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ABSTRACT
        This document is a final report of a study that
assessed students' use of the Information Online (IO) computer
catalog at the Indiana University at South Bend (IUSB) library, as
well as their skills and attitudes related to library use. The 38
participants completed multiple choice and true/false exercises
testing their understanding of the IO catalog and their familiarity
with general library terminology, concepts, and specific printed
reference tools. The IO portion of the exercise required students to
perform searches; transaction logs of the sessions were maintained.
Performance on general library skills and IO library catalog skills
items are discussed and analyzed to determine the significance of
participation in library instruction, frequency of library use, and
grade point average. Implications for IUSB library programs and
practices are considered in several areas. They include improvements
in library instruction methods, including workshops on advanced
library topics and interactive computer tutorials; more emphasis on
helping patrons limit IO searches to IUSB holdings; and improvements
to the periodical holdings list. Potential uses of the microcomputers
that have replaced five IO terminals for future assessment of the IO
catalog and library instruction are discussed. The library skills
survey questionnaire and sample IO screens are appended. (Contains 10
references.) (MES)

LIBRARY SKILLS ASSESSMENT PROJECT: FINAL REPORT

July 1992

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LIBRARY SKILLS ASSESSMENT PROJECT: FINAL REPORT

I. Introduction.

Computerized information retrieval systems have changed forever the kinds of skills and techniques that must be employed in order to use library resources effectively. While computerized library catalogs and indexes hold out the promise of enormous savings of time and energy in information searches, many pitfalls remain: lack of standards and uniform interfaces among computer systems, lack of retrospective coverage, inadequate documentation, to name a few. Public access computer systems require that library patrons accustomed to the "linear" world of the card catalog and the printed index think about information and its retrieval in new, more complex ways. Information is accumulated into databases, the contents of which may not be as readily apparent or open to browsing or the "serendipitous" discovery as are print-based sources. Characterizing the attitudes of some library patrons toward new computer systems, Northwestern University's Betsy Baker (1) maintains that "...the mere presence of an online catalog often creates a false sense of confidence concerning the comprehensiveness of its contents and the knowledge required to use it effectively." (p. 36)

Some information retrieval problems are common to both print and computer resources, and may simply have become amplified in the electronic environment. Others are unique to computer systems: the necessity, for example, of understanding the discrete elements that make up "records" in a computer display, and the almost limitless ways in which search commands can interact with these elements.

II. Background-- Indiana University at South Bend (IUSB) Library.

The IUSB library has for many years provided access to computer databases through online searches assisted or conducted by a librarian. The last five years or so, however, have seen a proliferation of computerized reference catalogs and indexes designed to be used by patrons with a minimum of librarian assistance. Of particu'   ¬portance was the introduction of the Indiana University Libraries' IO (Information Onlin.   ·¬¬puter catalog. In the case of IUSB, IO was the first public access computerized system to · › ¬ ¬oly replace an existing print source (the venerable card catalog.) IO was and rema ¬¬.   ¬ sole source of information for books acquired by the library after 1989 (the card catalog remains in the library but is no longer being updated.) The other computerized systems in the reference area, particularly the indexes on CD-ROM (Compact Disc-Read Only Memory), largely duplicate print sources to which the library also subscribes.

Grants for the assessment of academic programs became available at IUSB in the Spring of 1990. The grants, awarded by committees representing the various campuses of the Indiana University system, were intended to support assessment of: 1. outcomes of general education programs; 2. attainment on the part of students of basic skills; 3. student achievement at various stages of an academic program; and 4. competence of graduating seniors or of alumni. Librarians

at IUSB felt that assessment of the library's instruction program was needed in light of the rapid change in information resources available to students.

Given the growing importance of computerized systems like the IO computer catalog, we felt that an important component of any library assessment project would be a thorough analysis of the knowledge that students bring with them and the methods they employ in using such a system. As Ohio State University librarians Sue Pease and Mary Noel Gouke (2) so aptly put it, "...the first step in raising patron success levels on online catalogs should be to cast aside the comforting assumption that patrons will be more successful with the online catalog than the card catalog." (p. 291) Also vital to any assessment of library instruction would be an examination of the "common" library skills that students possess as well as their perceptions of traditional library resources. We wanted to compare objective measures of each student's performance on IO and traditional library skills tests with his or her subjective evaluation. Lastly, the project was designed to find out how often and for what purposes students use the library, and to measure attitudes regarding library services.

The library submitted the assessment project proposal to the IUSB assessment committee in the Spring of 1990. A grant in the amount of $2385 was awarded to the library in May of that year.

III. Design of the Library Skills Assessment Project and Survey Instrument.

A. The IO (Information Online) component. Ben Shneiderman (3) argues that information professionals "are rediscovering the power of the traditional scientific method," and that the study of human-computer interaction can benefit greatly from such methods:

> The battle will not be won by angry argumentation over the 'user
> friendliness' of competing systems or by biased claims that 'my
> design is more natural than your design.' I believe that victory
> will come to those who take a disciplined and empirical approach
> to the study of human performance in the use of interactive
> systems. More and more, system developers, maintainers and
> managers are collecting performance data from users, distributing
> subjective satisfaction surveys, conducting informal field trials
> for novel proposals, and using field study data to support
> organizational decision making. (pp. 27-28)

An enormous amount of research has been done to identify usage patterns of computerized public access library systems like IO. Some of these studies used transaction logs, that is, computer records or printouts of actual searches performed on the catalog, to provide a better picture of how patrons use the catalog and what sorts of searches they prefer. One problem with

studies of this type is that it is difficult to evaluate the "success" of such sessions, where success is defined as the bringing together of patron and needed library material through the use of the computer catalog. David Bishop (4) summarized the results of an early major study of online library catalogs that attempted to measure through a questionnaire the amount of material found by patrons as well as their satisfaction with the system. Still, problems remain in attempting such measurement: patrons may sit down at the terminal with vaguely formed goals or needs, or the goals may change as the patron interacts with the catalog.

