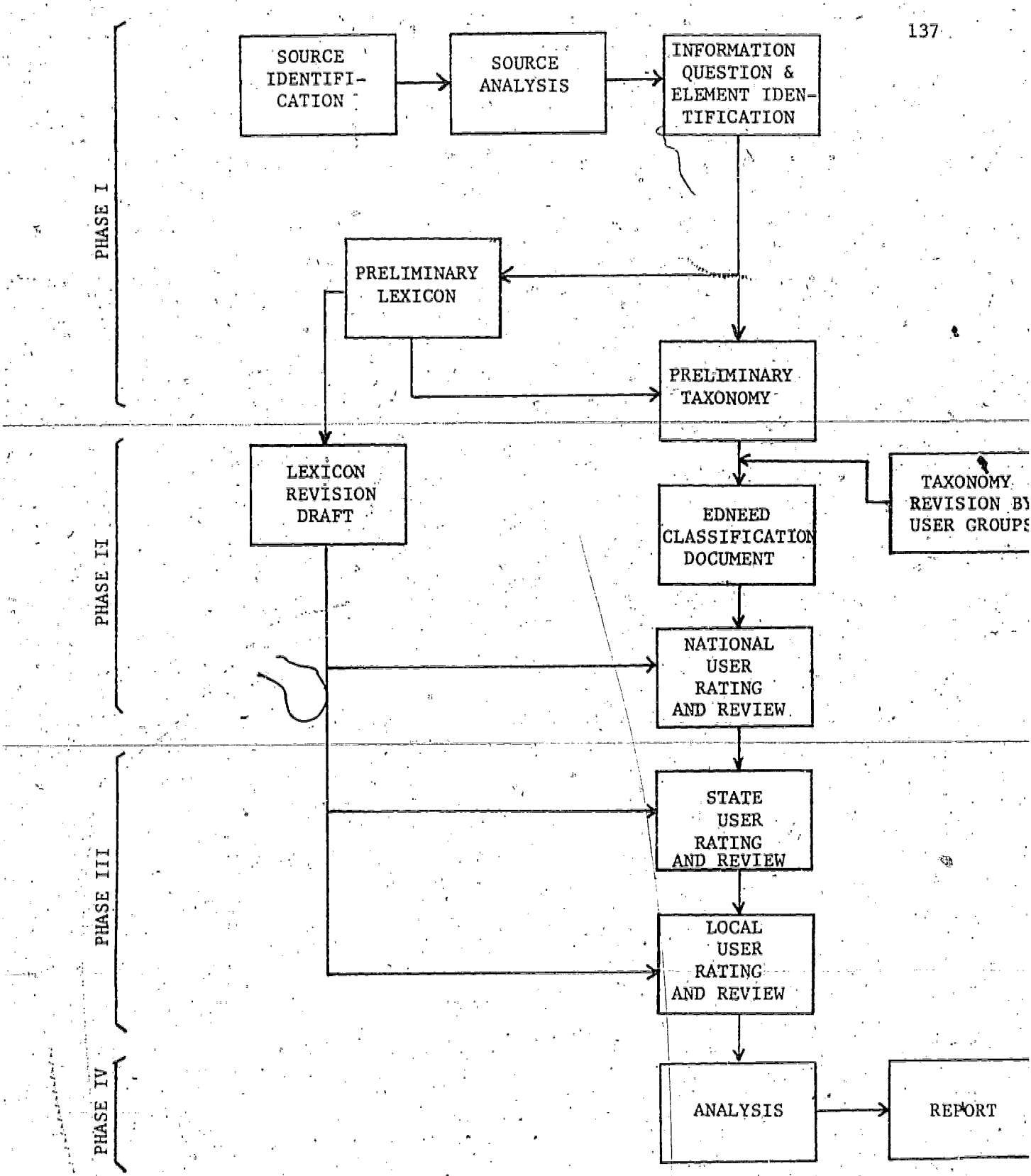


Figure 14. Products and Procedures of Project EDNEED I by Phase

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 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 information 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 was received, focusing mainly on 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 to incorporate the suggestions into a completely revised taxonomy in time for review, rating and checking by

a conference of national data users scheduled for mid-March, 1975, 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 I 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" to "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, conferees were presented with the 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 Project EDNEED I 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, 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 Project EDNEED I 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 between 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.

