

RESEARCH IN  
INDUSTRIAL EDUCATION

Retrieval Of Data From Information Systems

monograph



AMERICAN COUNCIL  
OF INDUSTRIAL ARTS  
TEACHER EDUCATION

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**RESEARCH IN  
INDUSTRIAL EDUCATION**  
Retrieval Of Data From Information Systems

by

**David L. Jelden  
University of Northern Colorado**

monograph

**6**

**American Council on Industrial Arts Teacher Education  
Affiliated with American Industrial Arts Association  
of the National Education Association  
1976**

## PREFACE

The American Council on Industrial Arts Teacher Education is a professional association dedicated to the support and development of the professional ideals of industrial arts education. One of the various means the council employs in pursuing this goal is the publication of selected research studies and reports of its committees and individual members.

Most teachers of Industrial Arts recognize the importance of research and the implications it has for program planning and development. One of the major problems confronting the practitioner, however, is the time involved in learning what research has been done and where the results may be found.

This sixth monograph is the result of the work of one member of the Council, David L. Jelden. It will serve as a valuable tool to those seeking comprehensive resources necessary for a literature search in industrial arts and vocational industrial education. The document is a clear and concise treatment of the "how and where" of resources useful in the solution of professional problems. The officers on behalf of the ACIATE membership wish to express their sincere appreciation to Dr. Jelden for his contribution to the profession.

Credit is also due to the ACIATE Publications Committee under the effective chairmanship of Clois E. Kicklighter. Dr. Kicklighter and the members of this committee listed on the inside front cover, have contributed a sizeable amount of time and effort in the selection and editing tasks essential to the publication of a quality monograph series.

Inquiries regarding the monograph series should be directed to the chairman of the Publications Committee or to any officer of the Council. Specific questions or suggestions relative to the content of this monograph should be sent to the author.

Walter C. Brown  
President

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## INTRODUCTION

Those involved in education are often confronted with decisions which affect the operation of the program. Administrators, teachers, curriculum specialists, school board members and teacher educators are but a few who must have access to information which will provide for the most realistic and logical educational decisions. To facilitate the collection of facts pertinent to the problem and to benefit from research or information previously generated by others who may have had similar decisions to make, a thorough knowledge of the "systems" or means of collecting and storing data is essential. To this end, this publication offers a brief explanation of some of the more prominent systems. It explains the basic characteristics of the common indexes which might be of value to those in industrial education and other allied fields. It is written primarily for the practicing teacher, or the typical graduate student in the field of industrial arts, trade and industrial and vocational/technical education and to those who may have limited time in which to sort through the volumes of data which exist and which might be useful to their purpose. It is an attempt to give direction to a complex, time-consuming research process.

This information is specifically designed to inform the researcher or investigator where information can be obtained and how it may be retrieved from some of the classification systems which exist. Retrieval is a basic need in most research. Furthermore, it is assumed that this information will encourage professional organizations such as the ACIATE, NAITTE, AVA, AIAA and any private and/or public educational institutions to promote data input to these systems. Greatest emphasis in this discussion is given to detailing the procedures and techniques of information retrieval.

David L. Jelden

## BASIC SYSTEMS FOR STORING RESEARCH DATA

This presentation will include an explanation of several basic systems used for storing and retrieving research for Industrial Arts and Vocational-Technical Education. Subsystems and other useful sources which may be helpful to the researcher will also be briefly explained. The main systems that will be discussed are:

1. University Microfilms which provides *Dissertation Abstracts International* and *DATRIX*.
2. U.S. Government Reports by the *National Technical Information Service* (NTIS), formerly the *Clearinghouse for Scientific and Technical Information* (CFSTI).
3. The ACIATE-NAITTE *Summaries of Studies in Industrial Arts, Trade and Industrial, and Technical Education* provided by the American Council on Industrial Arts Teacher Education and the National Association of Industrial Technical Teacher Educators.
4. Educational Resources Information Center (ERIC), which provides the *Current Index to Journals in Education* (CIJE), *Pacesetters in Innovation Index*, *Manpower Research Index*, *Abstracts of Instructional and Research Materials in Vocational-Technical Education* (AIM/ARM), and *Resources in Education* (RIE). A brief explanation will also be given on the purpose of clearinghouses in the ERIC system.
5. Additional sources of information that may be helpful in securing data relative to Industrial Arts, Vocational-Technical Education and related areas are: New York Times Index; Government Reports Index; Regional Research Coordinating Units; and regular publications such as *AVA Journal* and *AIAA Man/Society/Technology, Journal of Industrial Arts* and individual or private research reports and/or miscellaneous indexes in related fields.
6. Search strategies for information retrieval, *The Thesaurus of ERIC Descriptors* and its use.

### UNIVERSITY MICROFILMS AND DATRIX

Customer Services  
University Microfilms  
Xerox Company  
300 North Zeeb Road  
Ann Arbor, Michigan 48106

The University Microfilms compilation of abstracts is made up of those doctoral dissertations completed to cooperating institutions of higher education and

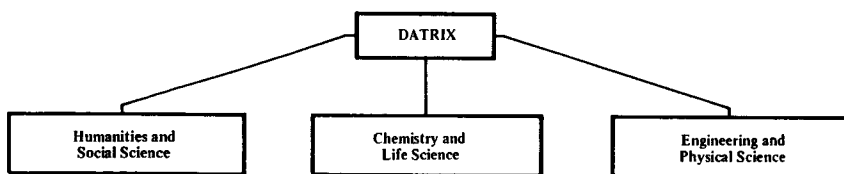
submitted to them for processing. A listing of cooperating institutions can be obtained from the above address or from the inside cover of the DAI Cumulative Index. Since 1938 University Microfilms has been microfilming most of the dissertations written by doctoral candidates in North America. The number of these originally researched documents is currently being increased at a rate of approximately 18,000 annually from nearly 200 institutions. The listing of dissertation abstracts is fairly complete, but it should be noted that all schools listed as cooperating institutions may not have all of their research in the University Microfilms system. For instance, if a graduate program awarded 50 degrees up to 1950 and then joined the association, the first 50 dissertations could not be listed in the indexes available prior to 1950. Caution should be observed by the researcher in stating that a search of related studies is complete by looking only at this one source.

The abstracts submitted to University Microfilms are found in a *Cumulative Subject and Author Index* which contains a complete listing of all abstracts in the entire collection. In addition to being identified by academic field, title, author, institution, adviser, number of pages, price and order number, valuable bibliographical information is included.

An index by subject categories is available which lists the major and minor areas used to classify documents. The subject index includes author, subject, code number, and institution awarding the degree for each dissertation found in the system.

Academic and non-academic researchers can now avail themselves of a computerized information retrieval system for quick and easy access to a vast storehouse of knowledge contained in tens of thousands of doctoral dissertations written in all fields. The name "DATRIX" ("Direct Access to Reference Information: a Xerox Service") is a development of University Microfilms.

Classification or areas in DATRIX system are as follows:



Industrial and technical education is listed under the Humanities and Social Science block. Some overlapping is found under engineering and physical science in technical areas of vocational education.

DATRIX is an information retrieval system that addresses itself directly to the needs of the individual researcher, freeing him from the frustration and tedium of bibliography compilation, making it convenient for him to access the wealth of useful data in doctoral dissertations.

DATRIX can be a researcher's timesaving, cost-saving information development tool. It quickly "takes stock" of the entire Dissertation Abstracts file and accurately pinpoints for the researcher any dissertation or group of dissertations pertinent to his particular field of interest.

DATRIX is simple in operation even though its data base comprises the majority of all dissertations published since 1938 to the current month. To enable it to hunt most effectively and economically throughout the expansive information area, the DATRIX computer's memory has an input of key words derived from the titles, author's selected subject headings and other descriptive data of complete dissertations.

The researcher may submit his order for a search with the assurance that each one will be checked against his own copy of the updated Key Word List. It is recommended that the researcher supply related words from his own vocabulary and allow DATRIX to amend the structure of the query order to his best advantage.

A clearly descriptive summary of the researcher's subject field or his research goal helps to search for the most relevant reference.

Bibliographies are sent to the researcher after the computer search. Each reference in the bibliography includes the complete title of the dissertation, author's name, university at which it was accepted, date of publication, and the page and volume of *Dissertation Abstracts* where the dissertation is listed. In addition, price information is shown so that a microfilm or xerographic copy of the complete dissertation desired can be ordered from University Microfilms. An order form accompanies the bibliography, enabling the researcher to conveniently request complete dissertations as needed.

The basic fee for a DATRIX inquiry is approximately \$10.00 which includes the first 60 (or less) references in the bibliography. Additional references are priced per item. Current prices for searches and microfilms can be obtained from information provided by most reference librarians or from University Microfilms. Also, DATRIX instructions and request forms are available from University Microfilms or your local library and should be used for requesting a computer search.

#### NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

National Technical Information Service  
 U.S. Department of Commerce  
 5285 Port Royal Road  
 Springfield, Virginia 22151

The NTIS was formerly known as the *Center for Scientific Technical Information* (CFSTI). It is operated and funded by the U.S. Department of Commerce. The system contains a listing of all funded scientific and technical projects under contract with the government and are generally outside of the field of education. Research done by agencies such as the military services on instructional methods and curriculum development, under private contract with business and industry, will be listed here.

Access to the data in the NTIS must be processed through its main office. Most publicly funded institutions, such as schools, can fill out a "need to know" request form and obtain copies of the document in hard copy print-out or microfiche form.

Research in this system is generally classified under a number of categories. The ones most used by educators are those of the Behavioral Sciences and Social Science. Documents and materials dealing with educational subjects are found under the Behavioral Sciences. However, those in technical education might have need for the Engineering category.

The advantage of this system is that documents which are fugitive in nature (not found anywhere else) can be obtained here. The data obtained, in general, is very technical and cannot be easily understood by persons unfamiliar with the field. (Note: More information is given about NTIS in another section of the Monograph.)

#### GOVERNMENT REPORTS INDEX AND GOVERNMENT REPORTS ANNOUNCEMENTS

The Government Reports Announcements (GRA) includes business and economic data as well as scientific and technical report literature. It is published biweekly by the National Technical Information Service (NTIS) to simplify and improve public access to federal publications as they become available. The Government Reports Index (GRI) is published concurrently with the GRA.

The GRA identifies information released to the public through NTIS. Translations and some reports written in foreign languages are also included. Announcements are arranged in twenty-two (22) subject fields, with each subject field subdivided into groups. The locator list at the end of each journal gives the field group location for each report cited in the issue. This list is arranged by accession number. An edge index on the back of each journal provides easy access to subject fields within the journal. Sample subject fields of interest to industrial education teachers might include: aeronautics, behavioral and social sciences, electronics and electrical engineering, energy conversion (non-propulsive), materials, methods and equipment, space technology and mechanical, industrial, civil and marine engineering. This is a good source for reports made by agencies under contract to the United States government to provide research and development information.

The Government Report Index (GRI) is published biweekly and indexes the GRA abstracts by corporate author, subject, personal author, contract number and accession/report number. Annotations of each entry are found *only* in the GRA. If you need the annotation of the entry which you locate in the GRI, you will have to locate that entry by accession/subject area and look it up in the GRA Index.

#### SUMMARIES OF STUDIES IN INDUSTRIAL ARTS, TRADE AND INDUSTRIAL AND TECHNICAL EDUCATION – ACIATE-NAITTE

Dr. D. L. Jelden  
ACIATE Research Committee  
Department of Industrial Arts  
University of Northern Colorado  
Greeley, Colorado 80639

This document can be obtained from the editor, Dr. Jelden, and contains almost all of the formal abstracts of doctoral dissertations completed in Industrial Education since 1930 to the present. A number of staff studies from graduate institutions have also been included when submitted by accredited institutions.

The abstracts in this compilation contain the purpose of the study, the methods, procedures, and sources of data used, and brief summaries of the findings and conclusions reached. At the time of this publication, 2500 abstracts are in the collection. Additional abstracts are being added at a rate of about 200 per year.

