

DOCUMENT RESUME

ED 152 315

IR 005 832

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TITLE Introducing the College Student to Academic Inquiry:
An Individualized Course in Library Research
Skills.

PUB DATE 8 Nov 77
NOTE 35p.; Paper presented at the International Congress
for Individualized Instruction (LaFayette, Indiana,
November 9, 1977)

EDRS PRICE MF-\$0.83 HC-\$2.06 Plus Postage.
DESCRIPTORS Autoinstructional Programs; Higher Education;
*Individualized Instruction; *Library Instruction;
*Library Skills; Performance Based Education;
Research Skills; *University Libraries

ABSTRACT

This paper discusses a course designed to equip students to use library resources while conducting academic research. By employing the methods of individualized instruction, a minimal teaching staff can direct the learning of large groups of students. Identifiable competencies are developed and can be assessed in: (1) the critical thinking which supports research, (2) research methods used to acquire knowledge, and (3) the methods of accessing and utilizing library collections in conducting research. The format of the course include each week one lecture session and one library practicum. The lecture is both informational and motivational; it provides the student with an overview of (1) the research procedure to be used that week in the library, (2) the library resource to be accessed and utilized, and (3) selected critical thinking skill exercises which will support the research procedure and use of the library resource (e.g. making classifications, producing analogies, paraphrasing, summarizing). The practicum, which is designed to allow the student to pursue self-paced learning, begins with modelling by the instructor of the research procedure and use of the library resource. Students are then guided by a carefully structured worksheet. An outline of the lecture and practicum components and examples of the worksheets are included. (Author/JAB)

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INTRODUCING THE COLLEGE STUDENT TO ACADEMIC INQUIRY:
AN INDIVIDUALIZED COURSE IN LIBRARY RESEARCH SKILLS

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at the

International Congress For Individualized Instruction
November 8, 1977
Purdue University

ED152315

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ACKNOWLEDGEMENTS

We are grateful to Dorothy Gray, Head of the Reference Division of the University of Louisville Library, and Mildred Franks, Assistant Head of the Reference Division, for their research and counsel on library sources of information.

Ms. Franks provided the bibliographic information which supports development of the lecture series on the history and use of library sources.

Introducing the College Student to Academic Inquiry: An Individualized Course in Library Research Skills

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We are teaching in the open-admissions college of the University of Louisville. Our mission is to prepare any student for a successful academic experience. We are charged with developing a basic academic skills program which insures the student can cope with college level work. We have determined four major areas of competency needed by college students:

1. Acquaintance with the purposes, methods, and nature of evidence that constitute the three major divisions of knowledge (Humanities, Social Sciences, and Natural Sciences), and specialized knowledge in the content and methods of investigation of several disciplines which can support advanced study.
2. An acquaintance with the existing sources of public information in various fields, and the ability to access and to use these sources.
3. Critical thinking skills which enable comprehension, analysis, and extrapolation of verbal, written, and visual information.
4. Ability to conduct independent inquiry, and to communicate findings to others orally, in written, and in visual forms.

Research With Printed Materials is one course we have developed to deal with these four areas of competency. All four areas are integrated into the skill activities of the course, although areas 2 (Sources of public information) and 4 (independent inquiry) are stressed in our design.

The course is offered to open admissions freshmen and other interested students from our college. The course is not at the remedial level; we do offer remedial level courses in University College (in critical thinking and reading. We will soon add remedial courses in listening and vocabulary development). Research With Printed Materials demands a competence in critical thinking to enter the course at a level determined by tests of inference, judgment, and analogy. We currently are developing a measure which combines items from the Watson-Glaser Critical Thinking Appraisal (Watson and Glaser, 1964), the National Council for the Social Studies Selected Items for the Testing of Study Skills and Critical Thinking (Morse, McCune, Brown, and Cook, 1971), and Albert Upton's and Richard Samson's Creative Analysis (Upton and Samson, 1963).

I. Background of the Course:

When we first joined the faculty at the University of Louisville, we were assigned to teach a course called Liberal Studies 101, Ideas and Research. This course was designed as a catch-all introduction to college work primarily directed to open-admissions students reading at levels from sixth through twelfth grade. We began to experiment in the course with texts and methods which could enable students to improve critical thinking abilities, judging that problems in reading and writing could be better attacked in separate courses designed for that purpose.