- 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 versus the benefits of placing people in employment.

- Local education agency data users have a greater need for curriculum information than do either national or state users.

- State users have less need for data on student characteristics than do national or local users.

- Local data needs are more congruent with a national orientation than with 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 with a state orientation.

- Information on the characteristics of the curriculum and instructional 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 information 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 and budgeting data.
- State data needs for planning, operations, finance and 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 21. Project EDNEED I Classification Document Organization of Files and Component Questions

Table 21 (continued)

Table 21 (continued)

Table 21 (continued)

Table 21 (continued)

Table 21 (continued)

Table 21 (continued)

Table 22. Project EDNEED I Classification Document Sample File Organization Showing Questions and Information Elements

File 4

Title: What are the vocational curriculum expenditures by object?

Question 1: How is the curriculum identified?

- Curriculum title
- OE instructional code
- Program level
- Program area
- Type of student work program
- School code
- LEA code
- Academic year

Question 2: What are expenditures for salaries allocated to the curriculum?

- Regular salaries
- Temporary salaries
- Overtime (extended time) salaries

Question 3: What are expenditures for employer benefits allocated to the curriculum?

- Group health or life insurance
- Contributions to employee retirement
- Other

Question 4: What are expenditures for purchased services allocated to the curriculum?

- Non-payroll instructional services
- Non-payroll administrative support services
- Property services
- Transportation services
- Public relations services
- Printing and binding
- Tuition to other educational agencies

Question 5: What are expenditures for supplies and materials allocated to the curriculum?

- Supplies
- Curriculum materials
- Expendable tools and shop items

Table 22 (continued)

File 4

Question 6:	What are expenditures for land and buildings allocated to the curriculum?	
		Land (initial expenditure)
		Building acquisition and improvement expenditures
		Site improvement other than buildings
Question 7:	What are expenditures for equipment allocated to the curriculum?	
		Instructional equipment
		Instructional support equipment
		Administrative equipment
Question 8:	What are other expenditures allocated to the curriculum?	
		Redemption of principal
		Interest
		Dues and fees
Question 9:	What is the amount of transfers allocated to the curriculum?	
		Fund modifications
		Conveyance of flow-through monies to persons and/or agencies

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

CENTER FOR OCCUPATIONAL EDUCATION
RESEARCH-DEVELOPMENT-TRAINING

APPENDIX B

LETTER TO CEIS REPRESENTATIVES IN STATES AND TERRITORIES

The DASP Program Division of the Center for Occupational Education is currently conducting a study, Project EDNEED, for the U. S. Office of Education. One purpose of the study is the identification of data elements that satisfy the shared vocational education information needs of national, state, and local user groups. In addition, a compilation will be made of all data elements presently being collected and utilized for vocational education planning and reporting. These data involve information beyond that required by federal compliance documents.

We would appreciate your assistance in securing copies of each of the forms for collection of vocational education information used by your state, or a comprehensive list of data elements with their definitions.

As a result of the study, vocational education information groups should benefit from a comprehensive, empirically determined needs assessment for information at the national, state and local levels.

Your cooperation and contribution will be greatly appreciated.

Sincerely,

Robert L. Morgan, Director
Project EDNEED I

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

CENTER FOR OCCUPATIONAL EDUCATION
RESEARCH-DEVELOPMENT-TRAINING

APPENDIX C

LETTER TO DIRECTORS OF ALL 56 VOCATIONAL EDUCATION AGENCIES

We would like to thank you and your staff for the cooperation already provided us on Project EDNEED, to inform you of the progress of the project, and to request your further assistance in the next stage of this national study.

As you may recall, Project EDNEED is an ongoing effort of the Center for Occupational Education to determine

1. the questions most frequently asked regarding information for the administration of vocational education at the national, state and local levels;

2. the information elements empirically identified as most needed to answer those questions; and

3. the match between what is needed and what is currently being collected.