The unique part of this publication is that a loose-leaf organization allows updating to be done conveniently. When someone purchases the original document, they will automatically be mailed, around April 1, supplements of studies added in the previous year. These supplemental studies are provided on a cost per page basis with invoice and billing shipped with each supplement.

Input to the "Summaries of Studies" is obtained from University Microfilms, *Dissertation Abstracts International*, and all institutions having awarded a doctoral degree to any person whose name is included in the publication and submitted by the granting institution. The ERIC-VT Clearing House and the Research Committees of the American Industrial Arts Association, American Council on Industrial Arts Teacher Education and the National Association of Industrial and Technical Teacher Educators/American Vocational Association also contribute abstracts to the document.

The compilation of abstracts contains an index of key word descriptors obtained primarily from the ERIC Thesaurus, common terms in the professional literature and from the dissertation titles. This index contains over 200 key words or interest areas cross-indexed for easy identification. Each abstract has been coded by the editor with those key words describing the content, purpose, or significance of the study. Each abstract is assigned at least three but, no more than seven descriptors. From this classification system, a computer card is punched and an index by author printed for each of the descriptors listed. Two or more descriptors can be searched simultaneously to provide more selectivity to the information obtained. For example, key words such as *attitudes* and *administration* can be used to find those documents dealing with the *Attitudes of Administrators*. If more selectivity is required, a third descriptor can be used. The print-out of the index contains over 60 pages of author listings for computer searched descriptor combinations and is one of the best single sources for finding out what research has been done in specific areas for industrial arts, trade and industrial, and technical education.



Institutions or persons wanting the computer search capability locally can obtain punched cards of the coded abstracts and the computer program from the editor on a cost basis. Annual card updates will be mailed to these subscribers also.

It is possible to obtain a print-out of a computer search for descriptor combinations not included in the index by writing to the editor. Individual search requests can conveniently be handled in blocks of 10 searches per run due to the construction of the program. However, single search research requests will be honored. Searches will be made on a per request basis with up to seven descriptors per request. It is suggested that the researcher use no more than two or three descriptor combinations due to the selectivity of the program. Any combination of descriptors signifies a search request. The cost for this service is determined on a cost only basis. Current prices can be obtained from the editor.

Because the computer center at the University of Northern Colorado, Greeley, is used for production *and* instruction, time on the computer is not readily available. It is suggested that institutions or departments wishing to have the computer search capability available locally, purchase the punch cards and work with their local computer programmer to adapt these cards to their system. The independent search requests are provided as a convenience to those individuals who do not have access to a computer and who seek information not readily available in the annual index which accompanies the document.

## EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Central ERIC  
National Institute of Education  
Dissemination Task Force  
400 Maryland Avenue, S.W.  
Washington, D.C. 20202

Established in 1966, the Educational Resources Information Center (ERIC) is a national information system designed and supported by the National Institute of Education for the purpose of providing ready access to results of educational research, research-related materials, and other resource information that can be used in developing more effective educational programs.

The functional and supportive components (See Figure 1) of the system include: (1) Central ERIC with headquarters and staff in the National Institute of Education; (2) ERIC Facility; (3) The ERIC Document Reproduction Service (EDRS); (4) The ERIC Contractor for CIJE; (5) The U.S. Government Printing Office; and (6) a decentralized network of specialized clearinghouses.

The following explanation of the functions and services of each component shown in Figure 1 will enable the reader to understand the steps in document processing which will be discussed later:

*Central ERIC* – is the sponsoring agency in the National Institute of Education that manages and coordinates activities of the system.

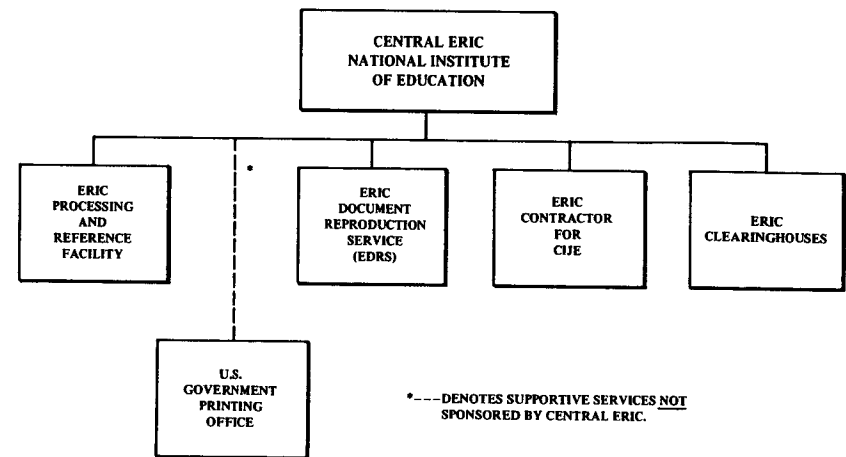


Figure 1 Functional and Supportive Components of ERIC

*ERIC Processing and Reference Facility* – (ERIC Facility) is the contractor that provides centralized computer and systems development services for the production of the monthly publication *Resources in Education* (RIE).<sup>1</sup>

*ERIC Document Reproduction Service* (EDRS) – is the contractor that produces and sells microfiche (MF)<sup>2</sup> and hardcopy (HC)<sup>3</sup> of most of the documents processed into the ERIC information system.

*ERIC Contractor to CIJE* – publishes and sells the monthly *Current Index to Journals in Education* (CIJE).<sup>4</sup>

*U.S. Government Printing Office* – prints, sells, and distributes *Research in Education* (RIE) and other ERIC publications.

*ERIC Clearinghouses* – sixteen clearinghouses are responsible for acquiring, selecting, abstracting, and indexing documents within a particular area in the field of education. Clearinghouse acronyms, locations, and educational areas are noted below:

<sup>1</sup>*Resources in Education* (RIE) will be discussed in greater detail in another section. This was formerly known as *Research in Education*.

<sup>2</sup>An ERIC microfiche (MF) is a 4" x 6" sheet of microfilm containing up to 98 pages of reduced document print. Microfiche is read with the aid of a microfiche reader that projects a printed page to nearly full size.

<sup>3</sup>Hardcopy (HC) may be either a xerox reproduction of the original document or a photocopy enlarged from the microfiche copy of the document.

<sup>4</sup>*Current Index to Journals in Education* (CIJE) will be discussed in greater detail in other sections of this monograph.

ERIC CLEARINGHOUSES ON . . . .

**CAREER EDUCATION**  
204 Gabel Hall  
Northern Illinois University  
DeKalb, Illinois 60115

**COUNSELING AND PERSONNEL SERVICES**  
The University of Michigan  
School of Education Building,  
Room 2108  
East University & South University Sts.  
Ann Arbor, Michigan 48104

**EARLY CHILDHOOD EDUCATION**  
University of Illinois  
805 W. Pennsylvania Avenue  
Urbana, Illinois 61801

**EDUCATIONAL MANAGEMENT**  
University of Oregon  
Eugene, Oregon 97403

**HANDICAPPED AND GIFTED CHILDREN**  
The Council for Exceptional Children  
1920 Association Drive  
Reston, Virginia 22091

**HIGHER EDUCATION**  
George Washington University  
One Dupont Circle, N.W., Suite 630  
Washington, D.C. 20036

**INFORMATION RESOURCES**  
Stanford Center for Research and  
Development in Teaching  
Stanford, California 94305

**JUNIOR COLLEGES**  
University of California at  
Los Angeles  
Power Library, Room 96  
405 Hilgard Avenue  
Los Angeles, California 90024

**LANGUAGES AND LINGUISTICS**  
Center for Applied Linguistics  
1611 North Kent Street  
Arlington, Virginia 22209

**READING AND COMMUNICATION SKILLS**  
National Council of Teachers of English  
1111 Kenyon Road  
Urbana, Illinois 61801

**RURAL EDUCATION AND SMALL SCHOOLS**  
New Mexico State University  
Box 3 AP  
Las Cruces, New Mexico 88003

**SCIENCE, MATHEMATICS, AND ENVIRONMENTAL EDUCATION**  
Ohio State University  
400 Lincoln Tower  
Columbus, Ohio 43210

**SOCIAL STUDIES/SOCIAL SCIENCE EDUCATION**  
Social Science Education Consortium, Inc.  
855 Broadway  
Boulder, Colorado 80302

**TEACHER EDUCATION**  
American Association of Colleges for  
Teacher Education  
One Dupont Circle, N.W., Suite 616  
Washington, D.C. 20036

**TESTS, MEASUREMENT, AND EVALUATION**  
Educational Testing Service  
Princeton, New Jersey 08540

**URBAN EDUCATION**  
Teachers College  
Columbia University  
Box 40  
New York, New York 10027

In the early development of the ERIC program, industrial arts, trade and industrial, and technical vocational education areas were processed under the VT (Vocational-Technical) Clearinghouse at Ohio State University, Columbus. Now these and adult education are combined into one clearing house, Career Education (CE) located at Northern Illinois University, DeKalb, Illinois.

One of the reasons for basing the ERIC system on the operation of decentralized clearinghouses was the belief that the clearinghouse directors, in their colleague relationships with the staff of professional organizations and educational agencies, could establish effective linking mechanisms with professional organizations and educational agencies for the transmission of information throughout the educational community. This hypothesis has been confirmed by the operation of the clearinghouses.<sup>5</sup>

Each clearinghouse sends documents for inclusion in the monthly issues of *Resources in Education* (RIE).

*RIE Information Flow*

The flow of documents given visibility in *Resources in Education* (RIE)<sup>6</sup> begins with the contribution of materials from individuals, institutions, government agencies, and others. The top of Figure 2 depicts the starting point. It should be noted that the effectiveness of the ERIC document base in serving the information needs of the educational profession is directly dependent on the flow of documents into the system.

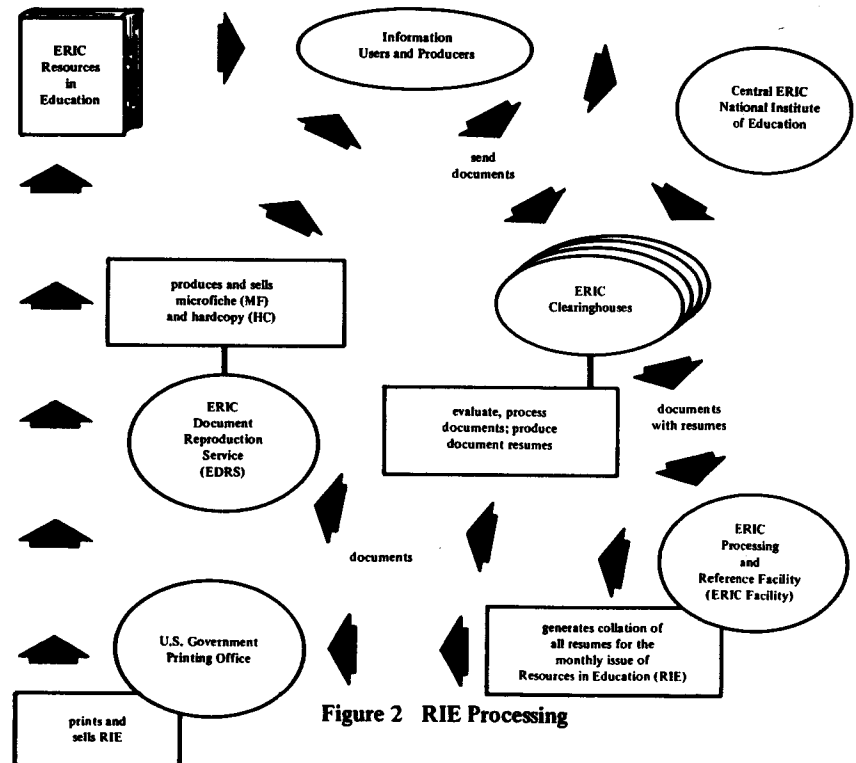


Figure 2 RIE Processing

The final products resulting from document inputs by all clearinghouses are the monthly issue of *Resources in Education* (RIE),<sup>7</sup> and the microfiche and hard-copy produced and distributed by the ERIC Document Reproduction Service (EDRS).<sup>8</sup>

### Characteristics of RIE

*Resources in Education* (RIE) is a monthly abstract journal which announces recently completed research and research-related reports in the field of education.