Researchers studying the use of the library computer catalog at Syracuse University in New York used transaction logs, but also were aware of the limitations of this method (5):

> The limitations of this log revolve around some difficulties in
> using it. First, it is not possible to determine when one search
> logically ends and another begins. Secondly, it is not possible
> to determine whether or not a user has found anything of value
> during the search, i.e., there is no way to express satisfaction
> or frustration. (p. 4)

Questionnaires administered to users can elicit perceptions of such things as the ease of use and utility of the system, but evaluating the actual effectiveness of the session may be problematic. For example, a patron may walk away from a terminal satisfied that she has successfully discovered all that the library owns on a particular subject (and may be correspondingly happy with the "user-friendliness" of the system), yet remain unaware of the existence of more material due to ignorance or misuse of certain features of the system. More than several studies of library user satisfaction have revealed high levels of satisfaction despite the failure to obtain the needed materials or information. Bishop, for example, found that patrons tended to prefer computer systems over the card catalog even when their computer searching was less successful. In reporting on the assessment of user education through online catalog transaction monitoring, Brian Nielson (6) succinctly summed up the advantage of the transaction log: "Transaction records have the distinct advantage of reflecting what users do, rather than what they say they do." (p. 31) In the process of evaluating two prototype online systems, a team at the National Library of Medicine headed by Elliot R. Siegel (7) used a controlled "sample search experiment" consisting of a set of searches assigned to trained library staff. A "user survey characterizing users' catalog information and searching behavior" was also used. (p. 35)

For the purpose of assessing student interaction with the IO computer catalog and identifying potential problems, we felt that monitoring a controlled IO session through a computer transaction log would yield the best and clearest results. Where the question to be answered by the use of IO is known in advance, it should be easier to discern in the session's transaction log the strategies used and difficulties encountered.

A set of multiple choice questions (initially consisting of ten questions, later refined to eight after pilot testing) was devised to test student understanding and use of the various types of searches (author, title, subject and keyword) as well as screen displays in the IO system. As a follow-up to the exercise, a number of scaled items were included to measure such things as the student's confidence in his/her performance on the exercise, opinions as to the system's design and ease of use, and general attitudes toward the system (see Appendix A. for a complete facsimile of the survey instrument).

A member of the Computer Science faculty at IUSB revised an existing computer communications program he had developed to allow the complete contents of each screen encountered during the course of the IO catalog exercise to be downloaded to the computer's hard disk with each press of the <Enter> key. Paper copies were then made of these transaction logs. Many computer transaction logs consist only of the text typed into the computer along with location/terminal number, time of transaction, etc. While keeping a record of all that the student types into the computer *and* sees on the screen during a session makes for greater storage and handling problems, distinct advantages emerge when reviewing the logs-- it is much easier for the reviewer to interpret a search strategy or track down the cause of a mistake when the visual cues encountered by the student, that is, the system screens themselves, are a part of the log.

B. The General Library Skills Component. It is often tempting in this "Information Age" to focus attention and resources on new, flashy computer systems to the detriment of the total information environment. Librarians must remind themselves that the computer systems that are occupying an increasing proportion of their attention are only one (albeit important) aspect of the larger information system that is the library. With the exception of the replacement of the card catalog by the IO computer catalog, the public access computer systems in use at the IUSB library all have their equivalents in paper form, and ready access to the literature in some subject areas is only available through print indexes.

However much electronic access to information has infiltrated the library's reference area, no serious investigator or researcher can avoid contact with these "traditional" sources. Even in the most "wired" academic library reference area, the great bulk of information is contained in the various printed encyclopedias, dictionaries, handbooks, bibliographies and loose-leaf services for which no equivalent computer database sources exist or are readily available on site.

In the case of periodical literature, the search for materials published twenty years ago, or even five years ago, is possible only through print indexes. For example, the IUSB library's *PsycLit* computer database coverage of literature in psychology extends back to 1974; *Psychological Abstracts*, the print equivalent, provides coverage from the 1920s to the present. The *ABI/Inform* index to business and trade journal literature on compact disc only covers the last five years; a

search at IUSB for material published prior to this must be done in the printed *Business Periodicals Index*.

Some print sources are used in conjunction with computer databases and are an integral part of the system. The initial version of the Information Online computer catalog (the version used in this study) required patrons to consult the three volume *Library of Congress Subject Headings List* to identify terms to use in subject searches. When searching a computer CD-ROM index for references to journal articles, IUSB library patrons must consult a printed list of the library's periodical holdings to determine what the library owns and to get the call numbers to locate the periodicals.

While coverage of computerized information systems in the IUSB library instruction program has grown considerably in recent years, the greater proportion of material in the instruction sessions relates to printed sources and so-called "traditional" research methods and strategies, reflecting the mix of sources available in the IUSB library. In order to assess the impact of this component of the instruction program, we devised a test of general library knowledge and skills to be administered in conjunction with the IO exercise. The General Library Skills component of the assessment instrument consisted of multiple choice and true/false questions testing student knowledge of standard library reference materials and basic information search strategies.[*] Scaled items measured attitudes toward the library in general, its services, staff, etc. In addition, information was solicited as to frequency and type of use of the library, use of standard reference materials, experience with library instruction, and such personal data as sex, age, major, years at IUSB, grade point average, etc. (see Appendix A.)

C. Recruitment of Student Subjects and Methodology. Ads were placed in the campus student newspaper for full or part-time students to participate in the study. The nature of the study was kept vague and a $10 incentive offered in order to attract a diverse group and avoid self-selection of frequent library users to the greatest extent possible. All IUSB students enrolled in at least one class and who had never been employed at the IUSB library were eligible.

The assessment study was conducted in a room equipped with a microcomputer, the three volume set of the *Library of Congress Subject Headings List*, a brochure explaining the basics of searching the IO catalog, and the assessment instrument on which the student recorded his/her answers. Visual distractions. i.e., posters, books or other printed matter unrelated to the study were kept to a minimum. A brief set of instructions was given that included mention of those printed materials to which the student could refer (in addition to the online catalog itself), and a reminder that there was no time limit on completing the exercises and the survey.