A progress report on the project was made to the Executive Session of State Directors at the 1974 AVA Convention. The first two stages have already been completed. It is essential to the third stage that we obtain from your state a comprehensive and up-to-date set of all forms regularly and systematically used by your agency to collect information for state administrative purposes, i.e., planning, operating or evaluating vocational education programs, or for public information or reporting purposes. This includes information on secondary, postsecondary and adult instructional levels. Also requested are copies of all guidelines and instructions for either filling out forms or routinely collecting data from other sources, e.g., manpower projections.

We are aware that similar requests have been made by other agencies. It is crucial, however, that we have a complete set of updated forms and guidelines from all states. We are willing to work with your agency in any way possible to expedite the return of this information.

We are particularly sensitive to the additional burden imposed by this request. However, we feel Project EDNEED is unique in that it is designed to assess actual needs of vocational education administrators at all levels. We feel strongly that your effort is critical to the accurate determination of a common core of data of maximum utility to decision-makers in vocational education.

Sincerely,

Robert L. Morgan, Director
Project EDNEED I

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

CENTER FOR OCCUPATIONAL EDUCATION
RESEARCH-DEVELOPMENT-TRAINING

APPENDIX D

FOLLOW-UP LETTER TO DIRECTORS OF VOCATIONAL EDUCATION AGENCIES

In July of this year, we mailed you a request for all forms then currently used to collect data for state administration of vocational education at secondary, postsecondary and adult levels. As indicated in the July letter, we were sensitive both to the additional burden imposed by this request and to the fact that we are not the first to ask for such information. We felt, however, that the rate of change in data-gathering techniques of some state vocational education agencies made it essential to contact each state for an accurate and current picture. Returns so far from across the nation have been gratifying, but we have not yet received a response from your state.

Current forms and guidelines from your state are quite indispensable if Project EDNEED is accurately to reflect each state's information needs in its eventual derivation of a common core of data of maximum utility to vocational educators at all levels.

Please accept our thanks if the forms are en route to us. If not, please help us in making a valid contribution to the vocational education data-collection field by sending your forms as soon as possible.

Sincerely,

John E. S. Lawrence
Co-Director
Project EDNEED II

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

CENTER FOR OCCUPATIONAL EDUCATION
RESEARCH-DEVELOPMENT-TRAINING

APPENDIX E

VERIFICATION LETTER

We would like again to express our appreciation and thanks to you and your staff for sending us your current forms and guidelines for Project EDNEED.

Because we want to ensure accuracy of coverage in our representation of each state, we are enclosing our current listing of all the forms and related materials we have from your state. Furthermore, because many states are at present involved in updating their forms, we are asking that July 1, 1975, be considered as the time at which these forms be considered "current." Changes made subsequent to that date will, therefore, not be reflected in this project.

Please look the enclosed list over for errors and completeness of coverage. There is no need to return the list unless you would like to suggest changes. We are particularly interested in the degree of coverage for secondary, postsecondary and adult levels of vocational education. If you notice areas in which we are substantially lacking forms, please indicate them and, where possible, send us those particular forms. If we do not hear from you by October 6, we will assume that we have as complete a set of all forms used as input to state vocational education administration (as of July 1, 1975) as it is possible to obtain at this time from your state.

Again, thanks for your great help in this project.

Sincerely,

John E. S. Lawrence
Co-Director
Project EDNEED II

APPENDIX F

DIRECTORY FORMAT

STATE NAME

INDEX NUMBER	FORM NUMBER	DATE OR REVISION DATE	TITLE OF FORM	COLLECTION UNIT	CONTENT CODES	FORM COMPLETED OR APPROVED BY:

Collection Units and Content Codes for Directory

Collection Unit Codes

Individual Student	- IS
Staff Member	- SM
Course or Class	- CL
Grade Level	- GR
Curriculum	- CU
School	- SC
LEA (District)	- LEA
State	- ST
Other	- OTH

Content Codes

Administrative/Procedural	- AP
Completions	- CO
Curriculum	- CU
Enrollment	- EN
Equipment/Facilities	- EF
Evaluation	- EV
Financial	- FI
Follow-up/Placement	- FP
Planning	- PL
Staff Information	- SF
Student Information	- SD
Other Information	- OT