RIE is organized in a manner that allows the user to quickly locate specific documents. Figure 3 shows a sample table of contents in RIE.

As revealed by the sample RIE table of contents, five major sections are found in the issue.

The resumes in the DOCUMENT SECTION are arranged in numerical order by ERIC document (ED) number, and alphabetically by clearinghouse prefix initials and acquisition number.

e.g.:

ED 022 461                      JC 680 335 (Junior College Clearinghouse)

ED 096 387                      CE 001 358 (Career Education)

The DOCUMENT SECTION also has three indexes: subject, author, and institution.

# Resources in Education

ED 106 442-107 756

<b>Table of Contents</b>	
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Figure 3 Sample RIE Table of Contents

Since each clearinghouse focuses on a specific field of education, the reader who is interested in locating other pertinent documents on a subject should consult the subject index of RIE for a more comprehensive search.

The SUBJECT INDEX lists titles of documents under the major subject terms that have been assigned to characterize their contents. A sample SUBJECT INDEX entry in RIE is shown in Figure 4.

<sup>5</sup>Burchinal, Lee G. "The Educational Resources Information Center: An Emergent National System." *Journal of Educational Data Processing*. Palo Alto: Educational Systems Corporation, Vol. 7, No. 2, April, 1970, p. 61.

<sup>6</sup>*Resources in Education* (RIE) began monthly publication November 1966 as *Research in Education*. Its name was later changed to *Resources in Education*. Subscription costs and mailing addresses are inside the cover of each monthly RIE publication.

<sup>7</sup>Report resumes which appeared in the first 14 issues of *Resources in Education*, beginning November 1966 and ending December 1967, are no longer available through the Government Printing Office. One volume containing these 2,349 resumes may be purchased, post-paid, for \$24.50 from: National Standards Association, Inc., 1321 14th Street, N.W., Washington, D.C., 20005.

<sup>8</sup>How to purchase microfiche and hardcopy from the ERIC Document Reproduction Service will be discussed in detail later.

<b>Industrial Arts</b>	
Career Education Instructional Guide.	ED 106 501
Industrial Ecology Instructional Guide for the Industrial Arts Teacher.	ED 106 465
Practical Guide to Industrial Arts Education.	ED 106 475//
<b>Industrial Education</b>	
A Comprehensive, Informational, Instructional Guide for the Implementation of Manufacturing in the Public School.	ED 106 466
<b>Industrial Personnel</b>	
Job Specialization, Work Values and Worker Dissatisfaction. Technical Report No. 29.	ED 106 495
Profile of a Rural Area Work Force: The Wyoming Uranium Industry.	ED 107 410
<b>Industrial Training</b>	
Principles and Practices of Occupational Safety and Health: Administrator's Manual.	ED 106 639
Principles and Practices of Occupational Safety and Health: Student Manual: Booklet One.	ED 106 640
Principles and Practices of Occupational Safety and Health: Student Manual: Booklet Two.	ED 106 641
Principles and Practices of Occupational Safety and Health: Student Manual: Booklet Three.	ED 106 642

Figure 4 Sample RIE Subject Index

If one is interested in keeping aware of the research activities of a particular person, the AUTHOR INDEX in each issue of RIE should be consulted. The AUTHOR INDEX lists each document under the name(s) of the author(s) and is arranged in alphabetical order by the author's last name. As shown in Figure 5, the ERIC document (ED) number for each author's document is displayed below and to the right of the document title. Additional information can be found by using the ED number to locate the abstract in the resume section.

<b>Abeson, Alan</b>	
A Primer on Due Process: Education Decisions for Handicapped Children.	ED 107 090//
<b>Adams, Constance Coburn</b>	
Adoption of the Metric System by Consumers: A Program for New York State Cooperative Extension.	ED 107 533
<b>Adams, Stuart N.</b>	
Evaluative Research in Corrections; A Practical Guide.	ED 106 698
<b>Adreani, Arnold J.</b>	
Improving Child Management Practices of Parents and Teachers. Maxi I Practicum. Final Report.	ED 106 729
<b>Agin, Michael Lawrence</b>	
The Feasibility of Teaching Science via a Socio-Historical Approach. Part 2. Classroom Materials. Practical Paper No. 303. (Part 1 of 2 Parts).	

Figure 5 Sample RIE Author Index

The INSTITUTION INDEX adds another search tool as this index lists the title of documents under the institution responsible for them. The index is arranged in alphabetical sequence by the name of the university, agency, association, etc.

The ED number is displayed below the title of each document. Additional information about the document can be found under the ED number in the resume section.

Utilizing the INSTITUTION INDEX allows researchers and others to locate documents produced by specific institutions.

The Clearinghouse Number/ED Number CROSS REFERENCE INDEX can be used by readers who desire to locate an ED number for a document when they only have the clearinghouse accession number. Inversely, the same technique could be used to locate a clearinghouse accession number if only the ED number is known. The CROSS REFERENCE INDEX is arranged in numerical order by ED number and alphabetically by clearinghouse prefix initials and acquisition number to facilitate quick usage.

The other contents of *Resources in Education* (RIE) include the Special Notices section about other ERIC products; a section on HOW TO ORDER ERIC DOCUMENT REPRODUCTIONS (microfiche and hardcopy); new thesaurus terms, ERIC TAPES and ERIC TOOLS and a final section on HOW TO ORDER ERIC PUBLICATIONS.

### Annual RIE Index

In addition to the monthly issues of *Resources in Education* (RIE), an annual index is published. Reports are listed in the annual index by subject, author, and institutional source. This index centrally identifies all reports announced in RIE for each year, thus allowing the researcher and other users to locate reports in an efficient manner. By using the ED number from the annual index, individuals can locate the document abstract in the appropriate issue of RIE.

#### Important Note About ERIC Publications

ERIC publications are designed so that, once familiar with the format of one, the reader will be able to effectively use all others. As shown in the preceding discussion, a variety of approaches may be used to find information.

### CIJE – New Monthly Guide to Periodic Literature

In its continuing effort to provide a more thorough and effective means of identifying relevant educational information, the Educational Resources Information Center (ERIC) began publishing a multi-disciplinary index to periodical literature in April 1969. The monthly index *Current Index to Journals in Education* (CIJE)<sup>9</sup> is considered to be an important companion publication to *Resources in Education* (RIE). Subscribers to CIJE receive monthly detailed indexing and some annotations of approximately 1500-2000 articles from over 700 education and education-oriented periodicals.

CIJE is a computer-generated index containing articles which are processed by all clearinghouses in the ERIC system. The CIJE information flow is illustrated in Figure 6.

The need to leaf through stacks of periodical literature is eliminated through the use of CIJE thus saving time for other pressing activities. CIJE has subject, author, journal contents, and main entry indexes.

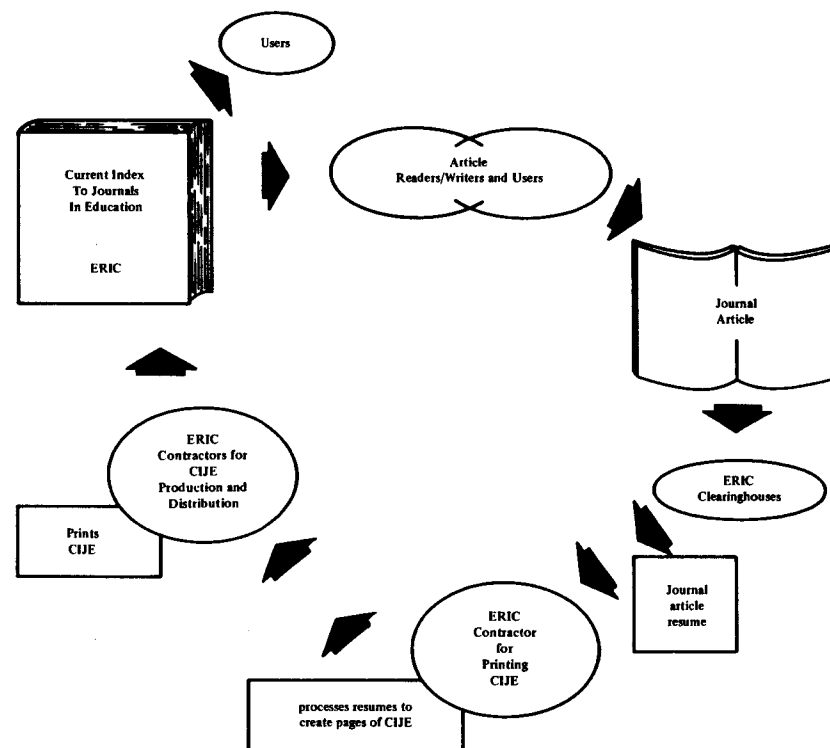


Figure 6 CIJE Processing

The semi-annual and annual cumulative CIJE indexes are invaluable educational references.<sup>10</sup> Since microfiche and hardcopy reproductions of articles in CIJE are not available through the ERIC system, access to a library with the periodicals covered by CIJE is essential to supplement the CIJE indexes.

<sup>10</sup> Monthly subscription to CIJE plus Semi-annual and Annual Cumulative Index, Semi-annual and Annual Cumulative CIJE indexes and Annual CIJE Cumulative Index are available from Macmillan Information, 866 Third Avenue, New York, New York 10022.

<sup>9</sup>CIJE subscription: Annual (12 issues) are available from Macmillan Informations, 866 Third Avenue, New York, New York 10022.

### *ERIC Clearinghouses – What They Are and What They Do*

The following summarizes the way in which clearinghouses are supported and the services that each clearinghouse provides for the education profession.<sup>11</sup>

#### **What They Are:**

- non-profit organizations
- funded by National Institute of Education
- coordinated by CENTRAL ERIC
- sponsored by educational organizations related to their field of interest

#### **What They Do:**

- evaluate documents and process them for *Resources in Education* (RIE), for *Current Index to Journals in Education* (CIJE), or for their local collection
- produce special bibliographies, state of the art papers, and interpretive summaries
- identify needed research
- create an atmosphere for rational change in education

Although other clearinghouses such as Information Resources and Teacher Education process and produce materials pertinent to industrial arts, the activities of the ERIC Clearinghouse on Career Education (ERIC/CICE) will probably be of most interest.<sup>12</sup>

CE-ERIC (ERIC Clearinghouse on Career Education) processes documents in the following fields:

- 1) All vocational and technical education fields
- 2) Industrial arts
- 3) Occupational sociology
- 4) Occupational psychology
- 5) Manpower economics
- 6) Employment
- 7) Occupations and occupational guidance
- 8) Student personnel services
- 9) Adult education

<sup>11</sup>It should be noted that clearinghouses are not staffed nor funded to provide searches or other user services. (See section on AVAILABILITY OF REPORTS IN THE ERIC SYSTEM for further information.)

<sup>12</sup>In the beginning, the clearinghouse on Vocational/Technical Education (VT-ERIC) processed the materials in industrial education. It was later changed to Career Education (CE-ERIC).

The following subject categories, when specifically related to the scope of CE-ERIC, are included in document collection efforts:

- 1) Administration and supervision
- 2) Curriculum
- 3) Employment and occupations
- 4) Evaluation and measurement
- 5) Facilities and equipment
- 6) Historical studies
- 7) Individuals with special needs
- 8) Instructional materials and devices
- 9) Philosophy and objectives
- 10) Research design
- 11) Development and utilization
- 12) Occupational guidance and other personnel services
- 13) Teacher education
- 14) Teaching and learning

The documents processed by CE-ERIC are reported in *Resources in Education* (RIE). RIE is broadly aimed at the total educational profession and it is not possible to include many documents needed by the vocational-technical and industrial arts profession. To maintain the services for vocational-technical and industrial arts education, the Center for Vocational and Technical Education was maintained at Ohio State University. This center now publishes AIM/ARM under the U.S. Office of Education. AIM/ARM will be discussed in detail further in this publication.

