

## DOCUMENT RESUME

ED 073 229

VT 018 425

AUTHOR Miller, David H.; Beasley, Gary F.  
 TITLE ERIC Instructional Package for Vocational Educators.  
 INSTITUTION Ohio State Univ., Columbus. Center for Vocational and Technical Education.  
 SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.B  
 REPORT NO Inf-Ser-67  
 PUB DATE 73  
 NOTE 82p.  
 AVAILABLE FROM The Center for Vocational and Technical Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210

EDRS PRICE MF-\$0.65 HC-\$3.29  
 DESCRIPTORS Group Instruction; Individual Study; \*Information Retrieval; \*Information Seeking; Information Sources; Information Systems; Information Utilization; Search Strategies; \*Study Guides; \*Teaching Guides; \*Vocational Education  
 IDENTIFIERS Educational Resources Information Center; \*ERIC

## ABSTRACT

Designed as an individual study guide as well as a teaching reference and guide, this teaching-study unit presents instruction on using educational information retrieval indexes, particularly the Educational Resources Information Center (ERIC) system's: (1) "Research in Education" (RIE), (2) "Current Index to Journals in Education" (CIJE), (3) "Abstracts of Instructional Materials in Vocational and Technical Education" (AIM), and (4) "Abstracts of Research Materials in Vocational and Technical Education" (ARM). The guide contains: (1) a discussion of the ERIC system's information retrieval products and other library retrieval sources, (2) instruction in conducting a manual or computer search of the ERIC system, which consists of defining the problem and outlining the search strategy, and (3) information for locating documents identified through the search. Appended materials include: (1) a glossary of ERIC terminology, (2) sample pages from ERIC access products, (3) several "hands-on" exercises in the use of RIE, CIJE, AIM, ARM, the "ERIC Thesaurus," and the computer search. Transparency masters for the visuals presented in the text are available from the Product Utilization Section of The Center for Vocational and Technical Education. (SB)

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# ERIC INSTRUCTIONAL PACKAGE FOR VOCATIONAL EDUCATORS

Information Series No. 67

**ERIC**

Clearinghouse on Vocational  
and Technical Education

VT018425



## FOREWORD

As the ERIC Collection continues to grow and becomes an increasingly important information resource for educators, it is necessary to instruct potential users on how to efficiently and effectively utilize the system. This ERIC instructional package is designed to serve as a self-study unit or an instructional guide. Transparency masters are available for group instruction.

The functions of Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and Abstracts of Research Materials in Vocational and Technical Education (ARM) are explored with the user gaining first-hand experience in retrieving information. The user is moved systematically through the development of a problem statement, first determining the parameters of the problem and then outlining the search strategy. The problem statement provides the searcher with the information upon which to select terms to be used in conducting a subject index search. Instruction is provided in the use of the Thesaurus of ERIC Descriptors in converting retrieval terms to ERIC terminology.

Steps in conducting a manual search of the ERIC system are outlined, with accompanying hands-on exercises in the use of RIE, CIJE, AIM, and ARM. Formulation of computer (QUERY) search requests is explained with opportunity for participants to demonstrate an understanding of combining descriptors in "and" (+), "or" (/) logic.

The profession is indebted to David H. Miller and Gary F. Beasley for their scholarship in the preparation of this product. Recognition is also due Garry Bice, Tennessee Research Coordinating Unit for Vocational Education; and Norman Ehresman, Western Kentucky University, for their critical review of the manuscript prior to final revision and publication.

Robert E. Taylor  
Director  
The Center for Vocational and  
Technical Education  
ERIC Clearinghouse on Vocational  
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**ERIC INSTRUCTIONAL PACKAGE  
FOR  
VOCATIONAL EDUCATORS**

David H. Miller

and

Gary F. Beasley

ERIC Clearinghouse on Vocational and Technical Education  
The Center for Vocational and Technical Education  
The Ohio State University  
1960 Kenny Road Columbus, Ohio

1973

The material in this publication was prepared pursuant to a contract with the National Institute of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official National Institute of Education position or policy.

## CONTENTS

INTRODUCTION . . . . .	iii
Message to the Individual User . . . . .	iii
Message to the Instructor . . . . .	iii
Instructional Objectives . . . . .	iv
INFORMATION RETRIEVAL PRODUCTS . . . . .	1
Library Information Retrieval Tools . . . . .	1
Educational Resources Information Center . . . . .	2
FORMULATING THE MANUAL SEARCH . . . . .	5
Search Statement . . . . .	5
Identification of Key Words . . . . .	6
Search Strategy . . . . .	7
Converting Retrieval Terms to ERIC Terminology . . . . .	16
The Conversion Process . . . . .	23
OBTAINING DESIRED DOCUMENTS . . . . .	27
Locating Document Resumes . . . . .	28
Locating Full-Text Documents . . . . .	29
COMPUTER SEARCHING . . . . .	31
Identifying the Problem . . . . .	31
Designing the Search . . . . .	32
SUMMARY . . . . .	34
APPENDIX A: ERIC TERMINOLOGY . . . . .	35
APPENDIX B: SAMPLE OF FORMATS OF ACCESS PRODUCTS . . . . .	39
APPENDIX C: "HANDS-ON" EXERCISES FOR USE OF ERIC ACCESS PRODUCTS . . . . .	49
APPENDIX D: PERFORMANCE TESTS . . . . .	67

## INTRODUCTION

This teaching-study unit presents instruction on using educational information retrieval indexes--particularly the Educational Resources Information Center (ERIC) system's Research in Education (RIE), and Current Index to Journals in Education (CIJE), published by the U.S. Office of Education, as well as Abstracts of Instructional Materials in Vocational and Technical Education (AIM) and Abstracts of Research Materials in Vocational and Technical Education (ARM), published by The Center for Vocational and Technical Education. The unit is designed for use as an individual study guide as well as a teaching reference and guide.

### Message to the Individual User

This instructional unit on the use of ERIC can be a very effective self-learning device. It is recommended that the user have ready access to individual issues of RIE, CIJE, AIM, ARM, and a copy of the Thesaurus of ERIC Descriptors before beginning the study unit. The visual aids which are presented in the text provide a reference to key points for consideration, as do Appendix A "ERIC Terminology," and Appendix B "Sample Formats for Use of ERIC Access Products." After reading the text, the search exercises in Appendix C, should be completed as a means of assuring that "hands-on" experience is gained in the use of the retrieval indexes.

### Message to the Instructor

The ERIC Instructional Package may be used in a variety of ways. Therefore, the instructor should become familiar with the unit before any attempt is made to use it. The unit can be used in group study, or it may be assigned as an independent study activity.

For group instruction as well as for independent study, it is recommended that every student have access to an issue of RIE, CIJE, AIM, ARM, and a copy of the Thesaurus of ERIC Descriptors. Transparency masters for the visuals presented in the text are available from:

Product Utilization Section  
The Center for Vocational and Technical Education  
1960 Kenny Road  
Columbus, Ohio 43210

The instructor may elect to use only selected portions of the material in presenting instruction on information retrieval. If this approach is selected, the transparencies should be used in the lecture/

discussion presentation. Throughout the text of this instructional unit, transparency reference are noted where applicable. As part of the lecture/discussion presentation, reference may be made frequently to visuals, "Sample Formats of ERIC Access Products" (Appendix B). After completing the lecture/discussion presentation, the "hands-on" exercises will familiarize students with search activities in the retrieval indexes (Appendix C). The instructor may use these exercises or prepare additional activities to meet individual student needs. The Performance Tests on ERIC Access Products: RIE, CIJE, ARM and AIM, the ERIC Thesaurus, and computer searching (Appendix D), can be used to determine user understanding.

If the instructional unit is assigned to students as an individual activity, the instructor should insure that "hands-on" exercises are utilized in some manner. Such exercises can be used through outside assignments or as classroom activities.

### Instructional Objectives

The following instructional objectives should provide a description of the knowledge and skills which can be acquired as a result of learning experiences presented, and describe the behavior that should be demonstrated after completing the ERIC Instructional Package.

1. The participant who has acquired the knowledge and understanding of the information retrieval process will be able to:
  - a. describe the process of converting an information problem to a search statement;
  - b. choose relevant descriptors for use in a search strategy; and
  - c. describe the function of microforms and how to use them in information retrieval.
  
2. The participant will acquire a knowledge and understanding of the scope and organizational structure of ERIC and will be able to:
  - a. list at least two reference indexes available through the Central ERIC facility;
  - b. list the two reference indexes available through The Center for Vocational and Technical Education;

- c. define the function of the ERIC Document Reproduction Service (EDRS); and
  - d. list a minimum of four library resource reference tools that can be used to supplement the ERIC reference publications.
3. The participant will understand the function of and be able to use Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and Abstracts of Research Materials in Vocational and Technical Education (ARM) so that, when given an information retrieval problem, he can identify relevant documents by means of a manual search. He will then be able to:
- a. select appropriate descriptors for an information search problem when given a description of the problem;
  - b. take a descriptor (index/retrieval term) pertaining to a search problem and
    - (1) locate at least one document title and accession number in the Subject and Identifier Index,
    - (2) locate the document resume in the Abstract Section of AIM or ARM,
    - (3) list the name of the author of the document,
    - (4) list the availability of the full-text document,
    - (5) list the agency which sponsored the research or instructional materials development,
    - (6) list the date of publication and the number of pages of the original document,
    - (7) locate the citation in the Personal and Institutional Author Index,

- (8) locate the citation in the Conversion of Document Index, and
  - (9) locate the citation in the Document Number Index.
4. The participant will have learned the function of and be able to use Research in Education (RIE) so that, when given an information retrieval problem, he can identify relevant documents by means of a manual search. He will thus be able to:
- a. select appropriate descriptors for a given search problem;
  - b. take a descriptor and
    - (1) locate at least one document title and accession number in the Subject and Identifier Index,
    - (2) locate the document resume in the Resume Section of RIE,
    - (3) list the author of the document ,
    - (4) list the availability of the full-text document,
    - (5) list the publication date of the original document,
    - (6) list the ERIC Clearinghouse that processed the document,
    - (7) list the agency that sponsored the research,
    - (8) locate the document in the Author Index, and
    - (9) locate the accession number in the Cross Reference Index.
5. The participant will understand the function of and be able to use Current Index to Journals in Education (CIJE) so that, when given an information retrieval problem, he can identify relevant journal article citations by means of a manual search. Thus, he will be able to:

- a. select appropriate descriptors for an information search problem when given a description of the problem;
  - b. take a descriptor pertaining to the search problem and
    - (1) locate at least one journal article citation in the Subject Index,
    - (2) list the title of the journal article,
    - (3) list the title of the journal in which the article appears,
    - (4) locate the resume of the journal article in the Main Entry Section and identify the Descriptor Group under which the citation appears,
    - (5) locate the journal article citation in the Author Index,
    - (6) list the volume and issue numbers, number of pages, and date of the journal article, and
    - (7) locate the journal citation in the Journal Contents Index.
6. The participant will be able to demonstrate proficiency in using the Thesaurus of ERIC Descriptors. He will demonstrate this proficiency by being able to:
- a. locate and list descriptors when given a specific multiword term by utilizing the words-in-context feature of the Rotated Descriptor Display within the Thesaurus.
  - b. locate and list at least one broader term (BT) item associated with a specific ERIC descriptor;
  - c. locate and list at least one narrower term (NT) item associated with a specific ERIC descriptor;
  - d. locate and list at least one related term (RT) item associated with a specific ERIC descriptor;

- e. locate and list a scope note (SN) item associated with a specific ERIC descriptor; and
  - f. locate and list at least one ERIC term that can be used as an alternate for a given "non-ERIC" term.
7. The participant will understand the function of and be able to perform necessary steps in formulating a computer (QUERY) search request, allowing him to:
- a. convert a search problem into a specific search statement in order to minimize the retrieval of irrelevant materials;
  - b. select appropriate descriptors from the Thesaurus to use in the computer search request; and
  - c. be able to demonstrate an understanding of combining descriptors in "and" (+) and "or" (/) logic when specifying the search strategy by selecting appropriate descriptor combinations in a search exercise.

## INFORMATION RETRIEVAL PRODUCTS

Users of education-related information are generally motivated by one overriding factor: a need to increase their awareness of what has been done and what is being done to solve educational problems. Many sources of information, including personal contacts with colleagues, are available to the researcher and practitioner in education. The education literature provides an almost overwhelming resource of such information. Literally thousands of books, research reports, texts of speeches, sets of instructional materials, and journal articles are published daily. Other types of educational literature include critical reviews, bibliographies, and state-of-the-art papers. To obtain information on resource materials, various retrieval tools can be used.

### Library Information Retrieval Tools

1. The library card catalog system is an important resource. Most library card catalog systems include subject, author, and title sections that can direct the searcher to specific reading materials that have been acquired by the library in which the system is housed.
2. The Readers' Guide to Periodical Literature lists a wide selection of periodicals, but is not limited to periodicals contained in a particular library.
3. The Educational Index lists bibliographic data on periodicals within the realm of education. This reference tool is available in most university and college libraries but may not be available in secondary school or public libraries.
4. Dissertation Abstracts International is another possible reference source. It includes abstracts of doctoral dissertations from major universities and also lists the availability of individual full-text dissertations. Many colleges and universities contain a collection of these volumes.