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[*] Many of the multiple choice items were adapted from a library instruction assessment questionnaire developed at the Lewis University Library in Romeoville, Illinois.

IV. Characteristics of the Subject Group.

7,474 students were enrolled at IUSB for fall of 1990, the semester immediately preceding that in which the study was conducted. 38 students participated in the assessment study. Males were somewhat overrepresented in the study, 42% of the group versus 36.4% for the IUSB student population. The subject group also tended to be younger. A large number of students at IUSB are working adults in the age range 25 - 34 years, going to school part or full-time. A majority of study participants fell in the 19 and under and 20 - 24 year age categories, suggesting a significant number of "traditional" students-- those coming to college straight from high school and enrolling full-time. The breakdown of the subject group in terms of class status corresponded fairly closely to the overall distribution. The study participants tended to be a little more "directed" in terms of the percentage with declared majors as compared with the general student body-- percentages for those enrolled in professional programs like business and education were very close to overall figures, but those in majors falling under arts and sciences were overrepresented and those without declared majors underrepresented.

Study participants tended to be fairly faithful IUSB library users: 18 reported that they used the library on a weekly basis; a large majority (71%) described themselves as daily or weekly users. As might be expected, they were "serious" users as well: use of the library for researching a course paper or report was most often cited (27), followed closely by studying for quizzes or exams (23) and course reading assignments (22-- see Figure 1 below.)
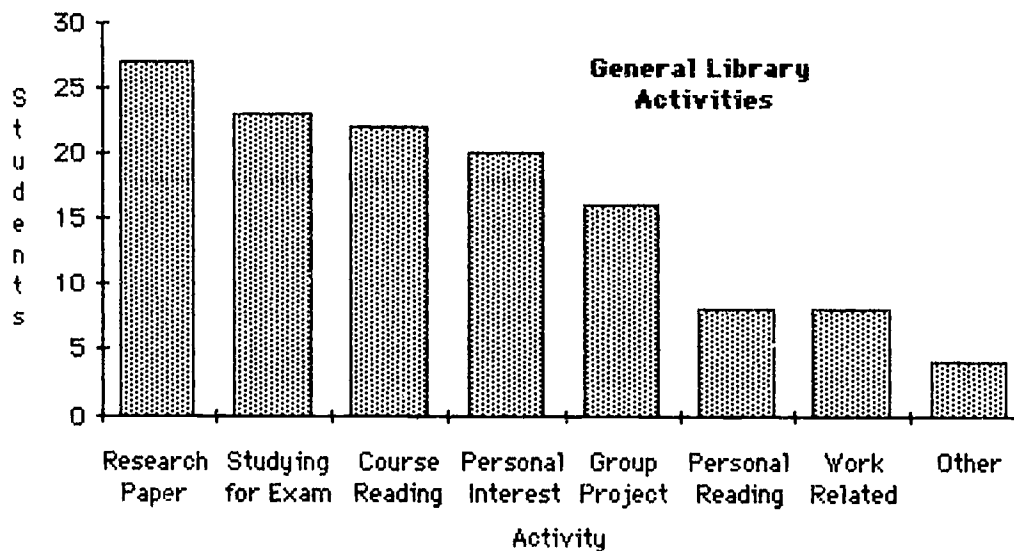

Figure 1.

Although the participants as a whole had a fair amount of experience with computers-- 42% reported using computers frequently or every day and every participant had at least some experience with computers-- they were relatively inexperienced with the library's public access

computers in spite of the rapid proliferation of such systems. 29% had never used the IO (Information Online) computer catalog before the study, and only 7, or approximately 18% of the subject group, used the computer catalog at IUSB more than occasionally. 60% reported never having used a computerized index to periodicals or other database in the library. Interestingly, but not surprisingly, the card catalog was the IUSB library resource most familiar to the participants, with 28 (74%) reporting having used it, followed by books available for loan (24 cites) and the IO computer catalog and periodicals (23 cites each-- see Figure 2 below.)
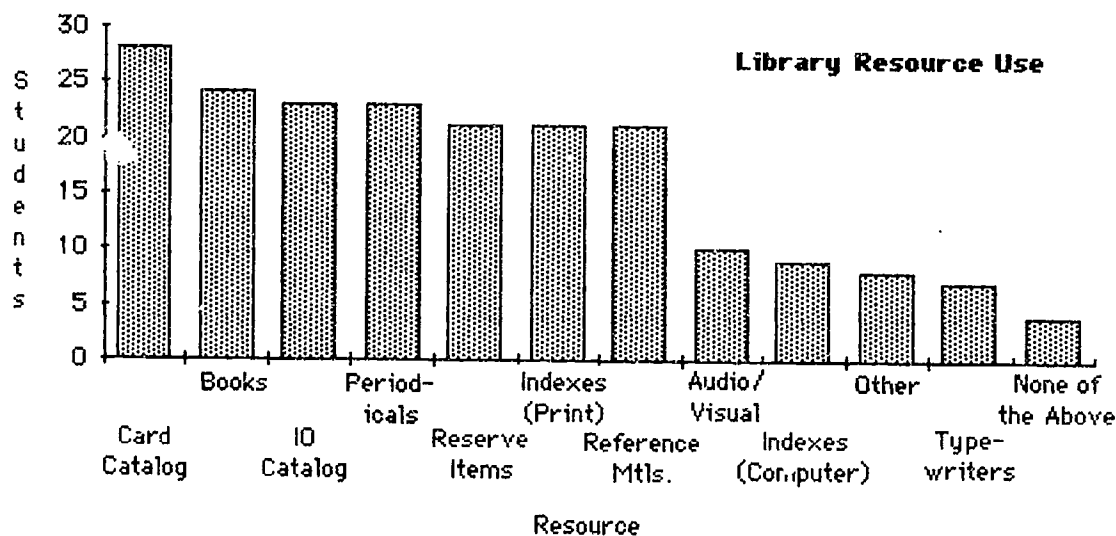
Figure 2.