#### *Availability of Reports in the ERIC System*

ERIC Document Reproduction Service (EDRS)  
Box 190  
Arlington, Virginia 22210

All orders for microfiche and hardcopy reproductions of documents processed into the ERIC system should be sent to the EDRS address noted above.

By reading the following sections on how to acquire ERIC documents, an individual can gain a clear understanding of how documents are made available from the ERIC system.

Careful utilization of the information in this section of the paper will eliminate unnecessary delays.

Although it has been previously mentioned, it is desirable at this point to stress that documents are not available from ERIC clearinghouses. EDRS is the sole source of documents available from the ERIC system.

## How to Acquire Documents Announced in Resources in Education (RIE)

A basic concept of the ERIC system is to make known the availability of the full text of materials abstracted and processed into the ERIC document base. Most of the processed materials with an ERIC Document (ED) number will be available from the ERIC Document Reproduction Service (EDRS) in the form of microfiche (MF) and/or hardcopy (HC). There is an EDRS availability line on each resume which indicates if a document may be obtained from EDRS.

If a document is not available from EDRS, the agency and address from which the document may be obtained is noted on the resume. The sample resume shown in Figure 7 highlights the EDRS availability line and the availability notation from an agency other than EDRS.

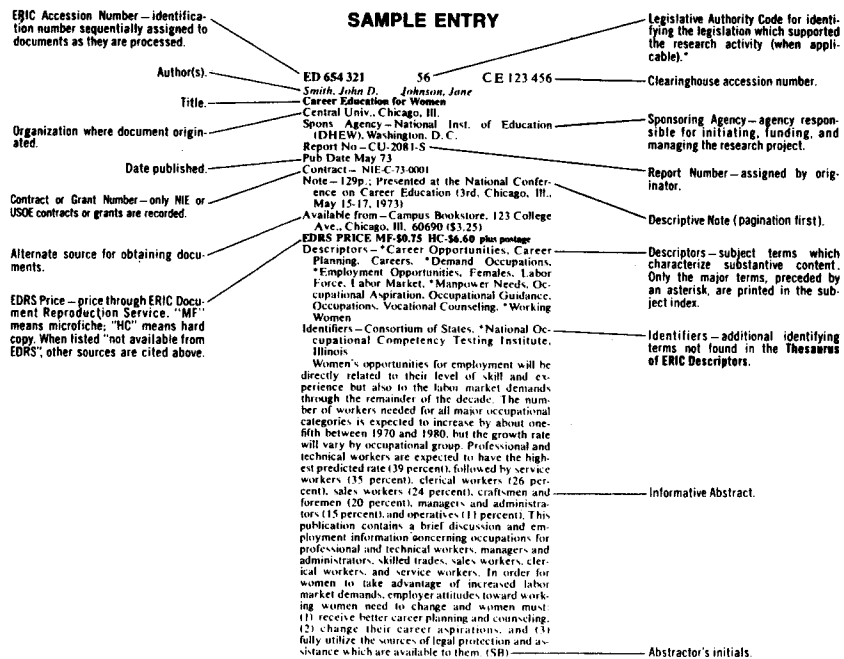


Figure 7 Sample RIE Resume

It should be noted that multiple availability for a document may exist. That is, a document may be available from both EDRS and another agency noted in the resume. By checking both availability lines, the reader can determine which source offers the most economical means of acquiring a document.

Microfiche (MF) and/or hardcopy (HC) must be ordered by ERIC Document (ED) number since EDRS is not set up to respond to request for materials by subject, author or title.

Organizations that have the total ERIC microfiche collection will have the microfiche back-up for RIE, AIM/ARM. If an organization wishes to order only the materials included in AIM/ARM, a standing order may be initiated with EDRS for an ERIC/CICE package. EDRS can provide information about cost of current and retrospective ERIC/CICE microfiche sets.

## Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM)

Another information resource available to vocational, technical and industrial arts educators is *Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM)*.<sup>13</sup> AIM/ARM is published bimonthly by The Center for Vocational Education at The Ohio State University under a project funded by the U.S. Office of Education. AIM/ARM announces research and instructional materials and on-going research and curriculum development projects. The full text of materials is made available in AIM/ARM microfiche sets which are "nested" within the ERIC microfiche collection.

The AIM/ARM project also publishes an annual index and provides computer search tapes. Computer-assisted retrieval from the AIM/ARM collection is done by a number of organizations including the Lockheed Dialog System.

AIM/ARM is compatible with *Resources in Education*, having a resume section, subject index, author index and a number cross reference index. Research and curriculum development projects in progress are indexed by state.

In earlier issues of AIM/ARM, many documents were cited that had ED, in addition to VT, numbers. Those with the ED number can usually be found in the ERIC microfiche collection as individual documents. For documents with only VT numbers, special techniques must be used to locate the microfiche. The VT-numbered document will be found in an AIM/ARM microfiche set under a single ED number that is announced in a later issue of AIM/ARM. Once this ED number is available, the user may find the VT number within the set. These VT-numbered documents are sequentially filmed.

<sup>13</sup> AIM/ARM is published bimonthly by The Center for Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, Ohio 43210. Current information on AIM/ARM subscriptions, computer search tapes, and other resources may be obtained by writing or calling.

AIM/ARM were originally separate quarterly publications. AIM featured instructional materials for student and teacher use; while ARM featured research and related materials. Some earlier quarterly issues are still available, and all are available in microfiche or hardcopy from the ERIC Document Reproduction Service. State research coordinating units usually have complete AIM/ARM sets and provide assistance with information retrieval. The Center for Vocational Education has worked closely with the State research coordinating units and curriculum management centers on information dissemination problems.

#### *Instructions and Assistance for Use of ERIC System*

Instructions in the use of the ERIC system is available from most state departments of education and in some university teacher education departments. Within these settings, state research coordination units (RCU) are providing the primary thrust of assistance. Each RCU is responsible for disseminating information to persons within its state. Many RCU's sponsor training sessions on the use of the ERIC system, or can advise where training institutes will be held. They also have information regarding the nearest locations of the total ERIC microfiche collections and, in many cases, maintain such collections.

Various capabilities and information-dissemination activities are being developed by RCU's. You can obtain information by writing your state RCU. *If your state does not have an RCU, do not contact the RCU in another state.* Instead, write to your State Director of Vocational Education or to the library at your state university(ies) which utilize ERIC services. Addresses of Regional Curriculum Coordinating Centers and state Research Coordinating Units or state research directors are included as an Appendix to this monograph.

#### *Thesaurus of ERIC Descriptors*

RIE, CIJE, and AIM/ARM are all indexed with terms from the *Thesaurus of ERIC Descriptors*<sup>14</sup> which is a vocabulary developed by subject experts of the various ERIC clearinghouses. The terms are called descriptors. These descriptors form a structured vocabulary of approximately 7000 educational terms. Each document processed into the ERIC system is assigned 5 to 10 descriptors which may be used in locating it, either through a manual or a computerized search.

The ERIC Thesaurus is therefore meant to provide an up-to-date, broad-based vocabulary spectrum for the educator access quickly both the general and highly specific elements of information stored in the ERIC system and to be confident that the thesaurus reflects adequately his present requirements and the developments in various subfields of education.<sup>15</sup>

<sup>14</sup>The *Thesaurus of ERIC Descriptors* may be purchased from: Macmillan Information, 866 Third Avenue, New York, New York 10022. This hard cover edition supercedes all previous paperback editions. It contains all newly added descriptors, a descriptor group display, a descriptor listing, and rotated descriptor display.

<sup>15</sup>Eller, James L. "The Development and Potentials of the ERIC Thesaurus for Educators." *Journal of Educational Data Processing*. Palo Alto: Educational Systems Corporation, Vol. 7, No. 2, April, 1970, p. 80.

#### *Information Analysis*

The amount of published information is reaching proportions that make it difficult for individuals to assimilate and use. Through the use of abstracts, educators can extend coverage and keep current with a particular professional area of interest. Publications such as RIE, CIJE, and AIM/ARM make this possible. However, as the volume of literature continues to expand and differing results of research and developments are reported, there is a need for review, analysis, and synthesis of information by recognized authorities.

The ERIC system is meeting this need by stimulating the production of clearinghouse information analysis papers. The Center for Vocational and Technical Education has developed a programmatic, long-range plan for information analysis in vocational, technical, and practical arts education. Review and synthesis papers were written by scholars in the field of agricultural education, business and office education, distributive education, health occupations education, home economics education, trade and industrial education, industrial arts education, and technical education.

Other information analysis papers, targeted to specific audiences, also were developed from the ERIC document base. A recent example is *Industrial Arts Curriculum Improvements: A Change Agent's Guide* by Emmett E. Mason, May, 1971 (ED 057 179). The ERIC clearinghouse in Career Education is also publishing an informational analysis series.

Such reports are included in the ERIC system and can be found in the *subject index* of RIE and AIM/ARM under Research Reviews (Publications). Use of information analysis of publications can significantly contribute to knowledge of the document base for a particular area of interest.

#### *Other Helpful ERIC Products*

The following products may provide helpful information:

*MANPOWER RESEARCH INVENTORY* – Another information resource that gives visibility to documents in the area of manpower and manpower training is *Manpower Research Inventory*.<sup>16</sup> VT-ERIC abstracted and indexed most of the documents cited in these volumes. It should be noted that the *Manpower Research Inventory* publication was discontinued after the first three volumes. The reports are now being included in either *Resources in Education* (RIE); or *Abstracts of Instructional Materials and Research Materials in Vocational and Technical Education* (AIM/ARM).

<sup>16</sup>The three Manpower volumes were available the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. Order: *Manpower Research: Inventory for Fiscal Years 1966 and 1967* (OE-12036); *Manpower Research Inventory for Fiscal Year 1968* (OE-12036-68); *Manpower Research Inventory for Fiscal Year 1969* (OE-12036-69).



*PACESETTERS IN INNOVATION*<sup>17</sup> – is a publication which presents resumes of Projects to Advance Creativity in Education (PACE). The PACE program was authorized and funded under Title III, Supplementary Centers and Services, of the Elementary and Secondary Education Act of 1965.

The *Pacesetter* publication was developed in cooperation with the Educational Resources Information Center (ERIC). Contents of the publication include:

- Resumes of projects which have been approved and are currently in the developmental and operational stages.
- Microfiche (MF) and hardcopy (HC) availability of project reports, if available from EDRS.
- Name, address, and telephone number of an individual that may be contacted to obtain further information about each project.

The publication has a subject, local education agency, and project number index.

*ERIC PRODUCTS* – is an annual annotated bibliography which includes all substantial bibliographies, review papers, and state-of-the-art papers produced by ERIC clearinghouses.

The following information is supplied for each entry:

1. Personal author
2. Title
3. Series name and number
4. Journal reference
5. Date of publication, if not already included in a journal reference.
6. Number of pages
7. Type of publication, e.g., Bibliography, Review Paper, etc.
8. ERIC Document (ED) number or clearinghouse accession number if the document has not yet appeared in *Resources in Education* (RIE).
9. Issue of RIE in which document abstract appears
10. Microfiche (MF) and hardcopy (HC) price, if available
11. A brief abstract

The first issue of ERIC products listed 149 publications; the second issue listed 240 publications; and the third issue listed 366 publications. It is readily apparent that clearinghouses are producing more compact information analysis publications. These information analysis papers enable readers to digest significant

<sup>17</sup> Available from the Government. Write to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. Request: *Pacesetters in Innovation: Cumulative Issue, Fiscal Years 1966-1969* (OE-20103-69); *Pacesetters in Innovation: Fiscal Year 1969* (OE-20166).

amounts of literature on specific topics. In many instances, a clearinghouse may have searched out the significant research and research-related material on a topic and published a review paper. *ERIC Products*<sup>18</sup> provides a quick reference for researchers and others to use in identifying clearinghouse information analysis papers.