During our second semester with this course, in a team-teaching situation, we decided that certain critical thinking skills (analyzing, inferring, judging) could best be developed and monitored while the student carried out activities in academic inquiry. Since inquiry--the acquisition of information--is the backbone of college work as we understand it, we decided that the library could serve as a laboratory for the practice of critical thinking skills. Thus Research with Printed Materials was conceived. We began with a practicum laboratory in the library once each week; originally this lab session was part of Ideas and Research. Later we separated the library activities and instruction from that course, added a lecture component, and offered it as an independent course called Liberal Studies 103, Research with Printed Materials. Currently it functions as a one credit course, and is providing us with a means to refine the individualized work-sheet projects that guide the student through the research process while giving him practice in using the information retrieval systems of the library. We are also presently engaged in developing lectures which will inform, guide, and motivate activities in the course.

II. Purposes and Description of the Course

We are offering an introduction to academic research that uses the library in an informed manner as a research tool. This is a general education level course that introduces the methods and sources fundamental to acquiring existing information to support academic research in any discipline of the Humanities, Social Sciences, and Physical Sciences.

The course is designed for any student who is unfamiliar with the methods and sources that the library can provide in acquiring information. We expect to reach freshmen and sophomores who attend day and evening classes at the University of Louisville and adults from the surrounding urban communities of Louisville who are enrolled in Continuing Education.

The course eventually will be able to enroll 1,250 students a semester, yet it is constructed so as to enable competency-based, individualized self-paced learning. (See below for a description of the course logistics and the competency-based, individualized, and self-paced course characteristics.)

The course offers primary research skills which will prepare students for independent and required academic work throughout their undergraduate career and professional training. We see the pursuit of knowledge as a three-stage process: 1) the acquisition of existing ideas, sources of authority, terminology, parameters of discourse, and general information on an issue; 2) the production of new thought on the issue; and 3) the utilization of new thought within the existing order of knowledge. Higher education seeks to enable the student to carry out these three stages in all their phases: the process exists for any discipline in the three major divisions of knowledge. We are concerned with the first state - acquisition - in this course, although the research skills we teach are used in phases of stage two, the production of new thought, and stage three, the utilization of new thought.

Two major purposes underlie the course which are essential to the initial acquisition of information:

1. To learn to access and use a broad range of materials available in the library.
2. To learn to use the resources of the library to conduct academic research.

These two purposes are achieved through research assignments which enable students to learn forms of academic investigation generic to the three divisions of knowledge that rely on library information sources. The forms of academic investigation is empty without the library source and the library source is idle without the investigatory form that makes use of it. The forms of academic investigation covered in the course are:

1. Overview of existing knowledge on an issue of interest:
 - learning sources for research in one or several fields which deal with the issue of interest;
 - becoming acquainted with the vocabulary of the field(s);
 - identifying principle investigators within the field(s);
 - identifying the main ideas within the field(s) that relate to the issue of interest.
2. Articulating a research problem from an issue of interest:
 - identifying elements of the issue which can relate it to a field of research;
 - stating a problem from the issue that is researchable within a field.
3. Preparing for future research on the problem:
 - identifying all pertinent sources of information;

- evaluating the sources of information;
 - compiling and annotating a bibliography according to a rationale that will guide future research.
4. Summarizing knowledge acquisition to prepare for new thought on a problem:
- learning to abstract research reports;
 - developing a state of the art review of research on the problem.

At each step of the research, a library source integral to the research is introduced. The research phase is linked to library sources so that the student will experience through practice the character of research tools enabled by the library. Library sources of information, such as a subject encyclopedias, specialized dictionaries, subject thesauri, abstracts, bibliographic indexes, government publications, and the major catalog systems, are among the information sources which are introduced to the student as he carries out his semester research.

The course now consists of a lecture component and a library practicum. The lecture is both informational and motivational; it provides the student with an overview of (1) the research procedure to be used in the library practicum activity, (2) the library resource to be accessed and utilized in the research, and (3) selected critical thinking skill exercises which will support the research procedure and use of library resource (e.g. making classifications, producing analogies, paraphrasing, summarizing).