5. Direct Access to Reference Information (DATRIX), a computer-based retrieval system, is also available for identifying abstracts of dissertations in its collection.

#### Educational Resources Information Center

Using all the above reference tools in locating literature will ensure a fairly comprehensive search. Collectively, however, these do not represent a coordinated effort at developing resource materials into a comprehensive educational information system.

To provide a national educational information system, the U.S. Office of Education (USOE) has developed the Educational Resources Information Center (ERIC) system. This system provides ready access to: results of exemplary programs, research and development efforts, and related information that can be used in developing more effective educational programs.

Through a network of specialized centers or clearinghouses, each of which is responsible for a particular educational area, current significant information relevant to education is acquired, evaluated, abstracted, indexed, and listed in one or more of the ERIC reference publications. A central ERIC facility coordinates the processing of documents by the separate clearinghouses and assembles ERIC reference publications and makes them available to users.

ERIC Access Products. Two indexes available through Central ERIC are:

Research in Education (RIE), a monthly abstract journal reporting research reports and related documents of educational significance indexed by subject, author, and institution (see Appendix B-1); and

Current Index to Journals in Education (CIJE), a monthly guide to periodical literature covering over 500 educational and related journals (see Appendix B-2).

Two reference publications devoted to vocational and technical education are available through The Center for Vocational and Technical Education. These are:

Abstracts of Instructional Materials in Vocational and Technical Education (AIM), a quarterly publication which contains abstracts and bibliographic data on materials used by teachers in presenting information to students or materials used by students in connection with classroom instruction; and

Abstracts of Research Materials in Vocational and Technical Education (ARM), also a quarterly publication which includes abstracts and bibliographic data on research and research-related documents as well as information on specially funded research projects currently underway (see Appendix B-3).

Both AIM and ARM include, with their abstracts, information on microfiche (MF) and hard copy (HC) availability of the full-text documents from which the abstracts were developed.

The Thesaurus of ERIC Descriptors serves as an authoritative guide for assigning the descriptive terms used to index the various reports and journal articles that are entered in the ERIC information system. All terms in the Thesaurus are based on documents or journal articles previously indexed and currently included in the ERIC system. It is updated quarterly in a "Working Copy" format.

Index Format. ERIC reference tools are designed so that, once familiar with the format of one publication, you will be able to use all others. They are indexed to offer a variety of approaches for finding information by using:

- \* Subject Index--to find documents and projects on a specific topic through use of descriptors (Index/Retrieval Terms).
- \* Author or Investigator Index--to find out what an author has written or to learn what an investigator is now doing.
- \* Institution Index--to find out what an institution has published or what research projects are now being conducted at an institution.

- \* Accession Number Index--to identify a document when only the clearinghouse number (e.g., VT) or Central ERIC (ED) number is available.

Computer Retrieval Capability. ERIC is also accessible through automated processes such as magnetic tapes. Organizations having access to computers and appropriate retrieval software packages may wish to take advantage of the magnetic tapes (machine-readable forms) or ERIC files which are updated quarterly. One system utilizing tapes is QUERY. QUERY is the information retrieval program which is used to search the ERIC magnetic tape file. It is a proprietary system made available through-USOE on a limited basis to state and local educational agencies.

## FORMULATING THE MANUAL SEARCH

Information retrieval often involves locating documents from the bibliographic information that is available -- such as the name of an author, the name of an institution, or specific accession numbers that relate to that problem. When references on a specific topic are not known or if additional references are needed, a search strategy must be designed that can direct the searcher to information that addresses the problem.

### Search Statement

The first step in designing a search strategy is to convert the information problem into a search statement. A search statement is formulated by determining the parameters of the search problem and then listing the specific needs, preferences, and specifications that best address the problem. The following situation illustrates the importance of designing search statements to address specific information problems.

Situation: You are a researcher and have been asked to gather research studies on designing, developing, and conducting an evaluation of an occupational education program. Such research studies are to be used in assessing the effects of occupational education for program planning and program improvement purposes. In addition, information is needed on guidelines, procedures, and techniques used for gathering data that can be used in the evaluation.

An efficient solution to the information problem can be effected only after a specific search statement is formulated to guide the search for relevant material. The basic problem is to identify research studies on the evaluation of occupational education programs.

The search problem could be written as (Visual 1)\* This statement provides the searcher with the information upon which to make the decision as to what terms to use in conducting the subject index search.

Identify research that pertains to the evaluation of occupational education programs.

#### Identification of Key Words

The next step in the search process is to identify key words in the problem and underline them for later consideration. Two terms that clearly stand out as being descriptive of the problem are the terms "evaluation" and "occupational education." If we find that numerous documents are indexed under these items we may elect to "narrow down" the search statement. To do this, we might ask the following questions:

- \* What other terms would be either synonymous with or related to our retrieval terms "evaluation" and "occupational education"?
- \* Do "program evaluation," "program effectiveness," or "cost analysis" pertain to the problem?
- \* As a substitute for "occupational education," could "vocational education" be used, or "agricultural education," "business education," "health education," "home economics education," "distributive education," or "trade and industrial education"?

\*The visuals which accompany the text were reduced from the actual transparencies which are available for large group instruction.

### Search Strategy

If some, or all, of these terms are appropriate for our search, a systematic means of search for the information is needed.

Spot Search. When one wishes to conduct a spot search that does not require a great amount of depth, a convenient way to locate documents is to list potential index/retrieval terms on a worksheet and search for titles of documents under the specified retrieval terms in the Subject Index of a particular reference publication (see Appendix B-4,5).

For the search on evaluation of occupational education, assume that the following terms are used (Visual 2).

**Program Evaluation  
Evaluation  
Program Effectiveness  
Occupational Education  
Vocational Education**

List these terms on the worksheet and search for relevant article titles (Visual 3). After appropriate titles are found, list only the identification or accession numbers (ED, EJ, or VT) and not the titles. These accession numbers are used for cross-reference, document locations and document ordering.

INDEX/RETRIEVAL TERMS				
Program Evaluation	Evaluation	Program Effectiveness	Occupational Education	Vocational Education

After identifying a sufficient number of possible documents, use the accession numbers to locate the abstracts of appropriate documents and review them for relevancy to the search problem.

The Comprehensive Search. When a detailed, comprehensive search is required or if one is conducting a search for another person, a different search approach is often more appropriate. Decisions must be made as to the retrieval terms to use as outlined by the search statement. (The following procedure differs from the previous discussion in that synonymous retrieval terms must be grouped together as a means of organizing a systematic way either of identifying or eliminating specific documents in the search.)

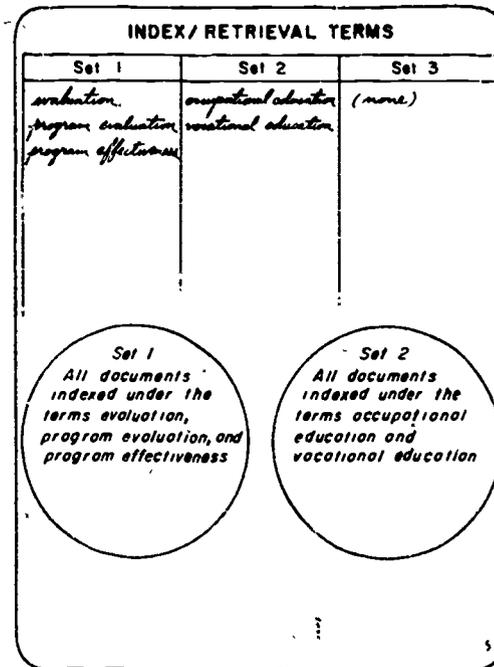
A worksheet can be used to help organize the search (Visual 4). By listing the synonymous terms vertically in the columns,\* the search can be broadened. By listing other terms in columns (or sets) to the right of the first column, the search can be limited. The worksheet takes the following form.

INDEX/ RETRIEVAL TERMS		
Set 1	Set 2	Set 3
evaluation program evaluation program effectiveness	occupational education vocational education	(none)

In this search problem, assume that we only want information that pertains to the terms listed on the worksheet. The information search is then conducted using the terms "evaluation," "program evaluation," or "program effectiveness" as they pertain to "occupational education" or vocational education."

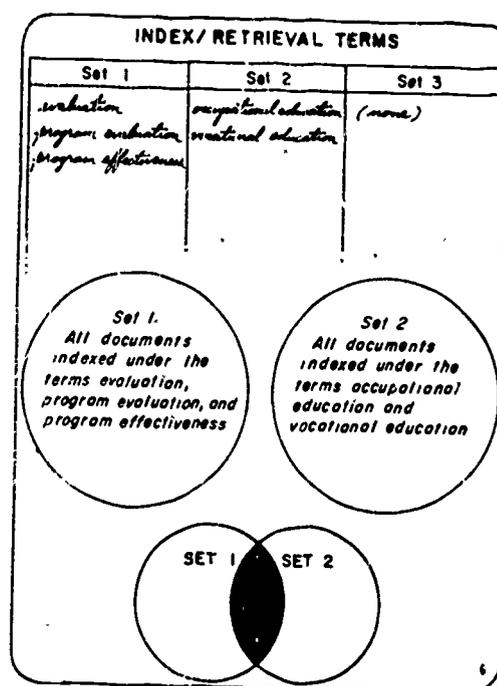
\*The term "set" is used throughout this series of visuals as a means of labeling columns.

The available information in this search problem might be illustrated in this way (Visual 5).



However, the search statement specifies that research reports in these two bodies of available information are acceptable only when an index/retrieval term in "Set 1" is used with "Set 2."

Thus, the information that addresses the search problem as defined through the index terms is illustrated by the overlapping areas of the two circles shown (Visual 6).



By searching for information using the index terms outlined above, the available research studies can be identified. We have stated that research reports with index terms of "evaluation" or "program evaluation" or "program effectiveness" are sought if they pertain to "occupational education" or "vocational education."

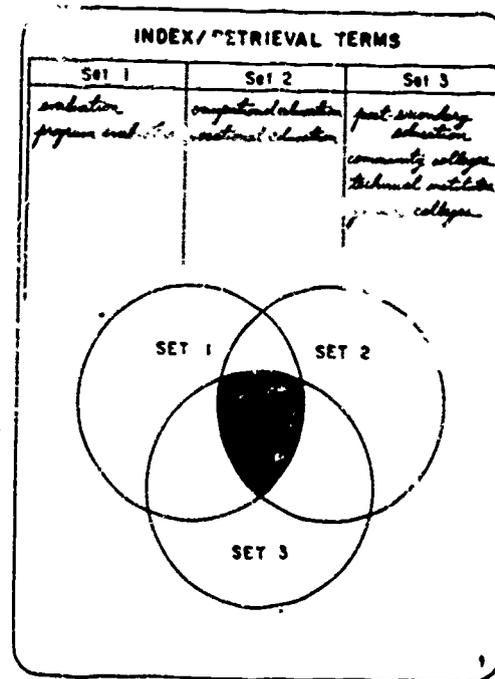
This information search statement can be refined to yield more specific information. Suppose that we want to identify only those evaluation studies on occupational education that relate specifically to post secondary programs. The following search statement would then be in order (Visual 7).

Identify research that pertains to the evaluation of occupational education programs at the post-secondary level.

In searching for information at the post-secondary level, terms that might be appropriate include "post-secondary programs," "community colleges," "technical institutes," or "junior colleges." The worksheet might take the following form (Visual 8).

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
<i>evaluation</i> <i>program evaluation</i>	<i>occupational education</i> <i>vocational education</i>	<i>post-secondary</i> <i>education</i> <i>community colleges</i> <i>technical institutes</i> <i>junior colleges</i>

This illustration indicates that although the information search will yield a more limited volume of research reports, each of the reports identified is relevant to the search statement (Visual 9).



Thus, if more sets of terms are used, the quantity of information will be smaller and yet more specific as it relates to the search statement. We can assume that an increase in synonymous or related terms in a set increases the number of reports that might be identified; and the more "sets" or terms used in establishing parameters of the information search, the more specific we can be in identifying relevant research reports. So, we broaden or limit our search by the terms we use and by the way in which we use them.

For a further explanation, let us take the broad information problem which was outlined at the beginning of this discussion. Suppose we want research reports that describe means of collecting data that can serve as evaluative criteria in judging the effectiveness of occupational programs. Let us select one criterion--followup studies--that can be used in the evaluation of an occupational program.

If guidelines, methods, or techniques for use in developing and conducting followup studies on occupational education are needed, the following search statement is appropriate (Visual 10).

Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.

Selecting Retrieval Terms. Selecting and organizing the appropriate terms to be used in searching for relevant documents calls for decisions on the selection of retrieval terms. The search statement specifies "guides," "methods," and "techniques." Other related terms that might be used are "procedures" and "guidelines." The search statement specifies further that these retrieval terms must pertain to "followup programs" and "followup surveys."

In addition, the search statement calls for documents that deal with occupational education. The term "vocational education" can be used as well as the terms for the service areas of vocational education such as agricultural education, distributive education, business education, health occupations education, and home economics.

The arrangement of these terms for retrieval purposes is illustrated on the following retrieval form (Visual 11).