### Summary

Through ERIC reference publications, any educator, anywhere in the country, can have easy access to reports of innovative programs, conference proceedings, bibliographies, outstanding professional papers, information analysis products, curriculum-related materials, and reports of the most significant efforts in educational research and development, regardless of where they were first reported.<sup>19</sup>

ERIC publications can be used for:

- Browsing – to scan each volume for reports and on-going projects in various fields of interest.
- Current awareness – to find out what has been written or what is now being done on a particular subject.
- Indepth searching – to find everything in the ERIC system on a particular topic by using specific descriptors (search terms).

Using the ERIC system to the best advantage requires knowledge of the scope of the system, its products, and how to use them.

### ADDITIONAL SOURCES OF RESEARCH INFORMATION

Many of the following indexes will be useful to the practicing classroom teacher as well as to the purely research-oriented individual. Much of the information contained in the following indexes is related directly or indirectly to the field of industrial education. No attempt was made to exhaust the whole of published indexes but to select rather critically from those 230 which were reviewed and which might provide useful information to the “practicing teacher.”

Information on learning theories, teaching psychomotor skills, etc., might be found in areas of psychology or physiology. No attempt was made in this monograph to analyze or evaluate materials in these or other remotely related fields. It should be pointed out, however, implications from research in these areas may well have a direct relationship to industrial education.

<sup>18</sup> *ERIC Products* publications are available from the ERIC Document Reproduction Service (EDRS). ED retrieval numbers can be found in the monthly RIE index under “Other ERIC Products.”

<sup>19</sup> U.S. Department of Health, Education, and Welfare. *HOW TO USE ERIC*. Washington, D.C.: Office of Education, National Center for Educational Communication. 20 p. Available as HE 5.212:12037-E from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

*American Association for the Advancement of Science (AAAS)* (an index of science books)

Subscription Orders:

Publications Department (Dept. W3)  
American Association for the  
Advancement of Science  
1515 Massachusetts Avenue, N.W.  
Washington, D.C. 20005

Science Books Index is a quarterly publication (May, September, December, March) and is one of the activities of the AAAS. It has as one of its main functions the facilitation of the public understanding of science. *Science Books* contains reviews of trade books, textbooks and reference works in the pure and *applied sciences* which are intended for students in the elementary and secondary schools and the first two years of college. In addition, the books are reviewed and personal appraisals and evaluations by a qualified specialist are made. Published annotations of these evaluations are prepared by the editorial staff from the comments of the science specialists. Complete volumes are on microfilm and are available from University Microfilms, Ann Arbor, Michigan 48106.

Content for course work in power, electronics and communications might be suggested from these kinds of books. Likewise, suggestions for curriculum which is interdisciplinary or "core" could readily be identified as it relates new and modern theories and laws of science to some specific applications, examples being solar heating, laser communication, equilibrium theory in construction.

#### *Air Pollution Abstracts*

U.S. Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Research Triangle Park, North Carolina 27711

A monthly publication to inform EPA personnel and others who are professionally interested in air pollution, of selected technical literature recently processed by the EPA. For each document, an abstract is provided its Abstract Number, APTIC (Air Pollution Technical Information Center) accession number, and bibliographic citations are given. Translations for other languages are cited wherever possible and can be purchased through the National Translations Center, 35 West 33rd Street, Chicago, Illinois 60616.

When the acronyms NTIS, GPO or DDC appear at the end of the citation, they indicate the sales outlet offering the document. Your best source would be the NTIS (National Technical Information Service discussed earlier in this monograph.)

Semi-annual cumulative indexes to both subject and author are also sent to all recipients of the monthly publication. Approximately 7000 journals, periodicals, etc., are scanned to provide a list of the 1000 most productive.

Publications with the address of each publisher are available upon request. Another service is that abstracts of *all* literature in APTIC on any subject related to air pollution will be provided free of charge upon request. More than 1400 subject index terms are available for such searching—*more* than those included in the subject index of each monthly issue.

The usefulness of this publication would be to find standards or solutions to problems in air quality control for labs and educational programs, such as wood shops, welding laboratories, automotive laboratories, etc.

#### *The Energy Index*

Published Annually By:

Environment Information Center, Inc.  
Energy Reference Department  
124 East 39th Street  
New York, New York 10016

Environment Information Center, Inc. is an independent research and publishing organization that provides comprehensive intelligence, reporting, reference and retrieval services covering all aspects of environmental affairs. It monitors the world's output of environmental information, stores it in a computerized data bank and makes it available to information seekers through a variety of publications and services.

*Environment Abstracts* is the monthly current awareness journal. Special features include reviews of environmental books and films.

The Energy Index also includes abstracts of papers presented at the World Energy Conference. Sections of the index deal with statistics and legislation. It is an excellent source to supplement a power or technology emphasis in a broad industrial education program.

#### *Applied Science and Technology Index* (Formerly the *Industrial Arts Index*)

Published Monthly By:

The H. W. Wilson Company  
950 University Avenue  
Bronx, New York 10452

The Applied Science and Technology Index is a cumulative subject index to English language periodicals in the fields of aeronautics and space science, automation, chemistry, construction, earth sciences, electricity and electronics, engineering, industrial and mechanical arts, materials, mathematics, metallurgy, physics, telecommunication, transportation and related subjects.

Advice to the publisher for indexing and editing entries into the index is provided by the American Library Associations' Reference and Adult Services Division.

In-depth content studies are conducted by this group every several years. The committee prepares a list of periodicals, representative of all subject areas included in the Index, for consideration by the *subscribers*. Selection for indexing is then accomplished by subscriber vote. Emphasis is placed on subject balance in the Index and reference value of the periodical.

Access to the documents is provided by subject and lists only bibliographic data to locate the original source.

This index is much more useful than the Reader's Guide for the field of industrial education, as a jury has already been involved in the selection of items to be included. Hence, this is a good condensed source of periodical literature in the field.

### *Current Geographical Publications*

The American Geographic Society  
Broadway at 156th Street  
New York, New York 10032

*Current Geographical Publications* is a monthly index (except July and August) to books, periodical articles, pamphlets, government documents and maps in the collection of the American Geographical Society. The index is arranged according to the classification of the society's catalog into four sections: Topical, General, Regional Maps and Selected Books. The topical index has much useful information, specifically if an attempt is being made to look for information on modern technology and its impact on society. Topics such as water resources, desalination, solar radiation, air pollution ecology, urban planning, urban industries, urban transportation, natural resources, coal, petroleum, food, industries, solid waste disposal, recreation and leisure are but a few. In the index, bibliographical data is provided so you may go to the original source to retrieve a copy of the full document.

### *Cumulated Magazine Subject Index 1907-1949*

An accumulation of 43 volumes of the *Annual Magazine Index*, published by F. W. Faxon Company, now out of print.

G. K. Hall and Co.  
70 Lincoln Street  
Boston, Massachusetts  
(Dated 1964)

The aim of the two volume index is to compliment *Readers' Guide*, *Poole's Index*, and the *Annual Library Index*. It provides a detailed coverage of United States local and state history. It indexed all the various historical periodicals as well as "collections" or other serial publications in state historical societies. In addition, it gave special emphasis to art, architecture, geography, travel, exploration and mountaineering, outdoor life, forestry, *education* and political science.

This is a very useful document on early historical development of industrial arts and industrial education, *both* in the United States and abroad but it is limited to the 1907-1949 period.

### *Education Abstracts (UNESCO)*

UNESCO House  
Place De Fontenoy  
Paris-7e, France

*Education Abstracts* is published four times a year. Some of the publications include indexes on Agricultural Education, Teaching Comparative Education, Primary Education, Correspondence Education, Educational Planning, Rural Education, The Psychology of Adolescence and Out-of-School Education of Young People. These listings include international reports or resumes on each of the subjects listed above. The index on Out-of-School Education of Young People provides annotated bibliographies in four fields of the subject:

Preparation for Working Life  
Preparation for Leisure  
Preparation for Citizenship and Life in Society  
Preparation for International Life

Indexes include materials prepared in each country represented in the Paris conference and provides useful data on the international problems facing education outside the United States.

### *Education Index*

The *Education Index* is a cumulative author subject index to educational material in the English language. Although primarily a periodical index, proceedings, yearbooks, bulletins, monographs and material printed by the United States government are included. Subject areas indexed include administration; pre-school, elementary, secondary, higher and adult education; teacher education; counseling and guidance; curriculum and curriculum materials. Subject fields indexed include the arts, applied science and technology, audio-visual education, business education, comparative and international education, exceptional children and special education, health and physical education, languages and linguistics, mathematics, psychology and mental health, religious education, social studies, and educational research relative to areas and fields indexed.

The Committee on Wilson Indexes of the American Library Association's Reference Services Division advises the publisher on indexing and editorial policy by means of in-depth contents studies conducted at intervals of several years. The Committee as part of its study prepares a list of periodicals, representative of all subject areas included in the Index, for consideration by the subscribers.

Selection of periodicals for indexing is accomplished by subscriber vote. In voting their preference, subscribers are asked to place primary emphasis on the

reference value of the periodicals under consideration. They are also asked to give particular consideration to subject balance in order to insure that no important field be overlooked in proportion to overall index coverage.

### *The Readers' Guide*

*The Readers' Guide to Periodical Literature*, 1900-date.  
New York, Wilson, 1905 to date.

An index to the contents of some 130 of the well known general magazines from 1900 to the present time, published twice a month (July-August, once a month). At intervals, these issues are combined into larger numbers which include in one alphabet all the information that formerly appeared in a number of issues. Such numbers are called cumulations, or cumulated volumes.

In the *Readers' Guide*, each magazine article is entered under its author and subject and frequently title as well, so that in its alphabetical dictionary arrangement it resembles the card catalog.

Each author and subject entry as shown contains the following information:

1. Title of the article.
2. Author's name if known.
3. Special features of the article, such as illustrations, maps, etc., abbreviated.
4. Name of the magazine containing the article (abbreviated, but explained in the "list of periodicals indexed" which appears in the front of each issue).
5. Volume number (before the colon).
6. Inclusive paging (after the colon).

Hints for using the *Readers' Guide* and other periodical indexes:

1. For current topics or latest data on any subject, begin with the latest paper-bound number and then work systematically back.
2. For material on a subject connected with a certain date consult first the volumes of the index covering that period, looking in others if necessary. For example: articles on the wreck of the dirigible Shenandoah in September, 1925, would most likely be found in Volume VII, covering 1925-1928.
3. In asking for a magazine, copy accurately, on the slips provided for the purpose, volume number, page, and date, as well as the name of the magazine.

### *Readers' Guide and Education Index*

Similarities:

1. Both are indexes and not abstracts

2. Same format in presenting information
  - a. Explanation of abbreviations in front of each volume
  - b. List of periodicals indexed in the front of each volume
  - c. Same sequence and format within the citations
  - d. Both have author-subject approach
3. Both published by H.W. Wilson Co.

Differences:

1. *Readers' Guide* a cumulative author-subject index to periodicals of general interest. *Education Index* a cumulative author-subject approach of educational materials in the English language. It indexes periodicals, yearbooks, proceedings, bulletins, monographs, and materials presented by the U.S. government.
2. *Readers' Guide* indexes 130 general periodicals, while *Education Index* indexes some 190 educational publications.
3. *Readers' Guide* began publication in 1900 while *Education Index* began publication in 1929.