V. Results of the General Library and IO Computer Catalog Skills Exercises.

A. Overall. The exercises consisted of 8 multiple choice questions testing the student's understanding of the IO computer catalog, and 22 true/false and multiple choice questions testing familiarity with general library terminology, concepts and specific printed library reference tools (see Appendix A.) The students fared poorly in the IO exercise, correctly answering an average of 2.68 multiple choice questions out of 8 (34%). They fared much better with the "traditional" library skills, scoring an average of 14.81 correct out of 22 questions (67%). A Pearson product moment correlation coefficient was computed for the IO and General Library Skills scores. The low correlation (.289) suggests that whatever else the tests measured, they were not drawing from a common skill or knowledge base: success on one exercise did not generally mean success in the other. Since the correlation was so low, there was no justification for combining the two scores into a single composite "index" of library skills.

B. General Library Skills. As mentioned above, the General Library Skills component consisting of multiple choice and true/false questions was designed to test the student's

knowledge of common library concepts, terminology and specific reference resources. 8 scaled statements at the end of the general skills exercise were included to assess confidence in the accuracy of answers to the general skills questions and opinions as to the ease of use of several reference materials/systems. There was a high degree of confidence on the part of the students in their answers to the general skills questions. 26 agreed and 7 strongly agreed that the "answers [they] provided in the General Library Skills exercise are for the most part accurate." Only 3 were neutral (neither agreeing or disagreeing) and 2 checked "Don't Know/N/A (Not Applicable)." Overall, there was a similar high degree of confidence reported in terms of actual use of common reference materials/systems. Large numbers agreed or strongly agreed that the *Readers' Guide to Periodical Literature*, the Library of Congress call number system, and library-related terms like "bibliography", "abstract," etc. were easy to use or to understand (29, 29, and 25, respectively.) Less certainty in understanding or use was reported for materials such as the IUSB library's in-house produced *Periodical Holdings List* (19 agreed or strongly agreed that it was easy to use, 9 were neutral, 3 disagreed and 7 checked "Don't Know) and the *Library of Congress Subject Headings List* (12 agreed or strongly agreed with the statement that it was "difficult to use," 13 disagreed or strongly disagreed, and 13 were neutral or didn't know.) Basic search strategy also produced some ambivalence in the group: 26 strongly agreed, agreed or were neutral when presented with the statement "it is often difficult to know what index to use to find periodical articles on a particular subject"; 16 agreed, strongly agreed or were neutral responding to the statement "knowing where to begin a search for information in the library is difficult."

1. Performance on Individual General Library Skills Items. Overall, the students scored an average of 14.81 questions correct out of a possible 22, or 67%. Among the multiple choice questions dealing with basic search strategy and familiarity with library-related terms, the students had the most difficulty with items requiring them to select the best index to find articles on a particular subject. For example, while 22 correctly identified the *Social Sciences Index* as the best beginning point for a search for current articles in the field of experimental psychology, a substantial number (16) picked the *Readers' Guide* as the logical index to use. Similarly, the respondents were divided over whether to use the *Humanities Index* (20), the *Readers' Guide* (16), or the *Social Sciences Index* (2) to locate references to articles on the subject of modern art. Correct answers could reflect a knowledge of the indexes based on experience and/or library instruction, or simply be based on the student's knowledge of where various disciplines/subject areas typically fit in broad areas like the "humanities" or the "social sciences." The large number opting for the *Reader's Guide* in each case probably reflects that title's high name recognition due to its almost universal use in all types of libraries.

Students also had difficulty selecting the best search starting point from a number of different types of reference material. When asked to pick "the best place to begin looking for an

introductory summary on a topic such as astronomy," 21 chose an encyclopedia, while 17 thought the library's computer catalog was the proper place to begin.[*] No one chose the other options of a periodical index or an almanac. The students generally performed well on questions that tested knowledge of frequently used library-related terms or familiarity with the contents of the computer catalog.

Posing even greater difficulties were those true/false questions that required the student to interpret sample entries from select reference materials. With regard to the *Library of Congress Subject Headings List*, students were almost evenly divided over whether the term "Foreign trade promotion--law and legislation" could be used to search the computer catalog (19 answered true correctly, 18 chose false.) Students who answered incorrectly may not have understood that term subheadings are listed below the main heading in the List. A large number also misunderstood a "use" reference directing them to another form of the listed term: 16 incorrectly decided that "Foreign trade policy" was a valid term for subject searching (the List directs users to use the term "Commercial policy" instead.) Even the familiar *Readers' Guide* caused some difficulties. 12 students incorrectly interpreted a reference to a magazine volume number as a page number. An even greater number, 16, thought that three "See also" references listed under a subject heading were references to individual articles.

Practicing librarians have a limited amount of influence with the publishers of indexes like the *Readers' Guide*, and to a great extent must trust the publisher to design a product accessible to the average patron. Library class and point-of-use instruction come into play where the publisher fails. Some reference tools, like the IUSB Library's *Periodical Holdings List*, are designed and produced in-house, so the librarians have no one to blame but themselves if the tool presents problems. Librarians must remember to think like patrons when designing an important reference item like the *Holdings List*-- use of jargon and undefined abbreviations is especially to be avoided.

Unhappily, the IUSB Periodical Holdings List does not seem to meet the crucial accessibility test (see Appendix A., Part III., questions 17-19). Students were evenly divided (18/18) over whether or not back issues from volume 70 of *Modern Language Notes* are available in paper form in the IUSB Library. The *Holdings List* does not explicitly state that unless otherwise noted in the journal or magazine reference, back issues will be found in paper form on the second floor of the library (the periodicals floor.) Another big source of confusion is the way in which call numbers for periodicals are presented in the List. A Call number is headed by a "PER" on the first line to identify it as a periodical. On the next line is the first part of the call number, followed on the third line by the number after the decimal point identifying the particular

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[*] In the library's instruction program for the basic writing course (W 131), general and subject-specific encyclopedias are promoted as the logical sources to use in seeking background information or an overview of a topic.

title. A surprising number of students (15) answered "true" to the statement that "M" is the first letter in the call number used to locate the journal *Modern Language Quarterly* (M is the first letter in that portion of the number identifying the title-- P is the first letter in the journal's full call number.) Quite a few students appear to be confused about basic call number notation and construction. The various ways in which call numbers appear in the library-- all on one line in the computer catalog, broken up into three lines in the Periodical Holdings List, etc.-- seem to add to that confusion.