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
<i>methods</i> <i>techniques</i> <i>guides</i> <i>procedures</i> <i>guidelines</i>	<i>followup studies</i> <i>followup programs</i> <i>followup surveys</i>	<i>occupational education</i> <i>vocational education</i>

Thus, by searching for information by means of the above strategy, we should identify abstracts of documents indexed under at least one term in the first "set" if these documents are also indexed under at least one term in each of the other "sets." If documents are identified that are not indexed under at least one term in each of the sets listed on the worksheet, the documents would likely be irrelevant to our problem. The searcher should identify relevant documents by circling common accession numbers as they appear across the specified "sets."

This information search statement (Visual 10) illustrates that precise parameters for an information problem are necessary. The search statement specified the parameters for the information search and also suggested relevant retrieval terms to be used in searching information sources. However, the retrieval terms that are used in the search process might not be appropriate for a given information system such as ERIC. Therefore, one must search a given information system only by employing the terminology that was used to index documents for retrieval purposes.

### Converting Retrieval Terms to ERIC Terminology

To be most effective in searching the ERIC system, one needs to convert the retrieval terms of a search strategy to ERIC terminology. The Thesaurus of ERIC Descriptors, an authoritative list of index/retrieval terms on education, has been designed as an aid in labeling concepts and showing the context in which certain concepts are used. By referring to the Thesaurus while developing the search statement, one can compile a comprehensive list of terms relevant to the information problem and also insure that retrieval terms are written in ERIC "language." Before changing non-ERIC terms into ERIC terminology, one needs to become familiar with the Thesaurus.

Thesaurus Format. The Thesaurus consists of two major sections--the "Rotated Descriptor Display" and the "Descriptor Listing."

The Rotated Descriptor Display is a list of all the descriptors in the Thesaurus with each element of each descriptor (each word in each multiword term) entered separately in alphabetical order as it is used throughout the Thesaurus (Visual 12).

INDO EUROPEAN LANGUAGES  
ADMINISTRATOR EVALUATION  
AUDITORY EVALUATION  
COUNSELOR EVALUATION  
COURSE EVALUATION  
CURRICULUM EVALUATION  
DENTAL EVALUATION  
EQUIPMENT EVALUATION  
EVALUATION  
FACULTY EVALUATION  
MEDICAL EVALUATION  
PERSONNEL EVALUATION  
PRESCHOOL EVALUATION  
PROFILE EVALUATION  
PROGRAM EVALUATION  
PSYCHOLOGICAL EVALUATION  
SELF EVALUATION  
SPEECH EVALUATION  
STUDENT EVALUATION  
TEACHER EVALUATION  
TEXTBOOK EVALUATION  
EVALUATION CRITERIA  
EVALUATION METHODS  
EVALUATION NEEDS  
EVALUATION TECHNIQUES  
EVALUATIVE THINKING

Thus, every word of every descriptor is listed alphabetically, and every possible combination of the words is listed in the alphabetic array of descriptors. The "Rotated Descriptor Display" is

useful in determining all combination usages of a particular descriptive term as the term is used within the ERIC system. The purpose of the "Display," from a searcher's point of view, is to alert him to all possible uses of a particular word. The goal is to suggest other descriptors and to provide a perspective of the contents of the Thesaurus. Using the descriptor--"evaluation"--as presented in the previous information search, an array of terms is listed in the Thesaurus as shown in Visual 12.

The "Descriptor Listing" is used in determining the context within which descriptors are used and to identify related terms or specifically define appropriate retrieval terms for the search strategy (Visual 13). The "Descriptor Listing" includes five notations used to structure and display each type of term. (Only four are shown in the visual.) The five notations are: (1) Use, (2) Used For, (3) NT, (4) BT, and (5) RT.

Evaluation Designs  
use EVALUATION TECHNIQUES

EVALUATION METHODS 190

NT Content Analysis  
Cost Effectiveness  
Followup Studies  
Graduate Survveys

BT Methods

RT Action Research  
Comparative Analysis  
Correlation  
Counselor Evaluation  
Course Evaluation  
Evaluation  
Evaluation Criteria  
Evaluation Techniques  
Quality Control  
Relevance (Information Retrieval)

EVALUATION NEEDS 190

BT Needs

RT Evaluation

Evaluation Procedures  
use EVALUATION TECHNIQUES

EVALUATION TECHNIQUES 190

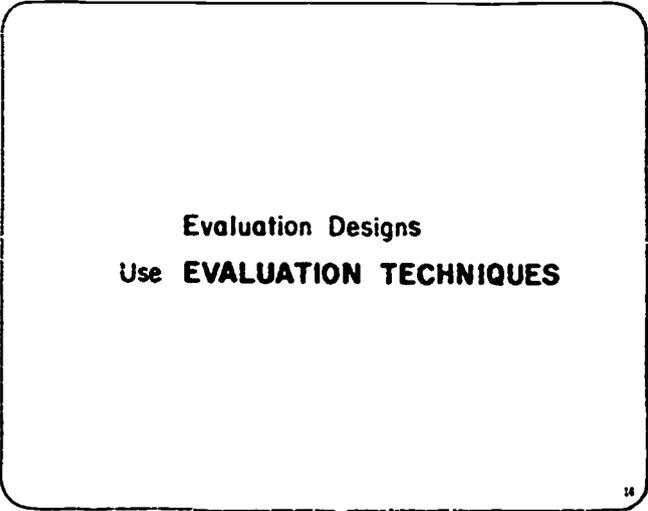
UF Evaluation Designs  
Evaluation Procedures

BT Techniques

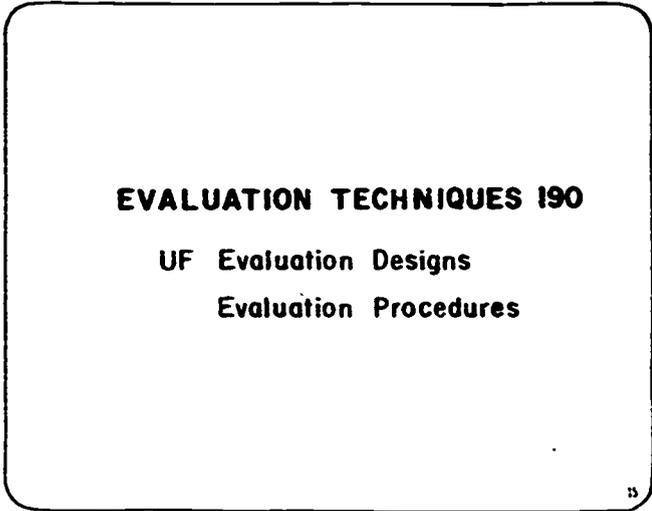
RT Action Research  
Auditory Evaluation  
Auditory Tests  
Counselor Evaluation  
Equivalency Tests  
Error Patterns

11

A "Use" entry follows synonyms or near synonyms of descriptors and directs the user to the preferred descriptor for communicating with the system (Visual 14). No documents are indexed by these synonyms nor should any attempt be made to use such terms as valid search terms (i.e., the term "evaluation designs" is not, of itself, a valid search term). The synonyms appear solely to provide as many entry points to the Thesaurus as possible. The user must enter the system with the descriptor denoted under such entry.



The "Used For" (UF) entry is the reverse of the "USE" entry (Visual 15). The UF entry appears only under a descriptor for which there is a synonym or near synonym in the Thesaurus. The entry tells that the descriptor includes the concept represented by the UF entry. The UF entry adds to the user's understanding of the scope of a descriptor which is "used for" other concepts.



"Narrower Term"  
(NT) denotes a hierarchical relationship between the main descriptor entry and a descriptor which belongs to the same class but is on a lower level of hierarchy; i.e., the narrower term is more specific (Visual 16).

#### EVALUATION METHODS 190

NT Content Analysis  
Cost Effectiveness  
Followup Studies  
Graduate Surveys

"Broader Term"  
(BT) is the second hierarchical notation and the reciprocal of the "Narrower Term" notation (Visual 17). A BT entry indicates that the descriptor is of the same class as the main descriptor entry but that it is on a higher level of hierarchy, i.e., the BT term is more general.

#### PROGRAM EVALUATION 180

BT Evaluation

"Related Term" (RT) performs two functions. A term listed as RT clarifies scope by further defining a main entry descriptor entry (Visual 18). This description is accomplished mainly by better defining the context in which the main descriptor entry should be interpreted. The second function of an RT entry is to alert the user to terms other than the main descriptor in which he may be interested. RT entries provide the collateral word relationships in a thesaurus that would not ordinarily be apparent if the user were to think only in terms of the hierarchical scheme. Visual 18 emphasizes these two functions of the RT relationship.

Every hierarchical and collateral entry has a complimentary entry elsewhere in the Thesaurus. That is, for every "Use" entry, there is a complimentary UF entry; for every NT entry, there is a complimentary BT entry; conversely, for every BT entry, there is a complimentary NT entry; and for every RT entry, there is a complimentary RT entry.

**PROGRAM EFFECTIVENESS 180**

**RT Cost Effectiveness**

**Educational Research**

**Methods Research**

**Programs**

**Quality Control**

**Relevance (Education)**

**QUALITY CONTROL 180**

**RT Analysis of Variance**

**Environmental Technicians**

**Equipment Evaluation**

**Evaluation Methods**

**Program Effectiveness**

**Statistical Studies**

The order in which the notations appear under a descriptor, when appropriate, is as follows (Visual 19).

UF - Used for  
NT - Narrower Term  
BT - Broader Term  
RT - Related Term

Each of the five notations previously discussed as illustrated by using the following example (Visual 20).

Followup Programs  
Use **FOLLOWUP STUDIES**  
**FOLLOWUP STUDIES 190**  
UF Followup Programs  
NT Graduate Surveys  
BT Evaluation Methods  
RT Vocational Followup

Three additional notations are found in the Thesaurus and need clarification. These notations are parenthetical qualifiers, scope notes, and the descriptor group categories with their respective three-digit group code number.

A number of terms in the Thesaurus are followed by a parenthetical word or words (Visual 21). The purpose of these parenthetical qualifying expressions is to clarify homographs and ambiguities in word meaning and usage, not to define terms. Whenever a parenthetical qualifier is used, it appears as an integral part of its hierarchical and collateral relationship with other descriptors in the Thesaurus.

Occasionally, descriptors have been selected which, because of their broad usage in the language or because of their special usage in fields other than education, require a brief statement of restricted usage.

In such cases, a "Scope Note" (SN) has been provided directly beneath the main descriptor entry (Visual 22). This is not intended as a formal definition and is not considered an integral part of the descriptor. Thus, the SN is only used with the descriptor where it is listed as a main entry.

**RELEVANCE  
(EDUCATION) 180**

**RELEVANCE  
(INFORMATION RETRIEVAL) 180**

21

**VOCATIONAL EDUCATION**

**SN Formal preparation for  
an occupation below the  
baccalaureate degree**

22

The "Descriptor Groups" contain a list of all Descriptor Group categories with their respective three-digit group code number (visible to the right of the term) and scope note. The three-digit group code arranges the main entry descriptors into 52 categories according to their usage in education. The Descriptor Group Display is provided for browsing, determining descriptor relationship and usage, and for showing related descriptors to aid in structuring new descriptors. Each Descriptor Group has a list of subject-related descriptors which appear in and are mutually exclusive to that group.

#### The Conversion Process

Using the above explanations about the organization and purposes of the Thesaurus, the following example presents the process of changing a search statement's retrieval terms to ERIC terminology.

The following search statement is used (Visual 23).

**Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.**

The retrieval terms that were selected for the previous example are presented (Visual 24).

These terms are transformed to ERIC terminology by taking each term and searching the Thesaurus for verification or for synonymous terms. A simple worksheet can be used in the process of transforming terms. List the terms from this Index/Retrieval Terms worksheet and search for the terms in the Thesaurus. If the term is used in the Thesaurus, place a check (✓) in the appropriate column; if not in the Thesaurus, substitute the most synonymous descriptor that can be found.

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
methods	followup studies	occupational education
techniques	followup programs	vocational education
guides	followup surveys	
procedures		
guidelines		

The user may refer to the Thesaurus in either of two places-- "Rotated Descriptor Display" or "Descriptor Listing." The Rotated Descriptor Display offers an advantage in that all of the words of a descriptor are presented in an alphabetic array. If the user begins with the Rotated Descriptor Display, he should followup by using the Descriptor Listing to determine the appropriate context of descriptors as used in indexing and to determine other possible retrieval terms for searching purposes.

The previous example (Visual 24) is transformed to ERIC terminology in (Visual 25).

ERIC TERMINOLOGY TRANSFORMATION			
Retrieval Term	Used in ERIC Thesaurus?	ERIC Descriptors	Additional ERIC RT, BT, or NY Terms
Methods	✓		Evaluation Methods
Techniques	✓		Evaluation Techniques
Guides	✓		
Procedures	no	none	
Followup Studies	✓		Vocational Followup
Followup Programs	no	Followup Studies	
Followup Surveys	no	none	
Occupational Education	no	Vocational Education	
Vocational Education	✓		

From the first "set" of retrieval terms, four terms were found to be a part of the ERIC language--Methods, Techniques, Guides, and Guidelines. For the term--procedures--the Thesaurus gave a "Use" term of "Teaching Procedures." However, "Teaching Procedures" is not appropriate for the search statement. Two additional terms were identified as relevant to the search statement--"Evaluation Methods" and "Evaluation Techniques." The two related terms will be added as retrieval terms in the search.