The one-semester course will consist in the future of two lectures a week (each 45 minutes) and one library practicum where the research problem is accomplished (1 1/2 hours, plus home work). Each week another research phase will be linked to new library sources. (See Appendix A for a fifteen week outline of the proposed course.) The projected course will be three credits. Currently LBST 103 is one credit (meeting 1 1/2 hours per week).

A. The Lectures: History, Functions, and Methods of Academic Search and the Library Sources

The lectures will be divided into the two major themes which comprise the course - the academic research process and the library sources and systems of information.

Lectures Series I will treat the divisions of knowledge and their subject matters, methods of investigation, and the nature of their evidence. The research process in its forms of information acquisition will be surveyed. Finally, the critical thinking skills which support effective research will be practice .

Lectures Series II will treat the history, function, and use of the various library sources which will be introduced throughout the fifteen weeks.

The lectures will include in-class worksheets which engage students in skills practice. Lecture I, critical thinking skills, will include exercises in making definitions, stating problems, providing synonyms, paraphrasing, and making analogies. The exercises will be similar to those used by Alfred Upton and Richard Samson in Creative Analysis (Upton and Samson, 1953).

The Lecture II will involve students in the construction of formal citations, bibliographical formats and annotation.

The lectures will be given to groups of approximately 250 students on two days of each week. From Monday through Saturday groups of 25 students will begin the library practicum exercise at hourly intervals. The small groups will be led by librarians who model the activity to be accomplished, and then counsel the students in their group who are using structured worksheets which guide them independently through the particular research task.

5. The Library Practicum: Competency-Based, Individualized, and Self-Paced

Library research is by its nature a competency-based activity. The lack of the many competencies needed for library research causes the majority of undergraduate students to avoid independent library work. We have thus far expressed the research competencies which will be taught, such as stating the problem, identifying fields which research the problem, preparing a bibliography, abstracting information, and compiling reviews of research. These are all competencies that can be assessed as they are practiced. However, there are hosts of skills which make these research forms possible that involve knowledge and usage of library sources.

The ability to use subject and author-title indexes is both an intellectual and a manual skill. It is tangible in that one can devise performance-based tests which indicate not only ability but degrees of ability. There are spatial recognition and motor skills involved in effective use of a library. The library practicum is designed to monitor the search process of a student and to test the perceptual and motor competencies that are vital to the search process. One exercise we have experimented with that measures abilities in the area of perceptual-motor skills requisite for library search is in locating sought-for books on a library shelf map. (See Appendix E for a copy of this activity.)

The ability to use an index system which is multiphased, such as Government Publications or the Readers' Guide, requires not only knowledge of a retrieval system, but also competence in synonym creation, analogies, and other comparative intellectual skills. These skills, the psycho-motor facility with index systems and the cognitive competencies of the search, are all measurable.

The individualized aspect of the course is found overall in our concern with providing skill development activities both within the lectures and in the library practicum. As the skills will be individually assessed, students will be able to identify the particular skill as well as his facility with it.

The structured worksheets which guide the library practicum research provide another individualized aspect. Students develop a theme of interest for research over the fifteen weeks of the course. This theme is incrementally individualized while each student does the same research form in the research sources as other students. The thematic selection of the problem enables the individualized pursuit through common practice and common source reference. Thus, although over 1,000 students may take the course in one semester, it is unlikely that more than 2% would define a research problem that was identical in its elements. (This estimate is based upon experimental practicum offered in the Spring of 1977. Several of the activities in this experimental course asked students to write individual problems based on four broader topics - crime, pollution city design, and work and leisure. The problem statements among the 80 students who took the course were not identical in any case. See Appendix B for examples of these exercises

The self-paced aspect of the course is found in the library practicum and its research forms that are guided by 1) the modeling of the teacher; and 2) the guidance of the structured worksheet which takes the student step by step through a research problem. The research problem can be completed on the student's own time. He is given 1 1/2 hours in the library practicum to do the work, but with the initial modeling of the teacher of the several steps of the activity and the structured worksheet, he will be able to complete an assignment quite independently.