The last set of questions in the General Library Skills exercise (See Appendix A., Part III., questions 20-22) presented an illustration of four books with call numbers on a shelf (the books are not arranged in the proper order.) The true/false questions were designed to test familiarity with the way the Library of Congress call number system arranges items on the shelf. While a substantial majority of students (29) correctly answered false to the statement that the illustrated items are in proper call number order, substantial numbers (16 and 13, respectively) incorrectly identified the proper order of the books in the last two questions of the exercise.

2. Statistical Analyses-- General Library Skills. Means were compared and statistical tests run to determine the significance of such variables as participation in library instruction, frequency of library use, and grade point average in predicting performance on the General Skills exercise (all statistical tests, including those analyzing the IO exercise scores mentioned below, were conducted with an alpha level of .05.) Gratifyingly for the library's instruction program, a t-test indicated that the mean General Skills score for those who had participated in some form of IUSB library instruction was significantly different from the mean for those with no library instruction experience. The 20 students who reported attending at least one IUSB library instruction session scored a mean of 15.9; the 16 who had never attended a session managed only a mean of 13.375 (2 students left the survey item blank; t= 2.03; degrees of freedom= 34; prob.= .05.)

One-way analyses of variance revealed no significant differences among the mean General Skills scores based upon frequency of library use or grade point average. Those who reported using the IUSB library daily or weekly obtained a mean of 14.73 (n=26); monthly or once per semester , 15.86 (n=7); less than once per semester or never, 13.8 (n=5). Simply visiting the physical library facilities on a frequent basis is no guarantee of familiarity with the multitudinous library systems and resources, or that they will be used effectively. As discussed above, quite a number of students reported using the library to study. While substantial numbers reported using such resources as the card and computer catalogs, periodicals, books and indexes *at least once*, use of these information resources may be much less frequent than simply finding a quiet place in the library to study a textbook or other course material (the survey did not ask students to estimate the percentage of time spent in particular library activities or use of resources.)

Academic achievement as measured by grade point average (GPA) was not a reliable predictor of General Library Skills success. Interestingly, the 6 students reporting a GPA of 2.49 or lower obtained the highest mean score, 16, versus 14.6 for the 10 B+ students (3.5-4.0). B students (3.00-3.49 GPA; n=10) obtained a mean of 15.385, with C+ students (2.5-2.99; n=7) bringing up the rear with a mean score of 13.751.

C. IO (Information Online) Library Catalog Skills. As mentioned above, the IO Information Online Catalog is a union catalog for the libraries located on the various campuses of Indiana University. IO is based on the popular NOTIS automated library system originally developed by Northwestern University and employed by nearly 150 libraries in the United States (NOTIS is particularly popular with larger academic libraries.) The public access catalog component of IO/NOTIS utilizes a command line interface that requires the user to type in a search code ("T=" for title searching, "A=" for author searching, "S=" for subject, etc.) followed by the search phrase, title, subject, or name (example: "T=Grapes of Wrath".) Pressing the Enter/Return key begins the search. Help screens are available online that discuss in a fair amount of detail the various ways to search the database and the commands and syntax required for successful searching. In the event that a search results in "0 items found," the screen providing feedback suggests some common reasons for failure to retrieve any items.

The IO portion of the library skills exercises consisted of 8 multiple choice questions designed to test the student's understanding of the general layout of the computer system and the various methods of searching. In addition to the computer catalog itself, students had access to: 1. a printed brochure explaining the basics of searching IO; 2. a brief explanation of keyword searching using the code for the IUSB library to limit the search to IUSB holdings (attached to the keyboard itself); 3. a key to the two character codes for the various libraries represented in the IO catalog (attached to the monitor); and 4. the three volume set of *Library of Congress Subject Headings*.

The multiple choi ~ ~stions in this section required the student to conduct title, author, subject and keyword searcnes in the IO catalog. Correct answers required such skills as interpreting screens showing multiple locations for individual titles, discriminating between "guide" screens and "index" screens showing references to individual titles, using the *Library of Congress Subject Headings List* to verify terms for a subject search, interpreting holdings information from a bibliographic record for a serial publication, and using keyword searching to limit a search to IUSB library holdings. (See Appendix A., Part I, Questions 1-8; see also Appendix B. for illustrations of various IO screens.) Through a "screen capture" utility incorporated in the communications software loaded on the computer used in the study, a complete text record of each IO search session was recorded (see Part 3., "Design of the Library Skills Assessment Project" above for a more detailed explanation of this feature of the study.)

1. Performance on Individual IO Skills Items. 23 subjects had at least some prior experience with the IO catalog, and 11 had seen a demonstration of the system at the library. In spite of this experience and high overall confidence in their performance on the IO exercise, the students had problems. The group scored an average of 2.68 questions correct out of a possible 8 (34%): the best score (2 students) was 5 correct out of eight. 1 student failed to answer any correctly. In stark contrast to their performance, 25 agreed and 8 strongly agreed with the statement "The answers I provided in the IO... exercise are for the most part accurate." No one disagreed (3 were neutral and 2 marked "Don't Know.) 25 agreed or strongly agreed that "Overall, searching IO is easy." Still more, 29, agreed that overall, their "attitude toward the IO computer catalog is favorable." This may be due in part to the fact that few "technophobes" were part of the subject group: only 9 agreed or strongly agreed that they were uncomfortable working with computers, and all reported having at least some experience with computers at home, school or the office (16 reported using computers every day or frequently, 22 occasionally or rarely.)

Features of the IO computer catalog that most bothered students involved subject and keyword searching and "index" screens displaying various titles held by libraries in the Indiana University system. A fairly large number, 14, agreed or strongly agreed that "searching IO by subject is difficult" (20 disagreed, 3 were neutral and 1 didn't know.) Keyword searching proved even more frustrating: while 15 agreed or strongly agreed that it was easy, 10 disagreed with the statement and 14 either were neutral or didn't know. A substantial number, 11, agreed or strongly agreed that "understanding the screen display that shows more that one item (book) is difficult."