In the second "set" of retrieval terms, "Followup Studies," was found in the Thesaurus. For "Followup Programs," the Thesaurus gives the "Use" term--"Followup Studies." A related term that was identified as relevant to the search problem was "Vocational Followup."

In the third "set" of retrieval terms, the nearest term to "Occupational Education" in the Thesaurus is "Occupational Training" which is not an ERIC term. The "Use" term for "Occupational Training" is "Vocational Education." Thus, "Vocational Education" is the appropriate term to use. (The search can be broadened by using the NT terms under "Vocational Education," but they are not used in this example.)

By compiling the appropriate ERIC terms as found in the Thesaurus, a new "Index/Retrieval Term" worksheet should be used in searching the ERIC system for documents pertinent to the information problem (Visual 26).

The information search is continued by locating the appropriate ERIC Indexes and manually searching the "Subject Indexes" for appropriate accession numbers.

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
Methods Techniques Guides Guidelines Evaluation Methods Evaluation Techniques	Followup Studies Vertical Followup	
Accession Number	Accession Number	Accession Number

The accession numbers can be listed in the column below each "set" of retrieval terms (Visual 26). An accession number that appears in both columns under the retrieval terms should be appropriate for retrieving as a relevant document in the search. The worksheet shown in Visual 27 provides an illustration of document accession numbers that are appropriate for the search statement. The accession numbers that appear in both Set 1 and Set 2 are circled\*. These documents should be relevant to the information problem.

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
Methods Techniques Guides Guidelines Evaluation Methods Evaluation Techniques	Followup Studies Vertical Followup	
Accession Number	Accession Number	Accession Number
ED 056 240 ED 056 176 ED 056 239 ED 056 177 ED 055 362 ED 055 321	ED 056 240 ED 055 583 ED 056 163	

\*The "Set 3" column of the worksheet is used only when the search is limited to a very narrow and specific topic. Three sets of terms are often used in computer searching (which will be discussed later).

## OBTAINING DESIRED DOCUMENTS

Whether identifying relevant titles by computer or manual searching, the searcher needs to review the resumes to determine appropriate material for solving the information problem. This phase is probably the simplest step in the search process. If a computer search was used, the resumes were printed in the output (see Visual 28).

### SEARCH IDENTIFIER 0001

ACCESSION NUMBERS: ED046746 SE010651

PUBLICATION DATE: 70

TITLE: POLLUTION: PROBLEMS, PROJECTS & MATHEMATICAL EXERCISES. GRADES 6-9.

PERSONAL AUTHOR: HENDERSON, GEORGE L.; AND OTHERS

INSTITUTION CODE: BBB01041

SPONSORING AGENCY CODE: BBB04607; ZQU97875

DESCRIPTOR: \*ECOLOGY; ENVIRONMENTAL EDUCATION; INSTRUCTION; \*MATHEMATICAL APPLICATIONS; POLLUTION; \*PRACTICAL MATHEMATICS; \*PROBLEM SETS; \*SECONDARY SCHOOL MATHEMATICS

EDRS PRICE: EDRS PRICE MF-30.65 HC-33.29

DESCRIPTIVE NOTE: 88P.

ISSUE: RIEMAY71

THIS SOURCEBOOK CONTAINS MATHEMATICAL EXERCISES, PROBLEMS, AND PROJECTS CONCERNING POLLUTION WHICH ARE ACCESSIBLE FOR STUDENTS IN GRADES 6-9. THE EXERCISES, WHICH ARE DESIGNED TO IMPROVE COMPUTATIONAL SKILLS, ARE CLASSIFIED ACCORDING TO TOPICS USUALLY TAUGHT IN THE MATHEMATICAL CURRICULUM OF THE MIDDLE SCHOOL. (CT)

INSTITUTION NAME: WISCONSIN STATE DEPT. OF PUBLIC INSTRUCTION, MADISON. DIV. OF INSTRUCTIONAL SERVICES.

SPONSORING AGENCY NAME: WISCONSIN MATHEMATICS COUNCIL, MADISON.; WISCONSIN STATE DEPT. OF PUBLIC INSTRUCTION, MADISON

If manual searches were used, a list of accession numbers has been generated (see Visual 27) to aid in locating the resumes.

INDEX / RETRIEVAL TERMS		
Set 1	Set 2	Set 3
Methods Teaching guides Guidelines Evaluation Methods Evaluation Techniques	Fellowship Studies Vocational Fellowship	
Accession Number	Accession Number	Accession Number
(ED 056 240) ED 056 176 ED 056 239 ED 056 177 ED 055 362 ED 055 321	(ED 056 240) ED 055 589 ED 056 163	

#### Locating Document Resumes

1. Make note of your lowest accession number; this is your starting point for locating and scanning the resumes.
2. For the sake of convenience, move through the list of accession numbers and read the corresponding resumes in some sort of numerical order. Look up and read all of the ED 045 000's, ED 046 000's, ED 047 000's and so forth until you finish your last ED number series. Then, look up and read all the EJ and VT resumes in numerical order.
3. Cross out the numbers on your list that you have rejected, leaving ED, EJ, and VT numbers of those documents you would like to order and read.
4. In most cases, the ED and VT numbers are all you have to keep track of; however, watch for those resumes that say "Document not available from EDRS," and make a note of them on a separate sheet. To locate full-text documents identified with VT numbers, one should refer to the resumes in individual issues of AIM and ARM for instructions.
5. In the case of the EJ resumes, you will have to keep track of Journal Title, Volume and Issue Number, Article Title, and Author. Also make a note of these on a separate sheet.

Remember, the resumes are only summaries of what is contained in the documents. However, there may be sufficient information in a resume to satisfy a need for very general information. In addition to the document abstract or annotation, all the bibliographic information you need is included in the resumes.

### Locating Full-Text Documents

You now have a list of documents to review. Entire ERIC microfiche collections are maintained by many university and college libraries, schools and supplementary educational centers, state education agencies, ERIC Clearinghouses, Research Coordinating Units, Regional Educational Laboratories, and other education-related institutions. A resume of an ERIC document contains information on the availability of the full text report from which the abstract was developed. If the document is available from the ERIC Document Reproduction Service (EDRS), the full-text of the report can be viewed on microfiche from the ERIC collection or copies can be ordered from EDRS in two forms:

1. Microfiche (MF) - 4" x 6" sheet of microfilm on which up to 70 pages of text are reproduced. (Use of microfiche requires a microfiche reader.)
2. Hard copy (HC) - reproduction of the document on paper.

Many agencies have the capability of duplicating microfiche and/or making paper copies from the microfiche.

Information on availability of documents, i.e., ERIC accession code number, source of original document, number of pages, cost, date of publication, and a complete bibliographic citation for each processed document is included in the most current issues of the ERIC reference publications. Correspondence and orders for MF and HC should be addressed to:

ERIC Document Reproduction Service  
Post Office Drawer 0  
Bethesda, Maryland 20014

Institutions housing the ERIC microfiche collections provide microfiche readers for reviewing the documents identified in the

information search.

Microfiche readers are available in various sizes and prices-- from a small portable machine, for reading only, to a more elaborate reader-printer model that can produce paper copies at the touch of a button. Prices vary accordingly, from a little over \$50 to \$1,000.

To stay abreast of ERIC developments, check the back pages of RIE each month for announcements, or visit the ERIC exhibits at a professional association meeting.

In addition to users of the ERIC system, there are also many contributors. Anyone who has prepared a report, speech, or paper can have it considered for national dissemination through ERIC by sending two copies of the material to:

ERIC  
U.S. Office of Education  
400 Maryland Avenue S.W.  
Washington, D.C. 20202

If material is related specifically to vocational and technical education, copies may be sent directly to:

Information Acquisitions  
ERIC Clearinghouse on Vocational  
and Technical Education  
1960 Kenny Road  
Columbus, Ohio 43210

## COMPUTER SEARCHING

The computer search is different from manual searching in that it can be designed to be more specific in retrieving information. QUERY, an ERIC computerized information retrieval program, capable of retrieving and disseminating information from diversely formatted files maintained on magnetic tape, disk, or data cell, enables the user to describe a given information search in ERIC terminology and retrieve the desired information. Although descriptors assigned to a document by an indexer are most commonly used as retrieval terms, publication date, sponsoring agency, author, identifiers, or key words in the abstract may also be used.

### Identifying the Problem

The process of searching the ERIC system by computer is basically the same as the procedure for searching the system manually. The first step involves writing a concise, specific summary of the information problem, including the major content area (information systems, cooperative education) and subtopics, specific requirements such as instructional level (secondary grades, grade 1, or grade 12), form of documents (teaching guides, literature reviews, or bibliographies), and any other specifications that define the search. Whether one is thumbing through a card catalog or listing descriptors as retrieval terms for a computer search of ERIC, he is making decisions about the needed information:

"Do I want information on this particular topic (program evaluation)?"

"In what field of education do I want information (vocational education or science education)?"

"Do I want information for a particular instructional level (post-secondary or elementary)?"

Whether the searcher reaches these decisions by writing the requirements on paper or storing them in his mind, specifications that guide the search process are made. Thus, the major difference between a computer search and a manual search of ERIC is that the computer locates document resumes for the searcher by using his specifications rather than requiring the searcher to locate the resumes manually.

## Designing the Search

The logic utilized in computer searching of ERIC materials evolves from a set of "profile" terms that describe a given subject for which references are desired. These terms are manipulated by means of search strategies to produce a yield of references that match as closely as possible the overall profile design.

The search strategy consists of an arbitrary number of descriptive terms that can be searched by the computer according to a variety of specified combinations and instructions. The chart below summarizes the major combinations, their characteristics, and requirements for a "computer hit," i.e., a match between the profile and the descriptors found in the search. Whether a search strategy is broad or narrow depends on the terms themselves and the specific problem.

In Visual 29, the letters A, B, C, D, and E represent arbitrary descriptive terms that can be searched by the computer according to a variety of combinations and instructions.

Descriptive terms to be searched as instructed	Degree of Search Strategy	Resultant hit
<b>Example 1</b> *A/B/C/D/E	Broad, relatively non-restrictive, loose	A hit results when <u>any one</u> of the terms searched is found in a single citation
<b>Example 2</b> *A *B *C	Narrow, precise, tight	A hit results <u>only</u> when all three terms appear in a single citation
<b>Example 3</b> *A/B/C *D/E	Restrictive, but not as restrictive as Example 2	A hit results <u>only</u> when one or more terms in <u>each</u> a group appears in a single citation. Thus, A or B or C <u>plus</u> D or E produces a hit
<b>Example 4</b> *A/B *C *D	Restrictive but not as restrictive as Example 2	A hit occurs <u>only</u> when A <u>and</u> B occurs in a citation, and C and D do <u>not</u> appear in the citation

Computer Instruction Codes \* = and / = or +B = and not  
 Note: A hit appears only on \* in a print-out, even though it may be cited by more than one of the search terms

To illustrate the preparation of a computer request, the following search statement is used (Visual 30).

Identify documents that will serve as guides or provide methods and techniques used in developing and conducting follow-up studies in occupational education programs.

Previously, retrieval terms were identified to guide the information search and were converted to ERIC terminology (Visual 31).

INDEX/RETRIEVAL TERMS		
Set 1	Set 2	Set 3
Methods Techniques Guides Guidelines Evaluation Methods Evaluation Techniques	Followup Studies Vocational Followup	Vocational Education

## SUMMARY

Whether information retrieval is to be done manually or by computer, it should be systematic, always with a sense of direction. This study unit has guided us through the retrieval process from identification of the problem to the selection of appropriate documents in the ERIC system. The following 10 steps are offered as a means of summarizing this information retrieval process (Visual 32).

### REVIEW OF INFORMATION RETRIEVAL PROCEDURES

1. STATE THE PROBLEM CLEARLY
2. FROM THE STATEMENT OF THE PROBLEM,  
IDENTIFY AND LIST KEY WORDS AND CONCEPTS
3. VERIFY DESCRIPTORS IN ERIC'S THESAURUS  
(optional)
4. ENTER THE SUBJECT INDEX OF ERIC REFERENCE  
PUBLICATION UNDER EACH OF THE KEY TERMS
5. IDENTIFY POTENTIALLY RELEVANT ABSTRACTS
6. REVIEW ABSTRACTS OF DOCUMENTS
7. OBTAIN MICROFICHE FROM FILES OR  
BY REQUISITIONING
8. REVIEW MICROFICHE ON READER
9. RECORD INFORMATION, REQUEST DOCUMENTS,  
REQUEST DUPLICATE MICROFICHE, OR OBTAIN  
HARD COPY AS DESIRED
10. USE THE INFORMATION

## APPENDIX A

### ERIC Terminology

Accession Number - A number assigned to a document in the ERIC system to facilitate identification and retrieval (e.g., ED, VT, AC).