An additional feature of the library practicum which can add to the self-paced character of the research will be a taped explanation of the steps of the particular research problem of the week. The tape will be available for students who have not been able to meet one of the hourly modeling sessions of the week. The taped explanation will guide the student, with worksheet in hand, to each library station where a required activity must take place, outlining what type of research is to be done and how the source is to be used to make the research possible. We have not yet experimented with tapes, but paradigms for tape construction exist in many educational fields.

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APPENDIX A

OUTLINE OF THE COURSE

RESEARCH SKILLS

LIBRARY SKILLS

Week

Lecture I

Lecture II

Practicum

KNOWLEDGE

APPROACHING A SUBJECT

1

I. StructureI. Overview

The organization of knowledge and its genesis, the 3 major domains (Humanities, Social Sciences, Sciences) and disciplines under each; subject, method, and evidence in the disciplines.

History and purpose of encyclopedias; use of encyclopedia indexes; relative strengths of the different encyclopedias.

Using encyclopedias to see range and depth of treatment of subjects by different fields. Comparing general and subject encyclopedias.

II. MethodologyII. Organization & Terminology

2

Methods by which disciplines approach the same problem differently in terms of method and evidence.

Structure of subject catalog and LC Classification; varieties and uses of specialized dictionaries, glossaries, thesauri.

Using subject catalog to find specialized dictionaries, etc.; comparison of different sources.

III. AuthoritiesIII. Authorities

3

The importance of personal contributions in disciplines; the relations between disciplines as embodied in people with interdisciplinary interests and activities.

Biographical reference works and their use; relative merits of various sources; biographical information found through card catalog.

Locating biographical information and identifying major contributors in various disciplines.

RESEARCH PROBLEMS

I. Identification of ProblemsIV. Identification of Problems

4

Identification of problems which have attracted attention; methods by which a researcher identifies and states a problem; view of societal issues as problems from the perspective of different disciplines.

Use of previously explained sources to identify problems in various fields.

Using previously explained sources to identify fields interested in a given topic; selecting books on the topic; deducing basic questions being asked.

Week

II. Statement of Problems

I. Introduction to Bibliography

5 Statement of problems for research; identification of fields which might examine the question.

Definition and types of bibliography; reference sources which identify bibliographies; bibliographic citations for books.

Using the reference collection & subject catalog to find fields to which chosen topic pertains; identifying bibliographies which the library has on the subject.

6

III. Evaluation and Interpretation of Sources

II. Periodical References

Purpose and methods of judgement in compiling a bibliography; quality and type of evidence provided by various sources.

Bibliographic citations for periodical articles; arrangement of indexes; various Wilson indexes for subject areas.

Writing out citations; selecting indexes and bibliographies on chosen topic.

7

(Evaluation and Interpretation, cont.)

III. Newspapers & Report Literature

Use of bibliographies to guide further research; development of a rationale for bibliographic selection.

Use of newspaper indexes and collections; indexes to major report series: ERIC, HRAF, and NTIS.

Answering specific questions on contemporary events using the sources introduced in lecture.

8

MIDTERM

MIDTERM

9

IV. Refinement of the Problem

SOURCES OF SPECIAL INFORMATION

I. Government Publications

Changes of problem definition during the research process; examples of problems from the three divisions of knowledge seen in historical perspective as they changed their definition with research.

Overview of SuDoc classification; kinds of material produced by the government; Monthly Catalog; Government publications citations.

Examining some selected government publications; writing bibliographic citations with comments; searching Monthly Catalog for chosen topic.

10

(Refinement of the Problem, cont.)

Methods for modifying and clarifying the personal research problem based on information gathered.

(Government Publications, cont.)

Location of items in our collection; Non-governmental sources of government information.

Locating items identified in previous week; answering specific questions by using resources introduced in lecture.