Even though a fair number of students reported being bothered by the screens showing more than one title, the vast majority were able to distinguish books from materials in other formats (specifically videotapes) and provide the correct answer to question #1 ("How many libraries in the IU system own a copy of the book *Cosmos* by Carl Sagan"-- references to videotapes were intermingled with book records when a title search for *Cosmos* was performed.)

Question #2 ("How many titles are listed under the subject heading 'Art and Science?'"), stumped the majority (21), who apparently mistook the number of subject headings beginning with "Art and Science" (4) with the number of titles listed under the main general heading. 17 students correctly navigated through IO to the list of titles under the general heading of "Art and Science."

Only five students out of 38 correctly answered question #3, which tested the ability to distinguish between a book about a writer and one written by that individual, as well as the ability to interpret screens displaying multiple library holdings. The largest number, 16, answered "0" to the question "How many libraries in the IU system own a book about author Theodore White?" Quite a few of the students tried using White's name in an author search (since the book about author White was an autobiography, this particular book would show up in an author search, but this was obviously not the most efficient means of finding it.) The few who succeeded correctly used the author's name in a subject search ("s=white theodore".)

A plurality, 18, correctly answered question #4 regarding the number of titles in the IU libraries on the topic of "freedom of information in the Soviet Union" This is an impressive feat, as this question probably demanded the most thought (or at least patience) of all the IO questions. There were a couple of avenues leading to the correct answer: for example, a keyword search ("k=") combining "freedom of information" and "soviet union" would produce the desired results. However, looking at the IO search logs, all of those who answered correctly typed in "s=soviet union" and patiently paged through several screens to arrive at the subheading "--freedom of information."

A keyword shortcut was available to correctly answer question #5, "How many titles does the IUSB library have by Farley Mowat?" The student could have typed "k=mowat farley and sb.puc." to display just those titles owned by the IUSB library ("sb.puc." is the code for the IUSB Library-- library location codes can be used in conjunction with a name or term in a keyword search to limit that search to a particular library's holdings.) Even though an example of this type of keyword search was attached well within sight to the keyboard of the computer (such examples are attached to all of the public-access IO computer terminals in the library's reference area), none of the students thought of using a keyword search to answer the question. The minority who answered it correctly (13), just like most of those who were stumped by the question, used a straight author search and simply counted the number of titles with the SB (IUSB library) code in the index display.

Questions 6 and 7 were related in that they required the student to perform a title search and correctly interpret information from a rather lengthy bibliographic record (two screens of information for each title.) Question #6 asked the student to determine how many editions of the *Statistical Abstract of the United States* that the IUSB library keeps in its reference collection. The information-- 11 editions-- is located on the second screen of a two screen bibliographic record. A check of the IO search logs reveals that few students looked at the second screen of the record containing the information they needed-- in fact, many failed to get beyond the title guide screen indicating that 26 titles were retrieved by the title search. Messages on the first screen of the bibliographic record indicating that the record consisted of two screens of information were apparently overlooked. This is not surprising given that the message to press <Enter> to see the next screen of information is located toward the bottom right of the screen and is not emphasized by larger text or highlighting. In all, only 8 students managed to successfully navigate the various titles retrieved by the "t=statistical abstract of the united states" search and to view the second screen of the appropriate IUSB library record containing holdings information.

Question #7 again required a title search (this time for a journal, the *Journal of Dental Education*) and a look at the second screen of a two screen bibliographic record. In addition the student needed to distinguish between a beginning year for a journal title run and the beginning

year for the library's holdings of that journal title (the former date is included on the first screen of the record, the latter in the holdings information note on the second screen.) Not surprisingly, an overwhelming number, 27, apparently confused the beginning year of the journal (1936) located on the first screen of the record with the beginning year of the IUSB library's holdings of that title. Only 6 proceeded to the second screen with the holdings information and correctly identified 1969 as the first year for which the IUSB library has back issues.

The last question, "How many books dealing with the subject of computer crimes does the IUSB library own?," essentially required the student to use a keyword search to limit to IUSB library holdings using the "sb.puc." location qualifier. Only 6 students answered correctly, and of those, all but 1 used the keyword shortcut ("k=computer crimes and sb.puc.") The successful student who did not use a keyword search typed "s=computer crimes" and paged through screen after screen of title listings, presumably counting those showing the IUSB library's two-letter code ("SB".) Most of the other unsuccessful students pursued the same strategy. One of the successful students initially tried to limit a subject search with the location qualifier ("s=computer crimes and sb.puc."), but very quickly corrected the mistake by typing in the keyword search. Even with access to a short explanation of using keyword searching to limit to IUSB holdings, a relatively few students caught on to the technique, or were able to see its appropriateness for the last question. Those who answered the question correctly were perhaps already familiar with keyword searching from experience or from attending a library demonstration of the system-- 11, or not quite 30%, had seen a librarian demonstrate the IO system.

Errors in the IO transaction logs were categorized in a fashion similar to studies done by Jean Dickson (8) and Thomas Peters (9). Some of the more common errors found by perusing the IO session logs included:

- failure to invert a personal name in an author or subject search ("a=farley mowat"; "s=theodore white")
- selection of too broad a subject heading ("s=authors" to find information on author Theodore White)
- improper abbreviations or forms of titles ("t=stat. abstract united states"; "t=statistical abstract u.s."; "t=statistical abstract of u.s.")
- inappropriate use of a subject search ("s=united states abstracts"; "s=journal" to find the *Journal of Dental Education*)
- failure to use correct subject terms ("s=freedom of information in the soviet union")
- uncertainty as to how to start a search (typing "t" and pressing <Enter> to try to initiate a title search)

• failure to press <Enter> to view the second screen of a multi-screen bibliographic record

• misuse of a keyword location qualifier ("sb.puc.") with a subject, title or author search

• interpreting screen messages too literally (typing "number" when instructed onscreen to type the number of an entry to select it.)