AIM - Abstracts of Instructional Materials in Vocational and Technical Education, published quarterly by The Center for Vocational and Technical Education, containing abstracts and bibliographic data on materials used by teachers in presenting information to students or materials used by students in connection with classroom instruction.

ARM - Abstracts of Research Materials in Vocational and Technical Education, published quarterly by The Center for Vocational and Technical Education, containing abstracts and bibliographic data on research and research-related materials.

Author Index - Indexes in RIE and CIJE listing the documents in that particular issue alphabetically by the person's last name. In AIM and ARM it is called the Personal and Institutional Author Index.

CIJE - Current Index to Journals in Education, published monthly by CCM Information Corporation, providing a guide to periodical literature covering over 500 educational and related journals.

Cross Reference Index - An accession number section in the back of each issue of RIE which cross references the ERIC Clearinghouse number (e.g., VT) to the ERIC Document (ED) numbers for resumes published in that particular issue. Readers who desire to trace documents for which they have only clearinghouse accession numbers as references may find the applicable abstracts.

ED Number - The ERIC accession number sequentially assigned to documents as they are processed for RIE.

EDRS - ERIC Document Reproduction Service, Post Office Drawer O, Bethesda, Maryland 20014. Supplies hard copy reproduction and/or microfiche of documents announced in ERIC.

EJ Number - The accession number sequentially assigned to journal articles as they are processed for CIJE.

ERIC - Educational Resources Information Center, a national educational information system developed by the U.S. Office of Education.

ERIC Descriptors - Subject terms which characterize substantive content of a document. Only the major terms, preceded by an asterisk, are printed in the Subject Index. They are sometimes referred to as retrieval terms.

Manual Searching - Information searching and retrieval by personal inspection, or methods other than computer assisted.

Microfiche (MF) - Four inch by six inch sheets of microfilm on which up to 70 pages of text are reproduced.

QUERY - An ERIC computerized information retrieval program capable of retrieving and disseminating information from diversely formatted files maintained on magnetic tape, disk, or data cell. It enables the user to describe a given information search in ERIC terminology and retrieve the desired information.

Retrieval Terms - Subject terms which characterize substantive content of a document. More often referred to as descriptors.

RIE - Research in Education, a monthly abstract journal published by the U.S. Office of Education, reporting research reports and related documents of educational significance indexed by subject, author, and institution.

Search Statement - A concise statement identifying the parameters of the search problem and then listing the specific needs, preferences, and specifications that best address the problem.

Search Problem - A situation or set of circumstances in which a user finds himself, where additional information is required to make a decision or arrive at a solution.

Search Strategy - A plan or method followed by a searcher in systematically going from a search problem to the identification of information appropriate for its solution.

Set - A term used in this study guide to label columns of related retrieval terms.

Subject Index - Indexes in RIE and CIJE listing the documents in that particular issue alphabetically by the major or asterisked descriptors. In AIM and ARM it is called the Subject and Identifier Index.

Thesaurus - The Thesaurus of ERIC Descriptors serves as the authoritative guide for assigning the descriptive terms used to index the various reports and journal articles entered into the ERIC information system.

VT Number - The accession number sequentially assigned to documents as they are processed by the ERIC Clearinghouse on Vocational and Technical Education.

## APPENDIX B

### Sample of Formats of Access Products

Sample pages from the various ERIC access products are displayed in this appendix to familiarize the user with the resume format, Subject and Identifier Index, and Personal and Institutional Author Index of RIE, CIJE, AIM, and ARM.

They may also be converted to transparencies; and may be used frequently through the lecture/discussion. They are referred to within the text when deemed particularly pertinent to the discussion.

Format of  
Research in Education (RIE)

Document Resume

ED 039 349

Clearinghouse Accession Number

ED Accession Number

Title of Document

Institutional Source--The  
Organization Responsible  
for the Report

Availability of Document

Terms Under Which Document  
is Indexed in Subject Index  
(Only terms that are preceded  
by an asterisk appear in The  
Subject Index)

Abstract of Document

ED 039 349 VT 010 981

From School to Work; A Pilot Study.  
New York State Education Dept., Albany. Bu-  
reau of Guidance.

Pub Date Aug 69  
Note--25p.

EDRS Price MF-\$0.25 HC-\$1.35

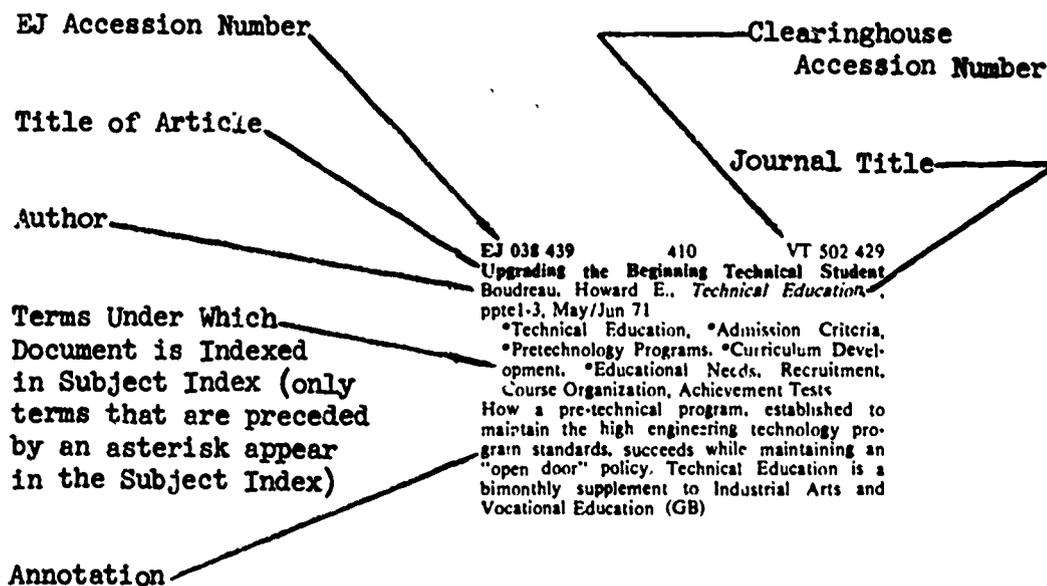
Descriptors--Community Involvement, \*Employ-  
ment Problems, Employment Services, \*Pilot  
Projects, School Role, \*Vocational Adjustment,  
\*Vocational Development, Work Environment,  
\*Youth Problems

The problems which youth face in the transi-  
tion from school to work are complex and chal-  
lenging. Such problems have been conceptualized  
into a model which relates specific problems to  
dimensions of self and environment in three  
developmental stages: (1) pretransitional--the life  
period before an individual is activated to seeking  
his first full-time job, (2) transitional--marked by  
activation to seek first full-time employment, oc-  
curring during grade 12 for about one-half of  
high school students, and (3) post-transitional--the  
first job. Using this model, perceptions of the vo-  
cational development of New York youth were  
obtained from staff members in 40 schools, 27  
employers, and 14 new workers. Suggestions for  
programs, activities, and facilities are tabulated  
by problem area, and public factors are ranked  
by strength score. The strongest transitional needs  
were identified in areas of preparatory education  
and training, occupational information, self-ac-  
tualization, worker role, job placement, mobility,  
and occupational mobility. There was no attempt  
to investigate causative factors; however, some  
causal inferences are drawn. Recommendations  
are included. (CH)

Format of  
Current Index to Journals in Education (CIJE)

Main Entry

EJ 038 439



The main Entry Section contains the complete bibliographic citation for each processed journal article.

The CIJE indexes provide access to journal article citations listed in the Main Entry Section.

Source Journal Index . . . lists the journals from which articles are reviewed and cited monthly.

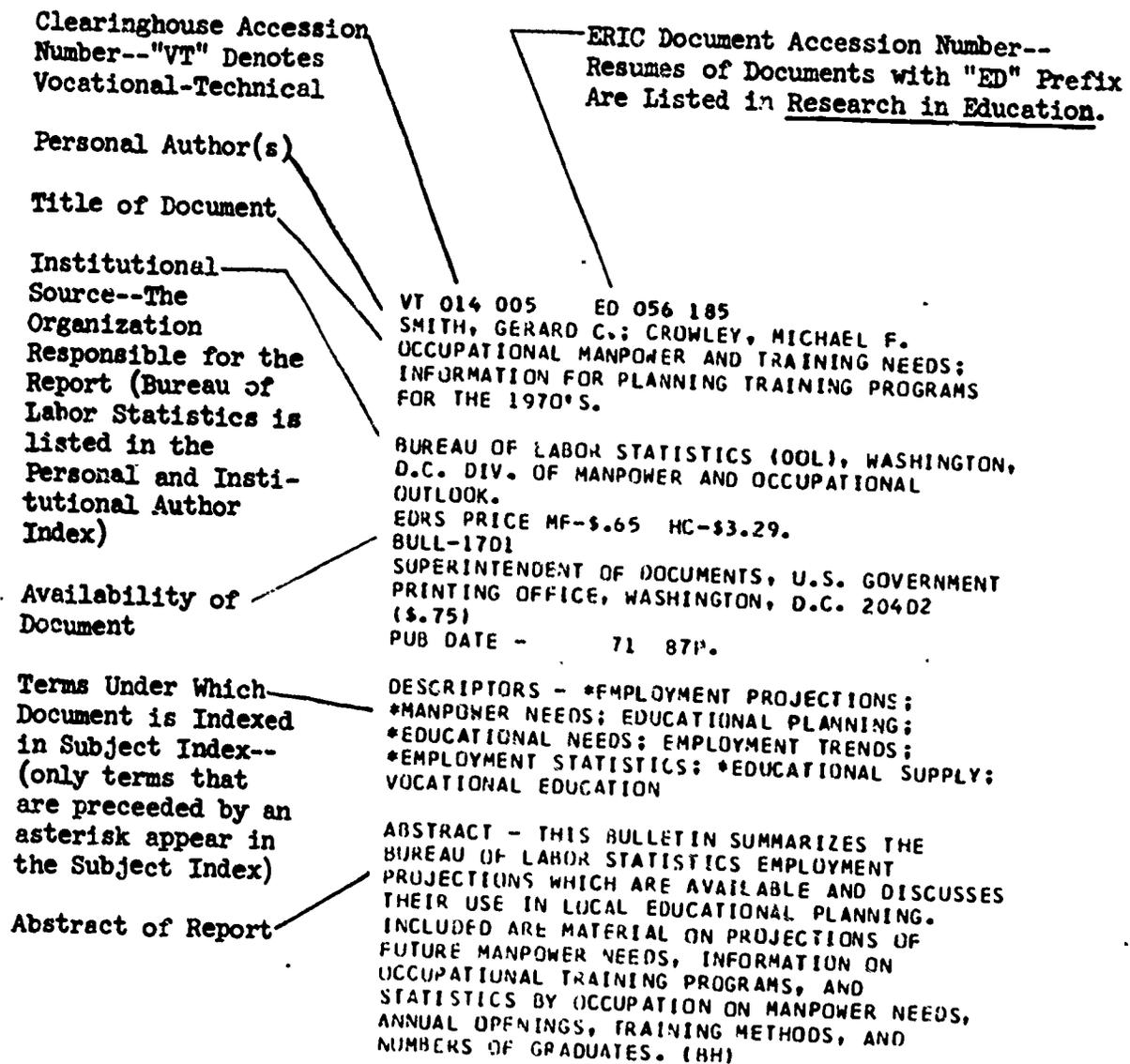
Subject Index . . . lists titles of articles according to descriptive retrieval terms contained in the Main Entry citations.

Author Index . . . lists authors' names along with title of article and EJ accession number.

Journal Contents Index . . . lists source journals along with titles of articles processed from each journal.