THE PROCESS OF SUMMARIZING

<p>Week</p> <p>11</p> <p>Purpose and methods of bibliographical annotation; methodology used in condensing and paraphrasing material.</p>	<p>Structure of these types of publications, from general to detailed.</p>	<p>Choosing most appropriate sources to answer given questions; writing out bibliographic citations and comments on choices.</p>
<p>(Process of Summarizing, cont.)</p> <p>12</p> <p>Analysis of the Purpose, organization, and terminology of abstracts from each of the three divisions of knowledge.</p>	<p><u>III. Abstracts</u></p> <p>Differences between abstracts and indexes; arrangement and special features of abstracting services; the major abstract titles.</p>	<p>Finding references in some abstracts and locating the articles; identifying abstracts to be used with chosen topic.</p>
<p>(Summarizing, cont.)</p> <p>13</p> <p>Analysis of the student abstracts of articles evaluating the organization, content, and terminology.</p>	<p><u>IV. Opinions</u></p> <p>Sources for opinions: editorials, columns; series of anthologies; opinions on books through book reviews.</p>	<p>Finding pro and con editorials on controversial topics.</p>
<p>14</p> <p>STATE OF THE ART</p> <p>A definition of state of the art; function of the review; analysis of sample review from the divisions of knowledge for content and organization.</p>	<p>STATE OF THE ART</p> <p>Published state of the are sources; annual reviews; progress in...; advances in...; year's work in....</p>	
<p>15</p> <p>FINAL EXAMINATION</p>		

APPENDIX B:

SAMPLE WORKSHEETS

USING U.S. GOVERNMENT PUBLICATIONS

Purposes: To make accessible government studies on public issues.
To practice finding government studies published since 1900.
To learn to use a two-step information retrieval system.

1. Choose one of the topics listed below (circle the topic chosen):

pollution population crime work/leisure planning

2. Think of three alternate subject headings (synonyms) for the subject:

3. Follow these steps to find a government publication published before 1971:

STEP 1: Look in the Cumulative Subject Index to the Monthly Catalog of United States Government Publications under the topic chosen (or under one of your synonyms for the topic).

STEP 2: Scan the publications listed and choose several that interest you. Write down the complete reference numbers.

STEP 3: Find the appropriate volume of the United States Government Publications Monthly Catalog for the year(s) which interest you.

STEP 4: Look up the publication you are interested in (by page number for publications before 1947, by item number for publications after 1947).

STEP 5: Copy full information (title, author, etc.) and call number.

STEP 6: Search the shelves for the publication. If you can't find it, return to STEP 3 and repeat the process for another publication. If you do find it, write a brief summary of the publication below:

Bibliography entry for publication described above:

4. Follow these steps to find a government publication published after 1971:

STEP 1: Select a volume of the United States Government Publications Monthly Catalog date 1971 or later.

STEP 2: Check the subject index (at the back of the volume) for your topic.

STEP 3: Scan the publications listed and choose one that interests you. If none are listed, return to STEP 1 and choose a different catalog. Write down the reference number.

STEP 4: Look up the publication in the front part of the same volume by item number. Copy full information and call number.

STEP 5: Look up the publication by title in the author-title card catalog of government publications to determine whether or not it is in the library's collection. If the answer is "no" return to STEP 1.

STEP 6: Look for the publication on the shelves. If it's not there, return to STEP 1. If you find it, briefly summarize what it contains.

USING U.S. GOVERNMENT CENSUS DATA

Purposes: To become familiar with the range of information contained in United States census reports.

To practice interpreting information presented in tabular form.

To understand how demographical data is collected and presented.

1. Choose any one of the United States: _____

2. Obtain the appropriate volumes of the 1970 census for the state you chose in #1 from the Government Publications Room.

3. Write the appropriate information necessary for citing facts from this source--title, publisher, etc. (f.e. write a suggested citation form):

4. Define, in your own words, SMSA or Standard Metropolitan Statistical Area (see Appendix A of your state's census report):

5. Study the state map on page 6. How many SMSA's are in your state? _____
List below the names of each of the SMSA's, and name those cities of 100,000 or more in each SMSA:

Names of SMSA's

Names of cities of 100,000 or more

6. Study the graphs on pages 4-5.

A. According to the 1970 census, how many people in your state live within SMSA's?

B. According to the 1960 census, how many people in your state lived within SMSA's in 1960?

C. What was the percentage change (from 1960 to 1970) of those living within SMSA's in your state?

A. _____ B. _____ C. _____

7. Indicate the total population of the state (table 1) for each year:

1970 _____ 1960 _____ 1950 _____

Give the date and population at that time for the earliest census of your state:

year _____ population _____

8. Indicate total male and female populations in 1970 (table 20);

males _____ females _____

9. Study table 60. How many native-born inhabitants of your state speak English as a native language? _____

Other than English, which is the most common native tongue among native born inhabitants of your state? _____ How many people speak this language as a native tongue? _____

10. According to table 83, what percentage of the population of this state has completed four or more years of college?

11. What is the median family income in this state? _____
What is the median family income for those who have completed four years of high school? _____
What is the median family income for those who have completed four years of college? _____

(See tables 201-202)

12. Read those parts of the Introduction (pp. 1 ff.) which explain the sizes of samples used in preparing the census. According to this information, which questions above will have the more accurate answers-- #6 or #11? Explain why.

13. Suppose you want to collect more information on this state from government publications. Use the monthly indices to government publications to collect three references to publications giving additional statistical or demographic information about the state published since 1962. Provide full information (title, author, call number, date, etc.) for each publication.

A. _____

B. _____

C. _____

Lab Exercise 2: USING THE SUBJECT CATALOGUE TO FIND
INTRODUCTORY WORKS IN A DISCIPLINE

Purposes: To learn to locate an introductory work in a specific discipline.
To learn to find books in the open stacks by call number.
To identify the basic scope of questions treated in a book.

1. Choose a discipline: _____
2. In the subject catalogue, find the main (first) heading for the discipline you have chosen. (For example, for the discipline art, the main heading is "art"; for sociology, the heading is "sociology.")
3. Look through the cards following the main heading, and locate three books that are introductions to the discipline. (Most introductory books will have one or more of the following in its title:

concepts in/of	primer	organization	nature of
textbook	fundamentals	nature of	understanding
study of	elements of	principles of	foundations
manual	guide to	the meaning of	story of
function of	inquiry	introduction	basic
	lessons of	general	

Many introductory books have simply the name of the discipline as their title (e.g. Sociology, College Physics, etc.)

4. Write down call numbers for three introductory books:

--	--	--

WATCH OUT!!! Copy down only Library of Congress call numbers (see Library Handbook, p. 13). These numbers indicate books found in the open stack area on the lower level of the University Library.

Ignore cards that refer you to another library or specialized collection. These cards have "Speed School," "Music Library," etc. printed in the left margin.

5. Locate the books by their call numbers downstairs in the open stacks. Skim through the books and choose one which you feel would be a good introductory survey of the discipline.
6. Check the book out at the main desk, and fill in the bibliographical information below:

Author/editor: _____ Publisher: _____
Title: _____ Date: _____
Place of publication: _____

7. Hand in this sheet before you leave the library.
8. Fill out Page 2 and hand it in at the beginning of the next laboratory period.

Lab Exercise 2: USING THE SUBJECT CATALOGUE TO FIND
INTRODUCTORY WORKS IN A DISCIPLINE

Discipline _____ Title _____

Author/editor: _____ Date _____

Publisher _____ Place of Publication _____

1. Read the preface, introduction, forward, or first chapter of the book. State in no more than three sentences why the author wrote the book.

2. Formulate one broad major question that the book attempts to answer.

3. Formulate five more specific questions which the book attempts to answer in order to answer the major question.
 - A.

 - B.

 - C.

 - D.

 - E.

(One means of discovering the more specific questions answered in the book is to review the table of contents and examine the chapter headings. Each chapter heading may suggest a question answered in that chapter.)

LABORATORY EXERCISE 3: USING THE AUTHOR-TITLE
 CARD CATALOGUE

Purposes: To learn to locate books by using the author-title card catalogue.
 To become familiar with the various library collections.
 To identify books by discipline.