### *National Technical Information Service (NTIS)*

U.S. Department of Commerce  
5285 Port Royal Road  
National Technical Information Service  
Springfield, Virginia 22151

The *National Technical Information Service* (formerly the Clearinghouse for Federal Scientific and Technical Information) is a central source for the public sale of Government-sponsored research reports and other analyses prepared by Federal agencies, their contractors or grantees, and it is a central source for Federally generated machine processable data files and programs.

NTIS fills 5,000 new and 6,000 standing orders daily as one of the world's leading processors of specialty information, supplying the public with approximately three million documents and microforms annually. The NTIS information collection exceeds 730,000 titles with more than 100,000 documents in current stock. All are available for sale and this catalog describes those most in demand.

The agency is obligated by statute to recover its cost and has become largely self-sustaining. Less than 20% of its funding comes from direct appropriation as an agency of the U.S. Department of Commerce.

Timely and continuous reporting to subscribers is ensured by agreements between NTIS and hundreds of Federal research-sponsoring organizations. NTIS is the marketing coordinator for various information analysis centers in the U.S., for their publications and technical inquiries and special analyses.

The public may quickly locate abstracts of interest from among the 300,000 Federally sponsored research documents published since 1964. Copies of the whole reports are sold, in paper copy or microform.

Current abstracts of NTIS documents and other records in various categories of interest are published in weekly journals (Weekly Government Abstracts). These are cumulative and indexed. The magnetic tape from which the journals are prepared also are available.

A microfiche service, with a custom profile option, automatically provides subscribers with the full texts of reports in categories of interest they select.

The foregoing and many more products and services are described in detail in the NTIS Information Services Booklet, free on request.

### *Graphic Arts Abstracts*

Graphic Arts Technical Foundation  
4615 Forbes Avenue  
Pittsburgh, Pennsylvania 15213

These monthly abstracts are of important current articles and books compiled by the Graphic Arts Technical Foundation. They represent statements made by the authors of the publications and *do not* express the opinions of the abstractors or of the Foundation. Contents of the abstracts are organized into categories such as: copy preparation, binding, color and color printing, education and training, ink, paper, etc. Included in each publication are lists of services provided by the Foundation and available technical up-date programs sponsored by the Foundation. This publication would be most valuable to printing and graphic arts teachers and teacher-educators.

### *Index to Handicrafts, Model Making and Workshop Projects*

Compiled By:

E. Winidred Alt  
F. W. Faxon Co., Inc.  
Westwood, Massachusetts

This is an index of books and periodicals *not* indexed in the Readers' Guide to Periodical Literature. "Art" books are indexed where the text gives extensive, practical directions for the use of tools and equipment. Electronic devices are included, but not radio and television technology; construction of photographic equipment is included, but not its use; specific needlework items such as purses, hats, bags are included, but *not* basic sewing, embroidery or knitting instructions. Cooking and gardening are *not* included. The index headings are much the same as those used in the Readers' Guide with the exception of a few specific technical terms.

This source is an excellent book for arts and crafts activities which might be employed in the middle school, camp craft, or in adult leisure time classes.

### *New York Times Index*

The *New York Times Index* is published every two weeks by the New York Times Newspaper. This index is the most complete condensed classified history of the world as it is recorded on a day-by-day basis. It consists of abstracts of news and editorial matter entered under appropriate headings. Headings are arranged alphabetically and the entries under the headings are listed chronologically. Each entry is followed by a precise reference—date, page and column—to the item which it summarizes.

Headings are made where possible under subject, such as steel, housing, agriculture, etc. These headings are alphabetized on the word-by-word basis. Recent entries include the letters L, M or S to indicate the approximate length of the article (long, medium, short). Dates on the abstract *do not* indicate the date of the event but the date of the publication in the New York Times. It should also be noted that for research purposes, these items are secondary sources. They will, in most cases, be based on fact but historical research cannot be totally documented on secondary evidence. This source would be a place to observe the general opinions of persons at the time of the event. Access or reference to the actual article will be made by microfilm or microfiche.

### *Research In Periodicals*

The industrial educator should look at the materials printed in the professional magazines in the field to see what is currently being done in research. The AIAA's publication *Man/Society/Technology* has a research column in each publication. The *AVA Journal* has published a 'Research Visibility' report in a number of its issues. Such reports are not too inclusive but with them an effort is being made to familiarize readers with current happenings in research in the field.

### *Additional Sources of Research Information*

The following sources may be tapped via correspondence or telephone:

Library of Congress

Smithsonian Institution

National Bureau of Standards

U.S. Office of Education

National Education Association

U.S. Department of Agriculture Library

World Future Society

Syracuse Research Corporation (Syracuse, N. Y.)

# SEARCH STRATEGIES: 'THE THESAURUS OF ERIC DESCRIPTORS' AND ITS USE

The most useful document required to facilitate a search of the ERIC or similar research materials is *The Thesaurus of ERIC Descriptors* which may be obtained from Macmillan Information mentioned earlier.

All of the following research systems use the ERIC Thesaurus for coding key-word descriptors to the documents they process:

*Resources in Education Index* (RIE)

*Current Index to Journals in Education* (CIJE)

*Pacesetters in Innovation Index*

*Manpower Research Index*

*Abstracts of Instructional and Research Materials in Vocational-Technical Education* (AIM/ARM)

*Summaries of Studies in Industrial Arts, Trade and Industrial, and Technical Education* (ACIATE-NAITTE)

To give a practical connotation to the search strategies a person would employ in securing research information on a topic, a list in sequential order of the steps of procedure that might be employed by an individual to secure information from the research storage systems is given. To begin with, several assumptions will be made. They are:

1. No single source or system is going to contain all the data on any given topic. Therefore, several sources must be used.
2. Terminology is going to differ as the research uses different systems and the use of broad or related terms will be helpful to begin with.

## A SUGGESTED SEARCH PROCEDURE

- Step 1. Define and refine the problem. Detail the general area or ideas in which you are going to place emphasis.
- Step 2. Go to the back of *The Thesaurus of ERIC Descriptors* and locate the rotated descriptor display index.
- Step 3. Using major ideas or area terms, locate the descriptors or key words closest to the specific purpose or topic. Write these down for future reference.
- Step 4. Locate these terms in the main body of the Thesaurus. List the descriptors and identify the broad terms (BT) under each heading.

- Step 5. Begin to isolate broad terms to related terms (RT) and narrow terms (NT). On occasion look for terms which substitute for those originally established. These will be marked "UF" and mean "used for." Sometimes a scope note "SN" will help with this isolation process.
- Step 6. Select the most specific descriptors or combination of descriptors which will provide the desired information.

Now, possible alternatives arise. They are as follows:

- A. If the topic is technical, it might be desirable to get government publications. A search of "GRI" or "GRA" might be in order.
- B. Obtain *ACIATE-NAITTE Abstracts* and look in their index for terms which have been identified. If related terms are used, judge if they fit the main purpose. If so, read the abstracts listed under each term (or combination). Make notation of those abstracts most applicable for future use, particularly if later it becomes necessary to look at the entire document.
- C. Check with the *Dissertation Abstracts International* subject categories to identify areas related to the topic. Search *Dissertation Abstracts* under these subject areas or request a computer search by "DATRIX" in subjects which will help. Proper forms will need to be filled out for computer search. Obtain from *Dissertation Abstracts'* main office or from the local library.
- D. If topic is historical or would likely be something found in the newspapers, look through the *New York Times Index* or similar sources for data relating to the subject. This may include looking at local resources, industries or similar kinds of places.
- E. Go to the ERIC materials.

It is assumed that all other sources provide data but the ERIC system will provide the most. As such, a detailed procedure will be continued using a manual search technique relating to the ERIC system. Computer search techniques could be used to speed up the process.

- Step 7. Secure the *RIE Annual or Semi-Annual Indexes* and look at items under each of the descriptors used. Make notes on usefulness of data for possible abstract reading which is found in monthly RIE publications.
- Step 8. Secure microfiche with "ED" number from EDRS.
- Step 9. Secure *CIJE Annual Index* and look at materials under the selected descriptors. If interested, read abstracts in monthly CIJE publication. If usable, secure magazine or journal and xerox copy for future use.

- Step 10. Secure *Manpower Research Annual Index* if applicable, and read abstracts located under descriptors identified. If applicable, request microfiche "MP" number from EDRS. It is possible the "MP" number may have to be converted to an "ED" number.
- Step 11. Secure *Pacesetters in Innovation Annual Index*. Read abstracts under identified descriptors. If applicable, retrieve microfiche from EDRS with proper "ES" number.
- Step 12. Secure annual index for AIM/ARM and read titles under listing of the descriptors or subject headings. Obtain the "VT" or "ED" numbers from *Annual Index*. If interested, read abstracts contained in monthly publications of AIM/ARM. If applicable, obtain a single "ED" number of document if available to order microfiche. If not ("VT" number only), identify the "ED" number of the quarterly AIM/ARM publication and order "VT" number within that series. The entire "ED" series of that issue may have to be purchased to obtain the "VT" document that is within it.
- Step 13. Order all microfiche at same time and expect delivery in approximately 8-10 days. If possible, use library microfiche file.
- Step 14. Sort and select the material to build related research summary and thus possibly answer the original question.

### COMPUTER SEARCH TECHNIQUES

The ultimate in research retrieval techniques is the computer search. The *Dissertation Abstracts*, *ACIATE-NAITTE Abstracts* and *ERIC* all have the capability to do computer searches of their system.

The procedure for identifying the descriptors, subject areas, etc. is the same with computer searching as it is with manual searching until use of the indexes is begun. At that point, requests are made to the computer through key words and the machine does the work.

The computer can be selective to the point of excluding materials from a certain date, or as inclusive by using related terms replacement as print-out items. A given system has its own uniqueness and should be understood by the researcher before using it.

## APPENDIX A CURRICULUM COORDINATING CENTERS DIRECTORY

### WESTERN CURRICULUM COORDINATING CENTER

Director  
Vocational Education Section  
Department of Education  
721 Capitol Mall  
Sacramento, California 95814  
(916) 322-2330  
*American Samoa, Arizona, California, Guam, Hawaii, Nevada, Trust Territories of the Pacific Islands*

### EASTERN CENTRAL CURRICULUM COORDINATING CENTER

Director  
Professional and Curriculum Development Unit  
Division of Vocational-Technical Education  
1035 Outer Park Drive  
Springfield, Illinois 63706  
(217) 782-7084  
*Delaware, District of Columbia, Illinois, Indiana, Maryland, Michigan, Minnesota, Ohio, Pennsylvania, Virginia, West Virginia, Wisconsin*

### NORTHEAST CURRICULUM COORDINATING CENTER

Director  
Bureau of Occupational Research  
Division of Vocational Education  
225 West State Street  
Trenton, New Jersey 08625  
(609) 292-5572  
*Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Puerto Rico, Rhode Island, Vermont, Virgin Islands*

### MIDWEST CURRICULUM COORDINATING CENTER

Director  
State Department of Vocational and Technical Education  
1515 West Sixth Avenue  
Stillwater, Oklahoma 74074  
(405) 377-2000, ext. 261  
*Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska, New Mexico, Oklahoma, Texas*

## SOUTHEAST CURRICULUM COORDINATING CENTER

Director  
Mississippi State University  
Research and Curriculum Unit  
Drawer JW  
Mississippi State, Mississippi 39762  
(601) 325-2510

*Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*

## NORTHWESTERN CURRICULUM COORDINATING CENTER

Director  
Washington State Coordinating Council for Occupational Education  
222 Airdustrial Park, Bldg. 17  
Olympia, Washington 98504  
(206) 753-0878

*Alaska, Colorado, Idaho, Montana, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming*

## MISSISSIPPI

Director  
Research Coordinating Unit for Vocational-Technical Education  
Drawer DX  
Mississippi State, Mississippi 37962  
(601) 325-2510  
Coordinator  
Research, Curricula, and Teacher Training  
Division of Vocational Education  
State Department of Education  
P.O. Box 771  
Jackson, Mississippi 39205  
(601) 354-6819