Format of

ARM and AIM Document Resume



ARM and AIM

Subject and Identifier Index

Subject Index searches are conducted when specific document titles, document accession numbers or authors' names are not known. Example: If the search strategy developed for a Subject Index search specifies that documents indexed under the term "Employment Projections" be identified, the citations from ARM/Volume 5, Number 2 would appear as follows:

SUBJECT AND IDENTIFIER INDEX		ARM AND AIM
	PAGE	PAGE
VI 011 027 ED 055 101 A SURVEY OF SURVEYS WITH IMPLICATIONS FOR VOCATIONAL-TECHNICAL EDUCATION WITHIN THE EDUCATIONAL COMMUNITY COUNCILS DISTRICT AREA 011.	476	EMPLOYMENT PROJECTIONS VI 016 119 PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.
EMPLOYMENT EXPERIENCE VI 011 027 ED 055 100 THE EFFECTIVENESS OF VOCATIONAL AND TECHNICAL PROGRAMS: A NATIONAL PROSPECTIVE SURVEY.	475	VI 016 216 PART-TIME EXPERIENCE IN VOCATIONAL EDUCATION: THE CONSEQUENCES IN INDUSTRY.
VI 016 451 CAPITA GRADUATES: A PROFILE OF JOB EXPERIENCE AND FURTHER STUDY OF STUDENTS WITH JOB OFFERS.	481	EMPLOYMENT PROGRAMS VI 011 006 ED 055 061 ANALYSIS OF ONE PROGRAM'S AUTOMATIC TERMINATION DATA.
EMPLOYMENT LEVEL VI 011 006 ED 055 059 FIELD TEST OF THE INTEGRATED SKILL DEVELOPMENT SYSTEM, PHASE II, VARIATION IN THE SYSTEM FOR GRADES ONE THROUGH 12.	103	VI 011 017 ED 056 104 EVALUATION OF THE IMPACT OF SELECTED LABOR-ORIENTED EMPLOYMENT PROGRAMS.
VI 016 272 THE EFFECTS OF MENSTRUATION ON THE DISTRIBUTION OF GRADES IN HIGHSCHOOL EDUCATION.	475	VI 011 101 ED 056 101 COST-BENEFIT ANALYSIS STUDY AND APPLICATION TO MANPOWER TRAINING PROGRAMS, A HIGHLIGHT.
EMPLOYMENT PATTERNS VI 012 125 ED 056 101 EMPLOYMENT CHARACTERISTICS OF THE PENNSYLVANIA STATE UNIVERSITY ASSOCIATED WITH CONTRACTS.	101	VI 011 000 REPORT OF THE WORK EXPERIENCE CAREER DEVELOPMENT PROGRAM.
VI 011 000 ED 056 100 PENNSYLVANIA STATE UNIVERSITY ASSOCIATED WITH CONTRACTS GRADUATES: SOME DEMOGRAPHIC CHARACTERISTICS.	100	VI 016 249 ED 057 217 PHASE II STUDY REPORT ON TERMINATIONS.
VI 011 010 THE 1971 OCCUPATIONS OF RECENT GRADUATES IN VOCATIONAL AGRICULTURE IN OHIO.	102	VI 011 100 A PROGRAM ON THE UTILIZATION OF THE EXISTING DEMOCRATIZATION CENTER FOR MANPOWER TRAINING.
VI 011 010 A COMPARISON OF THE EMPLOYMENT SUCCESS IN VOCATIONAL TECHNICAL SCHOOL GRADUATES, 1969-71, AND THOSE NOT ADMITTED TO VOCATIONAL PROGRAMS, PROJECT ONE STUDY.	110	EMPLOYMENT PROJECTIONS VI 011 000 PROJECTIONS 1960, THE REMOVED PATTERN OF THE ACTION IN THE 1970'S.
VI 011 007 ED 056 106 EMPLOYMENT OPPORTUNITIES, TRAINING NEEDS AND VOCATIONAL EDUCATION FOR THE GRAPHIC ARTS IN MISSOURI.	662	VI 011 052 ED 055 210 MANPOWER PLANNING USING SYSTEMS.
EMPLOYMENT PRACTICES VI 011 100 ED 056 117 A GUIDE TO CAREER OPPORTUNITIES IN THE FARM LABOR STANDARDS ACT.	107	VI 011 005 ED 056 105 IF OCCUPATIONAL MANPOWER AND TRAINING NEEDS INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.
VI 011 010 ED 056 106 EXCLUSIVE USE OF HIGH RISE SYSTEMS IN THE BUILDING TRADES.	496	EMPLOYMENT QUALIFICATIONS VI 007 200 RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.
VI 011 010 A STIMULATED MODEL OF DISPERSEDNESS IN THE LABOR MARKET	457	VI 011 202 THE JOB DESCRIPTIONS ACTION TOWARD CAREER DEVELOPMENT.
VI 011 119 PART-TIME EXPERIENCE AND THE TRANSITION FROM SCHOOL TO WORK.	462	VI 011 005 ED 056 100 A SURVEY OF TRAINING NEEDS AND INTERESTS FOR NON-TEACHING POSITIONS IN HUMAN ECONOMICS, FINAL REPORT.
		VI 011 012 ED 055 206 THE CHARACTERISTICS, EDUCATION AND TRAINING OF TECHNICIANS.
		VI 011 017 EDUCATION IN AGRICULTURE IN FLORIDA: OCCUPATIONAL NEEDS AND FUTURE DEMANDS.

APPENDIX B-5

ARM and AIM

Subject and Identifier Index

If the search strategy specifies that documents indexed under the term "Employment Projections" will be acceptable only when they are also indexed under the term "Educational Supply," the only acceptable document will be VT 014 005.

ARM/VOL 5 NO 2		903	
SUBJECT AND IDENTIFIER INDEX		PAGE	
	PAGE		PAGE
EDUCATIONAL STRATEGIES			
VT 013 723	400		
STRATEGIES FOR IMPLEMENTING			
EMERGENCY PROGRAMS AND PROJECTS IN			
ORDER TO MAKE MAXIMUM CHANGE IN THE			
EDUCATIONAL PROCESS.			
VT 013 705	413		
NEW CAREERS.			
VT 013 994	446		
ED 056 181			
THE IMPACT OF A RESCHOOLING SCHOOL			
YEAR ON VOCATIONAL TRAINING CENTERS			
IN NEW YORK STATE.			
EDUCATIONAL SUPPLY			
VT 014 005	448		
ED 056 185			
OCCUPATIONAL MANPOWER AND TRAINING			
NEEDS INFORMATION FOR PLANNING			
TRAINING PROGRAMS FOR THE 1970'S.			
EDUCATIONAL TRENDS			
VT 013 038	421		
ED 055 195			
THE CURRENT STATUS AND POSSIBLE			
TRENDS IN TEACHING INDUSTRIAL ARTS			
WOOD INFORMATION AT TEACHER			
EDUCATION INSTITUTIONS.			
VT 014 013	452		
TRENDS IN VOCATIONAL EDUCATION:			
ENROLLMENTS, EXPENDITURES, AND			
TEACHERS.			
EDUCATIONALLY DISADVANTAGED			
VT 011 052	390		
ED 051 189			
EFFECT OF BASIC LITERACY TRAINING			
IN TEST SCORES.			
ELECTRICAL SYSTEMS			
VT 013 096	431		
ED 055 204			
TROUBLESHOOTING INSTRUCTION IN			
VOCATIONAL-TECHNICAL EDUCATION VIA			
DYNAMIC SIMULATION.			
ELECTROMECHANICAL TECHNOLOGY			
VT 013 181	410		
ED 055 171			
THE ROLE OF THE INDEPENDENT			
INVENTOR IN THE EARLY DEVELOPMENT			
OF ELECTRICAL TECHNOLOGY.			
ELECTRONIC TECHNICIANS			
VT 007 768	376		
RELATIVE UNDERSTANDING OF			
MATHEMATICAL CONCEPTS BY STUDENTS			
MAJORING IN ELECTRONICS TECHNOLOGY.			
VT 014 171	440		
ED 056 220			
THE DETERMINATION OF A TECHNICAL			
CORE CURRICULUM FOR A TWO YEAR			
TECHNICAL PROGRAM IN BIO-MEDICAL			
ELECTRONICS.			
ELECTRONICS			
VT 010 035	302		
ED 057 162			
RETENTION OF ELECTRONIC			
FUNDAMENTALS: DIFFERENCES AMONG			
TOPICS.			
VT 012 725	391		
ED 054 337			
EMPLOYMENT CHARACTERISTICS OF THE			
PENNSYLVANIA STATE UNIVERSITY			
ASSOCIATE DEGREE GRADUATES.			
VT 013 020	424		
ED 055 191			
A SKILLED NEEDS SURVEY WITH			
IMPLICATIONS FOR			
VOCATIONAL-TECHNICAL EDUCATION			
WITHIN THE IOWA WESTERN COMMUNITY			
COLLEGE DISTRICT AREA DIST.			
EMPLOYMENT EXPERIENCE			
VT 013 022	425		
ED 055 190			
THE EFFECTIVENESS OF VOCATIONAL AND			
TECHNICAL PROGRAMS: A NATIONAL			
FOLLOW-UP SURVEY.			
VT 014 051	403		
CAREER GRADUATES: A PROFILE OF JOB			
EXPERIENCE AND FURTHER STUDY OF			
STUDENTS WITH AAS DEGREES.			
EMPLOYMENT LEVEL			
VT 010 496	303		
ED 054 315			
FIELD TEST OF THE WEIGHTED AVERAGE			
PROMOTION SYSTEM, PHASE II.			
VALIDATION OF THE SYSTEM FOR GRADES			
E-4 THROUGH E-1.			
VT 014 215	415		
THE EFFECTS OF MINIMUM WAGES ON THE			
DISTRIBUTION OF CHANGES IN			
AGGREGATE EMPLOYMENT.			
EMPLOYMENT PATTERNS			
VT 012 725	391		
ED 054 338			
EMPLOYMENT CHARACTERISTICS OF THE			
PENNSYLVANIA STATE UNIVERSITY			
ASSOCIATE DEGREE GRADUATES.			
VT 013 490	401		
ED 054 390			
PENNSYLVANIA STATE UNIVERSITY			
ASSOCIATE DEGREE TECHNICIAN			
GRADUATES: SOME DEMOGRAPHIC			
VARIABLES.			
VT 013 870	426		
THE 1971 OCCUPATIONS OF RECENT			
GRADUATES OF VOCATIONAL AGRICULTURE			
IN OHIO.			
VT 013 084	430		
A COMPARISON OF THE EMPLOYMENT			
SUCCESS OF VOCATIONAL-TECHNICAL			
SCHOOL GRADUATES, DROP-OUTS, AND			
PERSONS NOT ADMITTED TO VOCATIONAL			
PROGRAMS. PROJECT MINI-SCHEM.			
VT 013 747	402		
ED 054 390			
EMPLOYMENT OPPORTUNITIES, TRAINING			
NEEDS AND VOCATIONAL EDUCATION FOR			
THE GRAPHIC ARTS IN MISSOURI.			
EMPLOYMENT PRACTICES			
VT 013 744	397		
ED 054 377			
A GUIDE TO ENJOY LABOR PROVISIONS			
OF THE FAIR LABOR STANDARDS ACT.			
VT 013 615	404		
ED 054 394			
EXCLUSIVE UNION WITH REFERRAL			
SYSTEMS IN THE BUILDING TRADES.			
VT 014 006	457		
A STIMULANT MODEL OF			
DISCRIMINATION IN THE LABOR MARKET.			
VT 014 179	458		
PART-TIME EXPERIENCE AND THE			
TRANSITION FROM SCHOOL TO WORK.			
EMPLOYMENT PROBLEMS			
VT 016 319	464		
PART-TIME EXPERIENCE AND THE			
TRANSITION FROM SCHOOL TO WORK.			
VT 014 214	471		
FOREIGN EXPERIENCE IN PROVIDING			
WINTER JOBS IN THE CONSTRUCTION			
INDUSTRY.			
EMPLOYMENT PROGRAMS			
VT 013 394	399		
ED 054 391			
ANALYSIS OF WIA PROGRAM AUTOMATED			
TERMINATION DATA.			
VT 013 412	400		
ED 054 367			
EVALUATION OF THE IMPACT OF			
SELECTED URBAN CONCENTRATED			
EMPLOYMENT PROGRAMS.			
VT 013 742	410		
ED 054 363			
COST-BENEFIT ANALYSIS: TODAY AND			
APPLICATION TO MANPOWER TRAINING			
PROGRAMS: A BENCHMARKING.			
VT 013 440	438		
REPORT OF THE WORK EXPERIENCE			
CAREER EXPLORATION PROGRAM.			
VT 014 249	476		
ED 057 212			
YOUTH RESOURCES MANUAL FOR			
COORDINATORS.			
VT 016 304	470		
A PROGRAM FOR THE UTILIZATION OF			
THE ERNSTUNG REMOVAL INSTITUTION			
FOR MANPOWER TRAINING.			
EMPLOYMENT PROJECTIONS			
VT 013 763	413		
PROJECTIONS 1960. THE MANPOWER			
POSTURE OF THE NATION IN THE			
1970'S.			
VT 013 952	439		
ED 056 214			
MANPOWER PLANNING: EVALUING			
SYSTEMS.			
VT 014 005	440		
ED 056 185			
OCCUPATIONAL MANPOWER AND TRAINING			
NEEDS INFORMATION FOR PLANNING			
TRAINING PROGRAMS FOR THE 1970'S.			
EMPLOYMENT QUALIFICATIONS			
VT 007 768	376		
RELATIVE UNDERSTANDING OF			
MATHEMATICAL CONCEPTS BY STUDENTS			
MAJORING IN ELECTRONICS TECHNOLOGY.			
VT 013 242	374		
THE JOB DESCRIPTION ACTION TOWARD			
CAREER DEVELOPMENT.			
VT 013 995	445		
ED 054 748			
A SURVEY OF TRAINING NEEDS AND			
INTERESTS FOR NON-TEACHING			
POSITIONS IN HUMAN ECONOMICS. FINAL			
REPORT.			
VT 014 072	452		
ED 055 234			
THE CHARACTERISTICS, EDUCATION AND			
EXPERIENCE OF TECHNICIANS.			
VT 014 377	480		
EDUCATION IN AGRICULTURE IN			
CALIFORNIA: OCCUPATIONAL NEEDS AND			
FUTURE DEMANDS.			

ARM and AIM

Author Index

Documents can generally be identified by means of the Author Index when the name of the author is provided. Institutional authors are also indexed in the Author Index when the organization responsible for a report is clearly identifiable. The Author Index lists separately the personal author and the institutional author. Information in Author Index entries also includes the title of a document and its accession number(s).