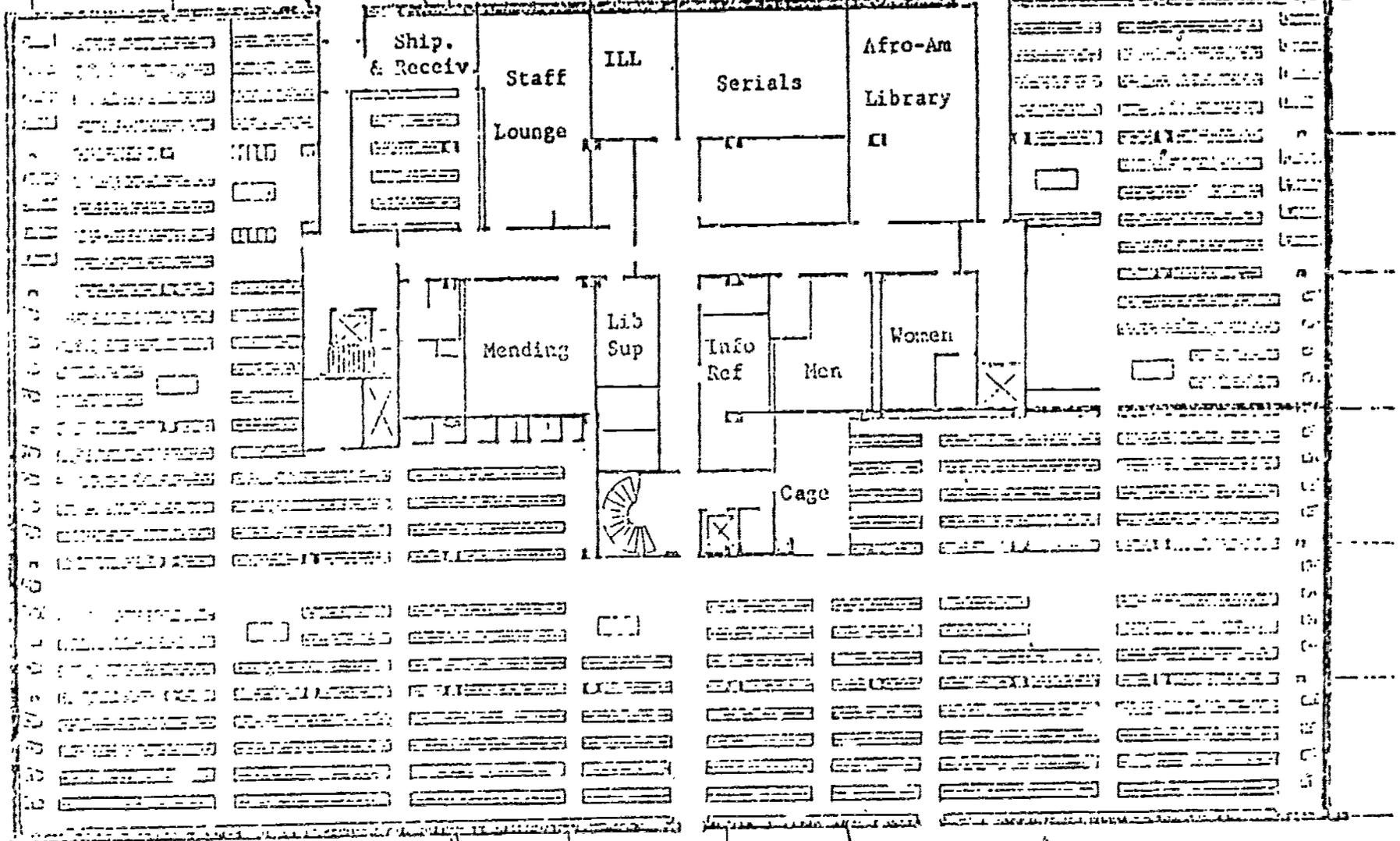
1. Use the author title card catalogue to complete the information (which would help you locate the book in the collections of the library) for each of the following:

<u>AUTHOR (or editor)</u>	<u>TITLE</u>	<u>CALL NUMBER</u>
Charles Barry		
Harold Zyskind		
	<u>Animal Tales: An Anthology of Animal Literature of all Countries</u>	
	<u>The Origins of the Modern Jew: Jewish Identity and European Culture in Germany, 1749-1824.</u>	
Jules Michelet	<u>The Bird</u>	
David Roy Davies and G. S. Tune	<u>Human Vigilance Performance</u>	
Jan Aleksander Piasecki	<u>The Origin of the Universe</u>	