• retyping a search in all caps (or all lower case) after failing to retrieve any information

• selection of records for other libraries

Help in the form of a printed "Quick Start" guide to IO basics, online help screens, and the *Library of Congress Subject Headings List* was available to the student during the IO exercise. 28 reported using the help screens in IO itself, 24 used the printed "Quick Start" guide, and only 14 reported consulting the *Subject Headings List* during the exercise. Of the 28 who used the help screens in IO, 24 agreed or strongly agreed that the screens were easy to understand-- the remaining four disagreed or strongly disagreed. (Study of the IO session logs, however, revealed that in only a handful of cases did a particular help screen seem to steer the student in the right direction.) The students who used the "Quick Start" IO brochure were apparently satisfied with it: only one person agreed with the statement that "the 'Quick Start' printed guide... is difficult to understand." Far fewer students (14) reported using the *Library of Congress Subject Headings List* volumes during the course of the IO exercise.

2. Statistical Analyses-- IO Skills. Statistical analyses were conducted to determine if three variables were related to performance on the IO exercise. The variables tested were frequency of computer use, previous library demonstration of the IO system, and frequency of IO use. The variable coming closest to statistical significance was computer use: the 16 frequent computer users (those who reported using computers at school, home or work every day or frequently) scored a mean of 3.125 on the IO exercise, while the 22 who reported occasional or rare computer use managed a mean of 2.364 ($t= 1.877$; degrees of freedom$= 36$; prob.$= .069$.) Greater familiarity with computers in general may mean greater familiarity with the type of command-line software interface used in a system like IO, which in turn leads to greater success with the computer catalog.

In light of the significant role library instruction played regarding General Library Skills scores (mentioned above), a promising variable seemed to be the IO demonstration: the 11 students who had seen a librarian demonstrate IO scored a mean of 3.273, the 27 who had not seen a demonstration scored 2.593. A t-test revealed no statistical significance ($t= 1.602$; degrees of freedom$= 36$; prob. $= .118$.)

Frequency of IO use also seemed to hold promise as a predictor of IO success. Even without "formal" help in the form of an IO demonstration or consultation with a librarian, a student who has had some experience with the system should be more comfortable with the setup and the screen displays. The greater the experience or frequency of IO use, the more likely the student will be familiar with some of IO's "idiosyncrasies" and "secrets" like location-based keyword searching. A comparison of means and a one-way analysis of variance, however, revealed no significance for frequency of IO use. The 13 students who had not used the system prior to participating in the study obtained the highest mean IO score, 2.846. The 5 students reporting "frequent" IO use (every library visit or almost every visit) scored 2.8, and the majority of "occasional" IO users (20) garnered a mean of 2.55.

There are at least two plausible explanations for these results. One is that the IO exercise was quite possibly too difficult for the sample of students tested. Tests that are too easy or too difficult typically lack the power to discriminate well. Another possible explanation is that the IO exercise may have failed to simulate adequately the students' "real world" use of the computer system.

VI. Implications of the Study for IUSB Library Programs and Practices.

A. Library Instruction. The IUSB Library's program of instruction reaches a healthy percentage of students, especially those who take the elementary composition (W131) or professional writing skills (W231) courses (55% of the students participating in the study had been to one or more instruction sessions at the IUSB library-- of those, a solid majority were exposed to library instruction through a writing course.) As mentioned above, those who had some experience with library instruction averaged nearly three points better on the General Library Skills exercise than those who had none. It would seem that IUSB's library instruction program does make a difference.

Students evidently come to IUSB with a fairly solid grasp of basic "library" vocabulary and concepts (for example, knowing the difference between a "bibliography" and a "biography", or the difference between the computer catalog for books and audiovisual materials and a periodicals index on computer.) The library instruction program, especially in the basic composition courses, does a good job of reinforcing the basics and dispelling certain fundamental misconceptions (making sure, for example, that students don't go looking in the IO computer catalog for references to individual journal articles.)

Judging from the results of the General Library Skills exercise, strong emphasis needs to be placed in beginning library instruction on the more subject-specific indexes to scholarly literature-- the humanities, social sciences, business, education, etc. Many students coming out of high

school, or perhaps returning to college after a long hiatus from education, are predisposed to using the old standby *Readers' Guide* for a whole host of information needs.* The broadening of horizons that is ideally the hallmark of a college education should be no less a part of a student's library experience. Some students may have only a vague notion of what terms like "social sciences" or "humanities" mean. As a starting point for undergraduate level research, introductory library instruction should (re)introduce students to these terms, show how such important publishers of reference materials as H.W. Wilson define these terms, and give examples of indexes that survey these areas.

A grasp of broad concepts alone is of course insufficient for productive use of the library. Exposure to a wide range of information sources and familiarity with various conventions for organizing reference material is also crucial. Most of this familiarity must be picked up "on the job," as the students use sources on their own or in consultation with a reference librarian. Library instruction, however, can provide the background to make the work easier. The "true/false" section of the General Library Skills exercise revealed a fair amount of confusion in interpreting information from standard reference sources or understanding some elementary (from a librarian's standpoint) conventions for organizing information -- a fair number of study participants encountered problems with such sources/systems as the *Readers' Guide*, the *Library of Congress Subject Headings List*, the library's own *Periodical Holdings List*, and the Library of Congress call number system. Reference/instruction librarians cannot assume that students know how to identify a citation in even so well known a source as the *Reader's Guide*. Equally problematic for some students is correctly interpreting a "use" reference in the *Subject Headings List*, or understanding that a blank space after a year and a dash ("1982- ") in the *Periodical Holdings List* means that the library is continuing to receive issues of the journal.