PERSONAL AND INSTITUTIONAL AUTHOR INDEX		PAGE	PAGE
ARM/VDL 5 AC 2	PERSONAL AND INSTITUTIONAL		
SIEGEL, IRVING H. VI 013 012 ED 055 196	ACCREDITATION AND AVERAGE.	426	
SILVERSTEIN, SAM, AND OTHERS VI 013 769 ED 055 167	EXPERIMENTS IN MENTAL HEALTH TRAINING. PROJECT SUMMARIES.	431	
SIMONS, JEROLD J. VI 001 768	RELATIVE UNDERSTANDING OF MATHEMATICAL CONCEPTS BY STUDENTS MAJORING IN ELECTRONICS TECHNOLOGY.	376	
SLODOWE, CAROLYN R. VI 018 882	VOCATIONAL INSTRUCTIONAL LEARNING CENTER TO CREATE A BRIDGE BETWEEN SCHOOL AND EARNING A LIVING FOR YOUNG PEOPLE.	486	
SKILL ADVANCEMENT, INC., NEW YORK, N.Y. VI 010 818 ED 056 107	A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME II: FINAL REPORT.	180	
VI 010 817 ED 056 108	A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME III: TECHNICAL APPENDIX A: TABLES.	181	
VI 010 823 ED 056 109	A STUDY OF LOW-WAGE WORKERS AND THEIR RESPONSE TO HIGH INTENSITY TRAINING. VOLUME III, PART I AND PART II: APPENDICES B 1-5.	181	
SMITH, GERRARD C. VI 016 005 ED 056 185	OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.	448	
SMITH, JAY T. VI 013 187 ED 055 176	WORKER AND DEVELOPMENT IN INDUSTRIAL EDUCATION AT ALCHEM CHEMICAL AND MECHANICAL CENTER.	417	
SMITH, MERLE VI 013 490	UNION IN MANUFACTURING EVALUATION REPORT IN A JUNIOR HIGH SCHOOL INDUSTRIAL PROGRAM.	429	
SMITH, NELSON P. VI 016 366	EVALUATION IN ACCEPTING SIMULATION AS A TECHNIQUE FOR TEACHING SAFETY PRINCIPLES IN THE USE OF SMALL POWER TRAYS.	481	
VI 016 015 ED 057 101	LESS-THAN-BACCALAUREATE LEVEL TECHNICAL EDUCATION PROGRAMS IN HIGHER EDUCATION.	646	
ST. JOHN, DAVID RICHARD VI 013 775 ED 056 368	EFFECTS OF MOVEMENT AND COMMENTARY ON MANIPULATIVE PERFORMANCE.	615	
VI 016 015 ED 057 101	REVIEW AND SYNTHESIS OF INFORMATION ON OCCUPATIONAL INFORMATION.	646	
MURPHY, JAMES P., AND OTHERS VI 016 018 ED 056 389	A JUNIOR HIGH SCHOOL INDUSTRIAL TECHNOLOGY CURRICULUM PROJECT: A FINAL EVALUATION OF THE INDUSTRIAL ARTS CURRICULUM PROJECT (IACP), 1965-1971.	655	
DAVIS, J. CLARK VI 016 269 ED 055 261	IMPROVING PREPARATION OF PROFESSIONAL PERSONNEL FOR VOCATIONAL EDUCATION IN METROPOLITAN AREAS. FINAL REPORT. INSTITUTE VS.	659	
DAVIS, ARBA JAMES VI 013 076	THE RELATION BETWEEN NUTRITION KNOWLEDGE AND THE DIETARY INTAKE OF SELECTED MURKIN A BASIS FOR ADULT EDUCATION PROGRAM DEVELOPMENT.	666	
DAVISON, MILDRED VI 016 851	CAREER GRADUATES: A PROFILE OF JOB EXPERIENCE AND FURTHER STUDY OF STUDENTS WITH AAS DEGREES.	483	
DRAM, EDWINE W. VI 013 930 ED 056 382	A STUDY OF VOCATIONAL EDUCATION AS A FACTOR IN SELECTING A COMMUNITY FOR A MANUFACTURING PLANT SITE.	635	
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C. VI 013 760 ED 055 166	A SUMMARY OF THE TYPES OF "PARAPROFESSIONAL TRAINING" PROVIDED BY JUNIOR AND SENIOR COLLEGE AND UNIVERSITIES IN THE AREAS OF HEALTH, EDUCATION, AND WELFARE DURING ACADEMIC YEAR 1970-1971.	611	
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C. OFFICE OF THE COMMISSIONER OF EDUCATION. VI 017 236 ED 050 295	CAREER EDUCATION--MORE THAN A NAME.	195	
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C. OFFICE OF THE SECRETARY. VI 013 165	NEW CAREERS.	411	
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, WASHINGTON, D.C. OFFICE OF INTERNATIONAL AFFAIRS. VI 016 216	FOREIGN EXPERIENCE IN PROVIDING WINTER JOBS IN THE CONSTRUCTION INDUSTRY.	671	
DEPARTMENT OF LABOR, WASHINGTON, D.C. VI 008 010 ED 056 293	EMPLOYMENT POLICIES OF THE UNITED STATES AND JAPAN. REPORT TO THE JOINT UNITED STATES-JAPAN EMPLOYMENT STUDY.	376	
VI 013 996 ED 055 229	PROCEEDINGS OF NORTH AMERICAN CONFERENCE ON LABOR STATISTICS.	667	
BUREAU OF LABOR STATISTICS, WASHINGTON, D.C. DIV. OF MANPOWER AND OCCUPATIONAL OUTLOOK. VI 016 005 ED 056 185	OCCUPATIONAL MANPOWER AND TRAINING NEEDS: INFORMATION FOR PLANNING TRAINING PROGRAMS FOR THE 1970'S.	648	
CALIFORNIA COMMUNITY COLLEGES, SACRAMENTO. VI 016 468	AD HOC COMMITTEE ON PUBLIC SERVICES--SOCIAL WORK EDUCATION OF THE ASSOCIATION CONFERENCE REPORT.	682	





ARM and AIM

Document Number Index\*

Documents may be located in ARM and AIM if the specific accession number and the issue is known. Consider in the following example that the only information provided is the accession number VT 011 613 and ARM/Summer 71. Note that the page number of the abstract and the complete title of the document can be obtained by referring to this accession number. (Accession numbers are listed in numerical order in the Document Number Index.)

\*Due to changes in format at the end of 1971, the Document Number Index is no longer included in ARM and AIM. Beginning with Fall 1971, documents can be located by referring directly to the Abstract Section where documents are listed in numerical order.

1970		ARM/SUMMER 71	
DOCUMENT NUMBER INDEX			
	PAGE		PAGE
VT 011 230	1002	VT 011 611 ED 017 003	1002
The Development of Vocational Appreciation in the Elementary School.		A SUGGESTED GUIDE FOR POST-SECONDARY VOCATIONAL AND TECHNICAL EDUCATION. LEADERSHIP TRAINING SERIES NO. 29.	
VT 011 281 FD 045 001	1001	VT 011 602	1071
INDUSTRIAL ARTS/INDUSTRIAL TECHNOLOGY.		Cooperative Student Planning for Vocational Rehabilitation Services. Summary of the Final Report, October 9, 1966 to April 10, 1969.	
VT 017 200	1050	VT 011 609 ED 004 009	1072
Report on Initial Evaluation of Industrial Arts Education and Vocational Guidance Project, Taiwan Province and Taipei Special Municipality, Republic of China.		THE VOCATIONAL REHABILITATION PROBLEMS OF THE PATIENT WITH APRAXIA.	
VT 011 351 FD 040 300	1051	VT 011 668	1002
AN ANALYSIS OF SELECTED EDUCATIONAL DOCUMENTS IN PRACTICAL NURSING. FINAL REPORT--PART II.		See Essentials for Approved Schools of Medical Technology.	
VT 011 359 FD 000 006	1001	VT 011 669 ED 004 009	1000
THE RECORD PLAN: A REPORT OF A TWO-TECHNOLOGY PROGRAM FOR THE "ADVANCED LEARNER."		THE RELATIVE EFFECTIVENESS OF TWO SOURCES OF FEEDBACK ON TEACHERS IN THE MICRO-TEACHING SITUATION.	
VT 011 400	1003	VT 011 679	1030
The Attitudes of School Staff Members Toward Occupational Education. A Summary of the Final Report.		Report of Electro-Mechanical Technology Certificate Development Project.	
VT 017 007 FD 002 019	1003	VT 011 600 ED 004 001	1030
STATISTICS OF SCHOOL BOARD MEMBERS TOWARD OCCUPATIONAL EDUCATION. FINAL REPORT.		DESIGN: CRITICAL ANALYSIS FOR INDUSTRIAL ARTS TECHNOLOGY. DOCTORAL SERIES 13.	
VT 011 000 ED 000 007	1004	VT 011 700 ED 000 002	1000
CLASSROOM ASSISTANCE IN INDUSTRIAL ARTS.		AN EXPERIMENTAL EVALUATION OF SELECTED WRITTEN GRAPHIC COMMUNICATION MEDIA FOR DESCRIBING INDUSTRIAL ARTS AND TECHNOLOGY STUDENTS.	
VT 011 009 ED 005 003	1006	VT 011 710 ED 000 003	1002
SURVEY OF RESEARCH IN INDUSTRIAL ARTS. FIFTEENTH YEARBOOK.		A STUDY OF READING IN FLOIDING SITE IMPLICATION FOR READING EDUCATION. (JULY 1, 1968 TO JUNE 30, 1969). FINAL REPORT.	
VT 011 350	1006	VT 011 711 ED 004 006	1003
Regulatory Management/Technician Roles in the Construction Industry. Summary Report 1, Part 1, Anthropology.		DISPERSED FLUORINE: A BIBLIOGRAPHY.	
VT 011 502 ED 005 000	1000	VT 011 710 ED 005 005	1000
QUALITY APPROACH PLANNING. STURGEON MONROGRAPH NO. 130.		EXPERIENCED TEACHER FELLOWSHIP PROGRAM, 1969-70.	
VT 011 505 ED 000 000	1071	VT 011 720 ED 002 020	1055
RELATIONSHIP OF THE COMPREHENSIVE CAREER SERVICE PROGRAM.		RESEARCH AND EVALUATION PLAN FOR INSTRUCTIONAL SYSTEM DEVELOPMENT FOR VOCATIONAL-TECHNICAL EDUCATION. PROJECT TITLE: DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (1855.) VOCATIONAL-TECHNICAL SCHOOL.	
VT 011 600	1001		
Learn by the Feel and Die Later Trick.			
VT 009 010	1001		
Printing and Publishing.			

## APPENDIX C

### "Hands-On" Exercises for Use of ERIC Access Products

The following four exercises are designed to develop user competence in developing problem statements, identifying key terms, and conducting manual searches for relevant documents in RIE, CIJE, AIM, and ARM.

The exercises require the following ERIC access products:  
issues of Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Research Materials in Vocational and Technical Education (ARM), Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and the Thesaurus of ERIC Descriptors.

EXERCISE NO. 1

RIE INDEX

This exercise involves developing a problem statement from a description of an information problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Research in Education (RIE).

Description of the Problem

A local school system is interested in implementing a comprehensive career education program. A committee has been asked to explore alternatives to the traditional methods of measuring education achievement, and to recommend specific types of tests that would be appropriate for the career education program. The nature of the career education project requires that some alternative to traditional norm-referenced achievement measures be investigated.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

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EXERCISE NO. 1 RIE INDEX-2

- From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

- By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "Eric terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

EXERCISE NO. 1 RIE INDEX-3

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

EXERCISE NO. 2

CIJE INDEX

This exercise involves developing a problem statement from a description of a search problem, identifying key terms in the problem statement, and identifying relevant journal article citations by means of a Subject Index search of Current Index to Journals in Education (CIJE).

Description of the Problem

As a senior faculty member in a teacher training institution, you have become increasingly interested in devising a means of screening students seeking admission to your teacher education program. Your interest is motivated by the increased emphasis on teacher accountability and by current projections which indicate a critical over-supply of teachers during the coming decade.

Your department chairman has indicated an interest in effecting such a screening procedure and has given you responsibility of reviewing the professional literature related to the problem.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

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54/55

EXERCISE NO. 2 CIJE INDEX-2

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

EXERCISE NO. 2 CIJE INDEX-3

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

EXERCISE NO. 3

ARM INDEX

This exercise involves developing a problem statement from a description of a search problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Abstracts of Research Materials in Vocational and Technical Education (ARM).

Description of the Problem

You have recently been asked to serve as a member of a team of consultants which has the responsibility for performing a cost benefit analysis of vocational training in a particular area vocational-technical school. In a planning meeting of your evaluation team, it was suggested that a followup study be undertaken as a means of assessing students' progress subsequent to graduation from the area vocational-technical school. The data from this study will be analyzed along with other data in determining the cost-effectiveness of the school's operation.

You have been assigned the responsibility for developing the followup instrument to be used by the evaluation committee. Can you identify studies that can be used as guides in developing the methodology for carrying out this assignment?