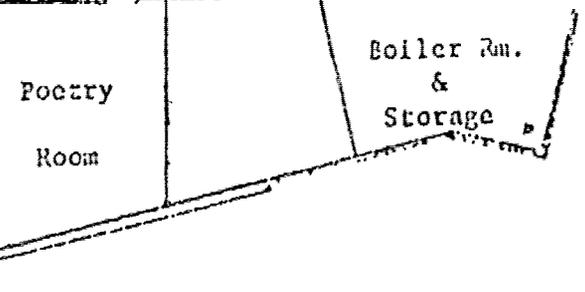
LABORATORY EXERCISE 3: USING THE AUTHOR-TITLE CARD
 CATALOGUE, PAGE 2

- Step 1: Look up each book below in the author-title card catalogue, and write its call number in the space provided.
- Step 2: Locate the books in the stacks.
- Step 3: Locate the position of the book on the 'stack map' (put the item number in a circle at the appropriate position on the map).
- Step 4: List the discipline to which the book belongs (look at the list of disciplines found at the end of each bank of shelves).

ITEM NO.	AUTHOR	TITLE	CALL NO.	DISCIPLINE
1	Karel Capek	<u>Money and other Stories</u> , 1970		
2	Ramon F. Adams	<u>The Rampaging Herd: A Bibliography of Books and Pamphlets on Men and Events in the Cattle Industry</u> , 1959.		
3	Richard von Krafft-Ebing	<u>Psychopathia Sexualis: A Medico-Forensic Study</u> , 1965		
4	Wanda M. Corn	<u>The Art of Andrew Wyeth</u> , 1973.		
5	Sigmund Freud (edited by Nandor Foror and Frank Gaynor)	<u>Dictionary of Psychoanalysis</u> , 1950		



NAME _____



LOWER FLOOR

NAME _____

Library Skills 9: Using periodicals to investigate a topic.

Purposes: To practice using the Reader's Guide to find periodicals.
To discover the scope and depth of popular periodicals in their treatment of a subject.
To gather evidence useful in answering a complex question.

In this project you will use the Reader's Guide to locate evidence in popular periodicals which may help you investigate the question "Under what circumstances does learning take place most effectively?"

This is a broad question, and can be broken down into smaller questions which may help you to accumulate evidence. Some smaller questions--there are many others--might be:

- What are the characteristics of a good teacher?
- What are the characteristics of a good student?
- Do mechanical teaching aids foster learning?
- What are the best methods for teaching a specific subject?
- How do grading systems affect education?

You can probably think of other, better questions than these which might help you in investigating the main question. (You can use one of the above questions.)

1. Write a question which would be helpful in gathering evidence which would help you answer the main question:

2. Use the Reader's Guide to locate references to material written in the last ten years which might help you answer your question. Among the subject headings you might check are the following:

teaching	teachers	students	education
college	learning	study	pedagogy

These are only some of the headings under which you might find information; your question will probably suggest other headings.

As you find references to useful materials in the Reader's Guide, copy the complete references in the chart on the second sheet.

Then look up the full name of the periodical referred to in the list of abbreviations in the front of the volume, and copy it in the appropriate column on the chart.

3. Now check to see whether or not the library has the periodicals on the chart by checking the U of L Magazines & Periodicals Complete Holdings list. If the library has the periodical, copy the call number on the chart; if the library does not have the periodical, put an 'X' in the space for CALL NUMBER.

4. After you have located references for at least three sources that the library does have, go down to the stacks and find the periodicals. When you do find them, write 'YES' in the FOUND? column on the chart; if you cannot find the periodical, write 'NO' and any comments explaining what the problem was (for example, "volume 22 was missing").
5. Finally, after you have found at least three articles, write a short BIBLIOGRAPHICAL ENTRY for each, giving author, title of article, name of periodical, volume, date, pages, and a brief one or two sentence summary of the article's content. Your BIBLIOGRAPHY should take the following form:

John S. Mill, "Why Students Fail," Time (September 12, 1967) Vol. 50, pp. 87-89.

Mill cites statistics to show that students fail in college because of poor study habits. His evidence is based upon a study of college students at Harvard during 1966.