## MISSOURI

Director  
Research Coordinating Unit  
State Department of Education  
P.O. Box 480  
Jefferson City, Missouri 65101  
(314) 751-2661

## MONTANA

Director  
Research, Planning, Development and Evaluation  
Office of the Superintendent of Public Instruction  
Helena, Montana 59601  
(406) 449-3693

## NEBRASKA

Director  
Research Coordinating Unit for Vocational Education  
Box 33, Henzlik Hall  
University of Nebraska  
Lincoln, Nebraska 68508  
(402) 472-3337

## NEVADA

Director  
Research Coordinating Unit  
College of Education Building, Room 201  
University of Nevada  
Reno, Nevada 89507  
(702) 784-4921

## NEW HAMPSHIRE

Director  
Research Coordinating Unit  
State Department of Education  
105 Loudon Road  
Concord, New Hampshire 03301  
(603) 271-3276

## NEW JERSEY

Associate State Director  
(Ancillary Services)  
Division of Vocational Education  
225 West State Street  
Trenton, New Jersey 08625  
(609) 292-5822

## NEW MEXICO

Director of Program Developing Unit  
State Capitol  
Santa Fe, New Mexico 87501  
(505) 827-2329

## NEW YORK

Chief  
Bureau of Occupational Education  
Research  
State Education Department,  
Room 468  
Albany, New York 12224  
(518) 474-6386

## NORTH CAROLINA

Director  
Occupational Research Unit  
State Department of Public Instruction  
Raleigh, North Carolina 27607  
(919) 829-3800

## NORTH DAKOTA

Research Coordinator  
State Board for Vocational Education  
900 East Boulevard  
Bismarck, North Dakota 58501  
(701) 224-3195

# STATE VOCATIONAL EDUCATION RESEARCH OFFICES DIRECTORY

## ALABAMA

Supervisor, Research and Evaluation  
868 State Office Building  
Montgomery, Alabama 36104  
(205) 269-7016

## ALASKA

Director  
Division of Vocational and Adult Education  
Department of Education  
Pouch F - Alaska Office Building  
Juneau, Alaska 99801  
(907) 586-6330

## ARIZONA

Director  
Arizona Research Coordinating Unit  
Arizona Department of Education  
1535 West Jefferson  
Phoenix, Arizona 85007  
(602) 271-5392

## ARKANSAS

Director  
Research Coordinating Unit  
State Department of Education  
Arch Ford Education Center  
Little Rock, Arkansas 72201  
(501) 371-1855



## CALIFORNIA

Chief, Program Services Section  
State Department of Education  
721 Capitol Mall  
Sacramento, California 95814

## COLORADO

Director, Research Coordinating Unit  
State Board for Community Colleges  
and Occupational Education  
207 State Services Building  
Denver, Colorado 80203  
(303) 892-3071

## CONNECTICUT

Director, Research and Planning Unit  
Division of Vocational Education  
Connecticut State Department of  
Education  
P.O. Box 2219  
Hartford, Connecticut 06115  
(203) 566-3008 or 566-3430

## DELAWARE

Supervisor, Curriculum and Research  
Department of Public Instruction  
John G. Townsend Building  
Dover, Delaware, 19901  
(302) 678-4681

## DISTRICT OF COLUMBIA

Assistant Superintendent  
D.C. Public Schools  
415 12th Street, N.W.  
Washington, D.C. 20004  
(202) 737-5298

## FLORIDA

Chief, Bureau of Vocational  
Research/Evaluation  
Room 258, Knott Building  
Tallahassee, Florida 32304  
(904) 488-3995

## GEORGIA

Director  
Occupational Research  
Coordinating Unit  
State Department of Education  
Atlanta, Georgia 30334  
(404) 656-2429

## HAWAII

Coordinator for Research and  
Development  
University of Hawaii  
2327 Dole Street  
Honolulu, Hawaii 96822  
(808) 948-7461

## IDAHO

Director  
State Department of  
Vocational Education  
506 North Fifth Street  
Boise, Idaho 83720  
(208) 384-3210

## ILLINOIS

Coordinator, Research and  
Development Unit  
Vocational and Technical  
Education Division  
1035 Outer Park Drive  
Springfield, Illinois 62706  
(217) 782-4620

## INDIANA

Coordinator  
Research Coordinating Unit  
State Department of Education  
1012 State Office Building  
Indianapolis, Indiana 46204  
(317) 633-4841

## IOWA

Chief, Support Services  
Career Education Division  
Department of Public Instruction  
State Office Building  
Des Moines, Iowa 50319  
(515) 281-5334

## KANSAS

State Director of Exemplary and  
Special Needs Program  
State Department of Education  
Division of Vocational Education  
120 East Tenth Street  
Topeka, Kansas 66612  
(913) 296-3346

## KENTUCKY

Director  
Resources Development Unit  
Capitol Plaza Tower  
Frankfort, Kentucky 40601  
(502) 564-3096

## LOUISIANA

Director  
Research Coordinating Unit  
State Department of Education  
P.O. Box 44064  
Baton Rouge, Louisiana 70804  
(504) 389-6629

## MAINE

Director  
Research Coordinating Unit  
Bureau of Vocational Education  
Department of Educational and  
Cultural Services  
Augusta, Maine 04330  
(207) 289-2621

## MARYLAND

Director, RCU for Vocational-  
Technical Education  
P.O. Box 8717  
Friendship Airport  
Baltimore, Maryland 21240  
(301) 796-8300, ext. 323

## MASSACHUSETTS

Director, Research Coordinating Unit  
State Department of Education  
Division of Occupational Education  
182 Tremont Street  
Boston, Massachusetts 02111  
(617) 727-5730

## MICHIGAN

Director/RCU  
State Department of Education  
Box 420  
Lansing, Michigan 48904  
(517) 373-1830

## MINNESOTA

Director, Research Coordinating  
Unit  
145 Peik Hall  
University of Minnesota  
Minneapolis, Minnesota 55455  
(612) 373-7789

## OHIO

Assistant Director  
Research, Survey, Evaluation and  
Exemplary Programs  
Division of Vocational Education  
Department of Education  
65 South Front Street, Room 609  
Columbus, Ohio 43215  
(614) 466-2095

## OKLAHOMA

Director  
Research Coordinating Unit  
State Department of Vocational-  
Technical Education  
1515 West Sixth Avenue  
Stillwater, Oklahoma 74074  
(405) 377-2000, ext. 283

## OREGON

Coordinator of Applied Research  
Career Education Division  
Oregon Board of Education  
942 Lancaster Drive, N.E.  
Salem, Oregon 97310  
(503) 378-3597

## PENNSYLVANIA

Director  
Research Coordinating Unit  
P.O. Box 911  
Harrisburg, Pennsylvania 17111  
(717) 787-4865

## RHODE ISLAND

Consultant, Vocational Education  
Roger Williams Building  
Providence, Rhode Island 02908  
(401) 277-2691

## SOUTH CAROLINA

State Supervisor  
Research Coordinating Unit  
Office of Vocational Education  
904 Rutledge Building  
1429 Senate Street  
Columbia, South Carolina 29201  
(803) 758-2358

## SOUTH DAKOTA

Director  
Division of Vocational and  
Technical Education  
222 West Pleasant Drive  
Pierre, South Dakota 57501  
(605) 224-3423

## TENNESSEE

Director  
Research Coordinating Unit  
University of Tennessee  
909 Mountcastle Street  
Knoxville, Tennessee 37916  
(615) 974-3338

## TEXAS

Director, DORD  
Texas Education Agency  
201 East Eleventh Street  
Austin, Texas 78701  
(512) 475-4641

## UTAH

Director, Research Coordinating Unit  
State Board of Education  
1670 University Club Building  
Salt Lake City, Utah 84111  
(801) 328-5891

## VERMONT

Director  
Research Coordinating Unit  
Vocational-Technical Education  
Division  
State Department of Education  
Montpelier, Vermont 05602  
(802) 828-3101

## VIRGINIA

Coordinator  
Vocational Education Research  
and Statistical Information  
1312 East Grace Street  
Richmond, Virginia 23216  
(804) 770-2066

## WASHINGTON

Director  
Research Coordinating Unit  
216 Old Capitol Building  
Olympia, Washington 98504  
(206) 753-5672

## WEST VIRGINIA

Director  
Research Coordinating Unit  
Marshall University  
Huntington, West Virginia 25701  
(304) 696-3180

## WISCONSIN

Director  
Research Coordinating Unit  
Board of Vocational-Technical-  
Adult Education  
Hill Farm State Office Building  
4802 Sheboygan Avenue  
Madison, Wisconsin 53702  
(608) 266-3705

## WYOMING

Director, Occupational Education  
Capitol Building  
State Department of Education  
Cheyenne, Wyoming 82002  
(307) 777-7416

## TRUST TERRITORIES OF THE PACIFIC ISLANDS

Coordinator of Vocational Education  
Headquarters Education  
Saipan, Pacific Island 96950

## VIRGIN ISLANDS

Director  
Vocational and Technical Education  
Department of Education  
P.O. Box 630  
St. Thomas, Virgin Islands 00801  
(809) 774-5481

## PUERTO RICO

Director  
Research Coordinating Unit  
Department of Education  
Box 759  
Hato Rey, Puerto Rico 00919  
(809) 765-5850

## GUAM

Director of Vocational Education  
Guam Department of Education  
Agana, Guam Pacific Islands 96910

# APPENDIX B

## SELF-TEST ON RESEARCH STORAGE AND RETRIEVAL SYSTEMS

This self-test can be used to partially evaluate your understanding of the information provided in this monograph. It may be used as a pre/post-test by the reader. Answers for the exam can be found in the script of the monograph.

1. The *Education Index* primarily indexes:
  1. books
  2. periodicals
  3. unpublished studies
  4. biographic reviews
  5. research documents
2. To review a source listed in the *Education Index*, the reader would refer to:
  1. the original document
  2. the abstract
  3. the microfilm
  4. the microfiche
  5. the Education Clearinghouse service for hardcopy
3. The *Education Index* is divided by:
  1. subject
  2. author
  3. number
  4. title
  5. code
4. What is the name of the computerized data-retrieving service capable of scanning most doctoral dissertations on microfilm for key words?
  1. DATRIX
  2. SIRIS
  3. VT-ERIC
  4. CIJE

5. ERIC means:
  1. Educational Resources Information Center
  2. Educational Research Information Center
  3. Early Research in Context
  4. Earth Resources in Conclusion
6. The ERIC system is funded by the:
  1. U.S. Office of Education
  2. Department of Labor
  3. National Institute of Education
  4. U.S. Department of Commerce
7. The field of education is located under \_\_\_\_\_ in the University Microfilm index.
  1. humanities and social science
  2. chemistry and life science
  3. engineering and physical science
  4. professional and applied studies
8. The NTIS is part of a research dissemination network of \_\_\_\_\_.
  1. the U.S. Office of Education
  2. private industry
  3. the Department of Labor
  4. the Department of Commerce
9. All materials in the NTIS system are generated from \_\_\_\_\_.
  1. professional publications in technical education
  2. contracts with industry or education by the Department of Labor
  3. contracts with industry or education by the Department of Commerce
  4. professional publications generated by in-house research in industry
10. The NTIS system requires that the person requesting information fill out a \_\_\_\_\_.
  1. descriptor form for manual search
  2. data sheet for declassification of restricted documents
  3. need-to-know form specifying request details
  4. very general letter stating your basic research needs or intent
11. Data in the NTIS is classified into \_\_\_\_\_ for ease of retrieval and review.
  1. specific subject areas, like math, physics, metals, etc.
  2. broad categories like the DATRIX system
  3. general author and title index
  4. descriptor listings by ERIC Thesaurus