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

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EXERCISE NO. 3 AP4 INDEX-2

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NT terms

EXERCISE NO. 3 ARM INDEX-3

4. Complete the Subject Index search by identifying documents indexed under whatever combination of terms you specified as acceptable in the development of the search strategy (list accession number[s] and title[s]).

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

EXERCISE NO. 4

AIM INDEX

This exercise involves developing a problem statement from a description of an information problem, identifying key terms in the problem statement, and locating relevant documents by means of a Subject Index search of Abstracts of Instructional Materials in Vocational and Technical Education (AIM).

Description of the Problem

As a member of a committee of elementary teachers, you have been asked to review educational literature and develop a list of industrial arts instructional materials designed to be used at the elementary school level.

1. In the space provided below, develop a clear, concise problem statement from the description of the problem.

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6/63

EXERCISE NO. 4 AIM INDEX-2

2. From the problem statement, select and list below a maximum of four key terms and develop a search strategy specifying the combination of terms under which a document must be indexed in order to be considered as an "on-target" document.

INDEX/RETRIEVAL TERMS

Set 1	Set 2	Set 3

3. By use of the Thesaurus of ERIC Descriptors, convert any "non-ERIC terms" into "ERIC terms" and list all of the ERIC terms to be used in the Subject Index search.

ERIC TERMINOLOGY TRANSFORMATION

Retrieval Term	Used in Thesaurus	ERIC Descriptor	Additional ERIC RT, BT, or NI terms

EXERCISE NO. 4 AIM INDEX-3

4. Complete the Subject and Identifier Index search by identifying documents indexed under whatever combinations of terms you specified as acceptable in the development of the search strategy (list accession number(s) and title(s)).

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

## APPENDIX D

### Performance Tests

The following performance tests on ERIC Access Products, Research in Education (RIE), Current Index to Journals in Education (CIJE), Abstracts of Research Materials in Vocational and Technical Education (ARM) and Abstracts of Instructional Materials in Vocational and Technical Education (AIM), the Thesaurus of ERIC Descriptors; and computer searching can be used to determine user understanding of information retrieval.

6/6/67

ERIC ACCESS PRODUCTS

Directions: Circle the letter that corresponds to the best answer to the following questions.

1. Two reference indexes available through Central ERIC (C-ERIC) are:
  - a. AIM and ARM
  - b. ARM and RIE
  - c. CIJE and AIM
  - d. ARM and CIJE
  - e. CIJE AND RIE
  
2. Two reference indexes available through the ERIC Clearinghouse on Vocational and Technical Education (VT-ERIC) are:
  - a. AIM and ARM
  - b. ARM and RIE
  - c. CIJE and AIM
  - d. CIJE and RIE
  - e. ARM and CIJE
  
3. Microfiche and hardcopy reproduction of documents announced in RIE, ARM, and AIM are available through:
  - a. The Center for Vocational and Technical Education
  - b. The Government Printing Office (GPO)
  - c. ERIC Document Reproduction Service (EDRS)
  - d. The U.S. Office of Education
  - e. The ERIC Clearinghouse on Vocational and Technical Education
  
4. Information material with broad national application is selected, abstracted, and indexed for the ERIC system by:
  - a. Central ERIC
  - b. ERIC Clearinghouses
  - c. Research Coordination Units
  - d. State Universities
  - e. Educational Abstracts, Inc.

6/8/69

ERIC ACCESS PRODUCTS-2

5. The scope of the ERIC Clearinghouse on Vocational and Technical Education (VT-ERIC) encompasses:
  - a. Vocational and Technical Education
  - b. Industrial Arts Education
  - c. Manpower Economics
  - d. Occupational Psychology and Sociology
  - e. All of the above.
  
6. The following library resource reference tools can be used to supplement the ERIC reference publications:
  - a. Dissertation Abstracts (DATRIX)
  - b. Government Reports Announcements (GRA) formerly USGDRA
  - c. School Research Information Service
  - d. Education Index
  - e. All of the above

RIE PERFORMANCE TEST

This manual search exercise requires use of an issue of Research in Education(RIE). Consider the search problem below, then respond to the questions that follow.

A school system is planning an outdoor education curriculum. Information on the philosophy, goals, and purposes of an outdoor education program is needed for establishing guidelines in preparing a curriculum guide. You are asked to help in obtaining the needed information.

1. Circle the one descriptor which is least appropriate to this information search problem.
  - a. Educational Philosophy
  - b. Curriculum Guides
  - c. Educational Research
  - d. Guidelines
  - e. Outdoor Education
2. Select one of the above descriptors and list the accession number of one appropriate document found in the Subject Index.  
\_\_\_\_\_
3. On what page can the document resume be located? \_\_\_\_\_
4. Who is the author of the document? \_\_\_\_\_
5. Where can you secure the full-text document? \_\_\_\_\_  
\_\_\_\_\_
6. What is the publication date of the document? \_\_\_\_\_
7. Which ERIC Clearinghouse processed the document? \_\_\_\_\_  
\_\_\_\_\_
8. What is the name of the agency which sponsored the research?  
\_\_\_\_\_
9. On what page of the Author Index is this document cited? \_\_\_\_\_
10. On what page of the Cross Reference Index can the accession number be found?  
\_\_\_\_\_

CIJE PERFORMANCE TEST

This manual search exercise requires an issue of Current Index to Journals in Education (CIJE). Consider the search problem below, then respond to the questions that follow.

A school administrator is concerned about the impact that recent movements toward a voucher plan might have on the financial aspects of a school system. By searching for relevant journal articles on educational finance, he feels that he might acquire recent information on the subject.

1. Circle the one descriptor which is most appropriate to the information search problem.
  - a. Financial Problems
  - b. Financial Support
  - c. Educational Vouchers
  - d. Educational Economics
  - e. Educational Needs
  
2. Select one of the above descriptors and list the accession number of one appropriate journal citation found in the Subject Index.

\_\_\_\_\_
  
3. What is the full title of the journal article identified in Question 2?

\_\_\_\_\_
  
4. What is the name of the journal in which to find the article?

\_\_\_\_\_
  
5. Under which Descriptor Group does the resume of the journal article appear?

\_\_\_\_\_
  
6. On what page of the Author Index does the citation of the journal article appear?

\_\_\_\_\_
  
7. What is the volume number, issue number, number of pages, and date for this journal article?

\_\_\_\_\_

\_\_\_\_\_

CIJE PERFORMANCE TEST-2

8. On what page of the Journal Contents Index does the journal citation appear?  
\_\_\_\_\_
9. On what page of the Personal and Institutional Author Index is this document cited?  
\_\_\_\_\_
10. On which page of the Conversion of Document Number Index is this document's VT number converted to the ED number?  
\_\_\_\_\_
11. On which page of the Document Number Index is this document's citation located?  
\_\_\_\_\_

AIM/ARM PERFORMANCE TEXT

This manual search exercise requires an issue of Abstracts of Research Materials in Vocational and Technical Education (ARM). Consider the search problem below, then respond to the questions that follow.

An information dissemination specialist is needing assistance for developing a training program on information systems for vocational education. One purpose for such a training program is to improve the competencies of professional personnel who are responsible for public information programs for vocational education.

1. Circle the one descriptor which is least appropriate to this information search problem.
  - a. Vocational Education
  - b. Information Systems
  - c. Institutes (Training Programs)
  - d. Program Development
  - e. Program Evaluation
2. Select one of the above descriptors and list the accession number of one appropriate document found in the Subject and Identifier Index.  
\_\_\_\_\_
3. What is the full title of the document identified in Question 2?  
\_\_\_\_\_
4. On what page is the resume of this document located? \_\_\_\_\_
5. Who is the author(s) of this document? \_\_\_\_\_  
\_\_\_\_\_
6. Where can you secure the full-text document? \_\_\_\_\_  
\_\_\_\_\_
7. What is the name of the agency which sponsored the research?  
\_\_\_\_\_
8. What is the publication date of the document? \_\_\_\_\_

THESAURUS PERFORMANCE TEST

This exercise requires a copy of the Thesaurus of ERIC Descriptors. Using the Thesaurus, circle the letter that corresponds to the best answer to the following questions.

Questions 1 and 2 refer to the Rotated Descriptor Display Section.

1. What descriptor immediately precedes "Rehabilitation Counseling"?
  - a. Rehabilitation Centers
  - b. Delinquent Rehabilitation
  - c. Rehabilitation
  - d. Correctional Rehabilitation
  - e. Rehabilitation Programs
  
2. What descriptor immediately follows "Information Retrieval"?
  - a. Relevance (Information Retrieval)
  - b. Information Science
  - c. Information Processing
  - d. Search Strategies
  - e. Information Retrieval Precision

Questions 3 through 7 refer to the Display Listing Section.

3. What is the broader term (BT) item for the descriptor "Inservice Teacher Education"?
  - a. Inservice Education
  - b. Professional Education
  - c. Inservice Teaching
  - d. Professional Training
  - e. Teacher Education
  
4. If a teacher needed information on the narrow term (NT) for "Instructional Trips" the appropriate descriptor would be:
  - a. Field Instruction
  - b. Instructional Media
  - c. Education Trips
  - d. Field Trips
  - e. Tourism
  
5. A related term (RT) for "Counseling Goals" is:
  - a. Educational Guidance
  - b. Counseling Programs
  - c. Guidance Counseling
  - d. Guidance Objectives
  - e. Adult Counseling

76/77

THESAURUS PERFORMANCE TEST-2

6. The appropriate scope note (SN) for "Vocational Education" is:
  - a. Occupational Training
  - b. Formal Preparation for an Occupation below the Baccalaureate Degree
  - c. Work and School Experience under the Direction of a Vocational Teacher
  - d. All Types of Education Related to Industry
  - e. Training for Employees Conducted by Industrial Organizations
  
7. Information on "Research Specialists" will be appropriately retrieved by searching the Subject Index using the descriptor:
  - a. Research Directors
  - b. Educational Researchers
  - c. Research Specialists (Education)
  - d. Specialists of Research
  - e. Researchers

### COMPUTER SEARCHING PERFORMANCE TEST

Consider the search problem described below and circle the letter that corresponds to the best answer for the questions that follow.

A state education agency is planning to develop an animal science program at the junior college level for training agricultural technicians and veterinary assistants. Curriculum materials for planning and developing such programs are needed as well as examples of other programs and curricula that might already be in operation at other institutions.

1. For the above problem, choose the following problem statement which best describes the specific information needed.
  - a. Materials are needed which can be used in designing facilities for programs in preparing agricultural technicians and veterinary assistants.
  - b. Materials are needed for planning and developing an animal science program and curriculum at the junior college level.
  - c. Information on evaluating animal science programs for training agricultural technicians and veterinary assistants is needed.
  - d. Instructional materials for preparing junior college students for agricultural technicians and veterinary assistants are needed.

COMPUTER SEARCHING PERFORMANCE TEST-2

2. From the following combinations of descriptors, choose the group which is most relevant for the above problem.
- a. Animal Science, Agricultural Education, Community Colleges, Junior Colleges, Post Secondary Education, Program Development, Curriculum, Program Planning
  - b. Animal Science, Program Evaluation, Agricultural Technicians, Veterinary Assistants, Program Planning, Curriculum Development, Agricultural Education
  - c. Animal Science, Junior Colleges, Post Secondary Education, Facility Planning, Facilities, Agricultural Technicians, Curriculum
  - d. Agricultural Education, Program Improvement, Instructional Materials, Veterinary Assistants, Agricultural Technicians, Program Planning, Facility Planning
3. Choose the combination of descriptors below which best illustrates the correct "and"- "or" (+ - /) logic in the search strategy.
- a. 

(+)	Agricultural Education	-	(+)	Animal Science
(/)	Program Development		(/)	Curriculum
			(/)	Community Colleges
(+)	Program Planning			
(/)	Junior Colleges			
(/)	Post Secondary Education			
  - b. 

(+)	Junior Colleges		(+)	Program Development
(/)	Community Colleges		(/)	Program Planning
			(/)	Curriculum
(+)	Agricultural Education			
(/)	Animal Science			
(/)	Post Secondary Education			
  - c. 

(+)	Agricultural Education		(+)	Program Planning
(/)	Animal Science		(/)	Program Development
			(/)	Curriculum
(+)	Junior Colleges			
(/)	Community Colleges			
(/)	Post Secondary Education			
  - d. 

(+)	Agricultural Education		(+)	Post Secondary Education
(/)	Animal Science		(/)	Program Development
			(/)	Program Planning
(+)	Junior Colleges			
(/)	Community Colleges			

## Mission of The Center

The Center for Vocational and Technical Education is an independent unit on The Ohio State University campus. It serves a catalytic role in establishing consortia to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach and interinstitutional in its program.

The Center's mission is to strengthen the capacity of state educational systems to provide effective occupational educational programs consistent with individual needs and societal requirements by:

- Conducting research and development to fill gaps in existing knowledge and to develop methods for applying knowledge.
- Programmatic focus on state leadership development, vocational teacher education, curriculum, occupational choice and adjustment.
- Stimulating and strengthening the capacity of other agencies and institutions to create durable solutions to significant problems.
- Providing a national information storage, retrieval and dissemination system for vocational and technical education through the affiliated ERIC Clearinghouse.