12. The mailing list of NTIS provides a \_\_\_\_\_.
  1. newsletter service of new documents for specific areas
  2. notification of availability within the Superintendent of Documents—Government Printing Office newsletters
  3. notification service when the index volumes are available for purchase
  4. means of identifying those documents which are classified and not available except to government contractors
13. The USGRDR is a research and development index which is published by \_\_\_\_\_.
  1. ERIC
  2. National Education Association
  3. United States Government
  4. Science Foundation
14. The ACIATE is the teacher education organization of the \_\_\_\_\_.
  1. AIAA
  2. AVA
  3. NEA
  4. PDK
15. The *Summaries of Studies* run approximately from \_\_\_\_\_. (From ACIATE-NAITTE joint publication)
  1. 1940-1970
  2. 1930-present
  3. 1930-1959
  4. 1920-present
16. The cost of each supplement is \_\_\_\_\_.
  1. 1 ¢ per page
  2. 2 ¢ per page
  3. \$6.50 per year
  4. contained in the initial purchase. Each supplement is sent free to subscribers
17. Input to the ACIATE-NAITTE publication comes from \_\_\_\_\_.
  1. Dissertation Abstracts International
  2. ERIC-VT Clearinghouse
  3. institutions granting doctoral degrees in education and industrial education
  4. research committees of ACIATE-NAITTE
  5. all of the above

18. Computer searchers of ACIATE-NAITTE abstracts are generally made by \_\_\_\_\_ .
1. asking the editor to file a request through the computer center
  2. writing directly to the University of Northern Colorado Computer Center
  3. writing the chairman of the research committees of the ACIATE or NAITTE
  4. writing to the University of Northern Colorado Research Bureau
19. The ACIATE-NAITTE provides copies of the punch cards for each abstract included \_\_\_\_\_ .
1. for the cost of duplication and cards
  2. for \$9.00 per set
  3. for \$15.00 per set
  4. for free as a service to education
20. The computer program is so designed for the ACIATE-NAITTE that a search of 10 descriptor combinations \_\_\_\_\_ .
1. will take 10 times as long as one
  2. is the maximum request that can be handled by the program
  3. is impossible
  4. can be made in the same time as one
21. The annual Index provides access to abstracts in monthly issues of *Dissertation Abstracts International* by \_\_\_\_\_ .
1. topic
  2. author
  3. number code
  4. institution
  5. date of completion
22. A separate index of abstracts for both the humanities and the sciences characterizes which index?
1. AIM/ARM
  2. RIE
  3. DIJE
  4. USGRDR
  5. Dissertation Abstracts International
23. The purpose of establishing descriptors for a computer search is \_\_\_\_\_ .
1. to keep meanings uniform among people
  2. to identify the limited vocabulary of computers
  3. to use words incorporated in the computer program
  4. to identify the corresponding numbers of each word
  5. none of these
24. In the process of establishing descriptors for a topic search, the ERIC Thesaurus Rotated Descriptor Display is of value because \_\_\_\_\_ .
1. all possible combinations of a given descriptor are listed together
  2. the revolving structure makes for ease of viewing and quick location of descriptors
  3. the separation of topics appears only in the Rotated Descriptor Display and not RIE
  4. there are some irregularities in identifying some topics
  5. the descriptors change meaning with use
25. DATRIX is a service of direct access to reference information on \_\_\_\_\_ .
1. dissertations
  2. unpublished research
  3. periodicals
  4. books
  5. biographic reviews
26. Dissertation Abstracts International can also skip or *delete* studies from a descriptor search of the DATRIX system by indicating those terms on the DATRIX form.
1. true
  2. false
27. The ERIC publication (RIE) is published:
1. yearly
  2. quarterly
  3. monthly
  4. weekly
28. RIE is an index containing primarily:
1. documents
  2. abstracts of documents or research studies
  3. biographic reviews
  4. unpublished studies
  5. periodicals

29. AIM is the index in Vocational and Technical Education for the materials which deal with:
1. instruction and curriculum development in the field
  2. curriculum for elementary schools
  3. supervision of teacher
  4. research and formal doctoral dissertations
  5. technical procedures in industrial processing
30. ARM is the index in Vocational and Technical Education for the materials which deal with:
1. instruction
  2. curriculum
  3. supervision
  4. research
  5. technical education
31. AIM/ARM is published:
1. monthly
  2. semi-yearly
  3. yearly
  4. quarterly
  5. whenever the accumulation of documents reaches a predetermined number
32. The proper name for the dissertation clearinghouse of University Microfilms at Ann Arbor, Michigan is:
1. Dissertation Abstracts
  2. Dissertation Abstracts National
  3. Dissertation Abstracts International
  4. International Abstracts Association
  5. Summaries of Studies in Education
33. AIM/ARM is funded under the:
1. U.S. Office of Education
  2. Department of Labor
  3. National Institute of Education
  4. U.S. Department of Commerce
34. The computer tape for the ACIATE-NAITTE abstracts is \_\_\_\_\_ .
1. also available on an annual update basis at cost to subscribers
  2. updated each 6 months
  3. updated each year
  4. both 1 and 3

35. The descriptors on the ACIATE-NAITTE abstracts are made up of \_\_\_\_\_ .
1. one to four letter abbreviations
  2. at least four letter abbreviations
  3. the first four letters of the descriptors assigned
  4. exactly the same as terms used in ERIC
36. The publisher and editor of the ACIATE-NAITTE abstracts is \_\_\_\_\_ .
1. Paul DeVore
  2. Jim Buffer
  3. chairman of the ACIATE Research Committee
  4. D. L. Jelden
37. ERIC is \_\_\_\_\_ .
1. a national information system
  2. a source for obtaining documents on education
  3. a network of decentralized information centers
  4. all of the above
38. Who can submit reports or papers to ERIC?
1. professional organizations
  2. school administrators
  3. researchers
  4. anyone
39. RIE is an index to educational information published by \_\_\_\_\_ .
1. Center for Vocational and Technical Education
  2. ERIC through the Superintendent of Documents
  3. U.S. Government Research and Development Reports and Translations
  4. DATRIX
  5. School Research Information Service
40. In RIE the main identifier to the ultimate source, which appears in all the cross reference indexes is \_\_\_\_\_ .
1. title
  2. alphabetic code
  3. author
  4. ED number/EP number
  5. date

41. How would you locate in RIE a particular educational research project which was in progress?
1. a search would be impossible
  2. would locate available information in Project Section
  3. would be listed by bibliographic entry only in Author Index
  4. might, by chance, appear in the indexes of RIE
  5. would be mixed with the other completed research indexed in RIE
42. Reproduction service of RIE original documents in hard copy is possible \_\_\_\_\_ .
1. for the current year only
  2. not at all from ERIC
  3. back to the beginning of its existence in 1967
  4. with subscription only
  5. for a limited number of documents
43. Microfiche is \_\_\_\_\_ .
1. a sheet of microfilm which contains approximately 70 pages of reduced document print
  2. a strip of microfilm which contains one page of a reduced document print
  3. a xerox copy of a document
  4. a carbon copy of a document
  5. a diazo film of 70 pages of reduced document print
44. CIJE is published \_\_\_\_\_ .
1. semi-annually
  2. quarterly
  3. annually
  4. monthly
  5. varying times
45. CIJE is an index providing abstracts of \_\_\_\_\_ .
1. books
  2. work in progress
  3. periodicals
  4. reports and monographs
  5. unpublished studies
46. All abstracts in CIJE are related to the field of \_\_\_\_\_ .
1. education
  2. vocational and technical education
  3. counseling and personnel services
  4. all fields of study
  5. humanities

47. To begin a hand search of a topic in CIJE, what should be established first?
1. relevant descriptor groups
  2. EJ numbers of relevant titles
  3. topic index source
  4. alphabetic code for topic
  5. range of publication years
48. The use of the \* (asterisk) on a descriptor in the main entry of CIJE denotes \_\_\_\_\_ .
1. more important material
  2. other articles on the same subject
  3. designation of the beginning of the abstract
  4. currently available
  5. those descriptors which are listed in the subject index
49. In the CIJE Index the main identifier to the ultimate source which appears in all the cross reference indexes is \_\_\_\_\_ .
1. title
  2. alphabetic code
  3. author
  4. EP number
  5. date
50. Using the original source of an abstract in ERIC can be done by \_\_\_\_\_ .
1. xerox copy
  2. borrowing the original document
  3. microfilm
  4. hard copy and/or microfiche copy
  5. carbon copy
51. *Pacesetters in Innovation Index* is published \_\_\_\_\_ .
1. annually
  2. semi-annually
  3. monthly
  4. quarterly
  5. varying times
52. The main identifier of abstracts in AIM and ARM placed on the document by the clearinghouse at Ohio State University is \_\_\_\_\_ .
1. ED number
  2. VT number
  3. TY number
  4. EP number
  5. alphabetic number only

53. The major division of the content of abstracts in AIM and ARM is by \_\_\_\_\_.
1. title
  2. subject
  3. number
  4. author
  5. institution
54. Coding of the documents in *Pacesetters in Innovation* is \_\_\_\_\_.
1. VT number
  2. ED number
  3. EF number
  4. ES number
  5. MP number
55. The documents listed in *Pacesetters in Innovation* are planning and operational grants of ESEA concerned with what phase of education?
1. future planning
  2. creativity and innovation
  3. evaluation
  4. instructional materials
  5. administration
56. Knowing the ERIC descriptors of a given topic, the user would search which index in RIE?
1. subject
  2. author
  3. institution
  4. cumulative document number
  5. title
57. The value of the coordinate indexing in the *Thesaurus of ERIC Descriptors* is \_\_\_\_\_.
1. the selection of document sources can be narrowed most precisely to the problem
  2. the speed which is possible in locating sources
  3. the size of the manual is reduced because the duplication is eliminated
  4. the updating of descriptors can be reduced to once a year
  5. the user is more familiar with this type of indexing

58. A microfiche reader enables viewing of \_\_\_\_\_.
1. one or two pages of a document on a screen
  2. seventy pages of a document on a screen
  3. five pages of a document on a screen
  4. one page and is a sound machine which plays back the content of the microfiche
  5. one page and is a scanning light which establishes a reading rate
59. The AAAS Index of Science Books provides \_\_\_\_\_ by science specialists of general science textbook publications.
1. detailed course outlines
  2. personal appraisals and evaluations
  3. sample copies of books
  4. highly sophisticated analysis of very technical papers
60. The U.S. Environmental Protection Agency publishes a monthly compilation of abstracts on \_\_\_\_\_.
1. air pollution and control
  2. the condition of the earth's dwindling natural resources
  3. monumental breakthroughs in population control
  4. all of the above
61. The Energy Index includes in its monthly current awareness journal the following:
1. reviews of environmental films
  2. reviews of environmental books
  3. reviews of papers presented at the world energy conference
  4. all of the above
62. The Applied Science and Technology Index requires the reader to \_\_\_\_\_.
1. have access to a computer terminal for retrieval
  2. have an understanding of at least French or English to utilize it
  3. select from every publication found in the field
  4. have access to the original documents annotated or abstracted in the index
63. The Current Geographical Publications Index would be most useful to teacher.
1. a human sexuality
  2. a drafting or topography
  3. modern technology and its impact on society
  4. primitive technologies—social studies

64. The best cumulated index for United States local and state history and listings of collections from 1900 to 1950 would be \_\_\_\_\_ .
1. Readers' Guide
  2. Cumulated Magazine Index
  3. Poole's Index
  4. Annual Library Index
65. Educational Abstracts (UNESCO) is a listing of reports, papers, publications and/or presentations in \_\_\_\_\_ .
1. foreign countries
  2. the United States
  3. the whole world presented at the Paris Conference by those represented
  4. the communist world primarily
66. The Graphic Arts Index includes \_\_\_\_\_ .
1. lists of up-date programs or workshops to be held
  2. abstracts of current articles in the field
  3. abstracts of books compiled by the Graphic Arts Technical Foundation
  4. all of the above
67. The Index to Handicrafts includes \_\_\_\_\_ books and periodicals indexed in the Readers' Guide to Periodical Literature.
1. most
  2. all of
  3. a few of
  4. none of

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