Instruction librarians at IUSB have recently (Spring semester, 1992) introduced small group techniques in library instruction sessions. Classes, wherever feasible, are divided up into groups of 2-4 students, and each group is given a "select" reference source (index, subject specific encyclopedia, book of quotations, bibliography, etc.) Groups are tasked with investigating the source by looking in the preface or user's guide, brainstorming terms to look for in the item (topics may be assigned by the librarian or be of the group's choosing), interpreting the information provided by the source, and suggesting ways to use the information they found. The instruction librarian typically provides help to each group during the work period, at a minimum making sure they understand the purpose and structure of the reference source. Students report to the entire class on what they found, with the librarian assisting them, where necessary, in placing the particular source in the larger library context (for example, having the students note the call

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* Many students are familiar with the popular *InfoTrac* computer index to general periodical literature, which has become the computerized "standby." Librarians at IUSB previewed the system several years ago and decided that the students would be better served by other computer indexes-- WilsonDisc's *Social Sciences* and *Humanities* indexes in particular.

number of the item and relating it to a broad subject area using the outline of the Library of Congress classification system provided in a handout.) In the course of group reports, the librarian can also ensure that students know what to do with the information they find. A group reporting on a citation in a periodical index, for example, can be asked to find out, through use of the *Periodical Holdings List*, if the library has the particular journal in question and how to go about tracking it down. The class as a whole can refer to a sample entry from the List in the handout packet.

Such small group work, in addition to providing students with the needed hands-on introduction to library resources, reinforces the idea of the librarian as a facilitator rather than as a dry, "know-it-all" bibliophile. Students also (hopefully) come out of such an instruction session with a better idea of how to help themselves when confronted with the "mystery" of a new index, catalog or other reference source. Response to the small group method among students and course instructors has so far been almost uniformly positive.

In any formal program of library instruction, timeliness and flexibility are critical. One problem with relying too much on course-based library instruction to communicate the needed basics is that a substantial number of IUSB students miss, for various reasons, the opportunity to attend a session. A large percentage of the students participating in the study, 45%, had not been to a library instruction session at IUSB. Much of this can be explained by the large number of freshman participating-- 29%. Students also may delay taking the basic writing course (W131, which mandates library instruction attendance) until well into their undergraduate careers. Additionally, a significant number of students (especially returning adults) take classes part-time, and may delay or miss altogether the basic writing course.

The IUSB library has offered one-time workshops on advanced library topics like the use of government publications. Consideration should be given to offering, in addition to the course-related instruction sessions, workshops on basic library and online catalog skills interspersed throughout the semester. These workshops could be advertised via flyers and the student newspaper, and would hopefully attract those students who have missed the opportunity to attend a course-connected session, or who feel the need for a library skills "refresher."

Another method currently in vogue is the use of interactive computer tutorials. An interactive library learning tool has not been seriously considered at IUSB primarily because of the relative lack of microcomputers for student use. Recent developments such as the addition to the library of a microcomputer lab, the increasing sophistication of multimedia and hypertext authoring software packages, the decreasing cost of such packages, and the growing availability of library-related, easily customized interactive instructional programs, makes the project much more attractive. A computer-based learning tool has several important advantages: its appeal to the growing percentage of students familiar with and excited by computers; the ability to learn at one's own

pace and repeat lessons as many times as desired; immediate feedback and correction of mistakes; and the opportunity to alleviate some of the demand for time-consuming, one-on-one instruction such as interpreting citations, call number arrangement and the like.

B. Other Library Practices. Library instruction is necessary, in part, because of the varying designs and conventions employed by commercial publishers of reference material. The best library instruction provides students with a healthy appreciation for the diversity of reference materials while at the same time reassuring them that most sources require only basic knowledge or skills to be readily accessible and helpful. No library, however large or small, is completely at the mercy of publishers in terms of establishing a better environment for fruitful information searching. Material produced by the library-- directional signs, supplemental documentation or users' guides, home-grown catalogs, databases, or indexes, etc.-- can obviously be very helpful and is in the direct control of the librarians who best know students' needs.

With so many Indiana University library collections reflected in the database, IO is potentially confusing and frustrating to undergraduate students who simply want to know what their library owns in terms of titles, authors, or subjects. (Librarians at IUSB understand that interlibrary loan cannot always meet the needs of the campus' primarily undergraduate population. The NOTIS software on which IO is based may eventually offer a location-based catalog option, enabling, for example, the IUSB library to set its IO terminals to default to IUSB library holdings only. This feature, however, may not be available in IO for some time to come.) As mentioned above, each of the IO terminals in the library has attached to it a printed key to the two letter library location codes used in the system, as well as directions for conducting a keyword search to limit results to IUSB library holdings.* The IO portion of the study revealed that even when attached to the keyboard, the necessarily brief instructions are not always noticed, or if noticed, not always understood.

The library can do more to advertise this valuable feature of the computer catalog. Demonstrations of location-based keyword searching are already a part of virtually every library instruction session. Point-of-use signs and documentation provided by the central computer catalog committee at IU-Bloomington are good, but do not emphasize keyword location searching. The lack of importance attached to location-based searching by Bloomington librarians and computing support people is reflected in the current version of IO (based on NOTIS software version 5.0): the introductory IO screen makes no mention of this keyword technique, nor, incredibly, is there any mention of it in the eight help screens dealing with keyword searching.

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* Full text is as follows: "IO (Information Online) is a catalog to the collections of **all** libraries in the Indiana University system. Use keyword searching (k=) to limit an IO search to IUSB library holdings by combining your term(s) with **and sb.puc.** and pressing <Enter>.

     Example: **k=computers and sb.puc.** (This will bring up a list of items in the IUSB library dealing in some way with computers.)"

The responsibility rests with the regional campus librarians to develop printed advertisements and guides to location-based IO searching. This can (and should) take the form of eye-catching, colorful signs that attract students' attention even before they sit down to the terminals, and in-house produced keyword handouts that highlight use of the IUSB library location code.

A problem revealed by the General Library Skills exercise involved misinterpretation of the information provided in the IUSB library's *Periodical Holdings List*. Unlike subscriptions to commercial services, the IUSB library possesses the means to directly address basic problems of the list's design. The list is maintained locally by means of a text-based database program, and copies of the list are available both in the reference area and on the second floor of the library where the periodicals are kept in call number order. Periodicals are listed in alphabetical order with call numbers, volume holdings, ranges of years for holdings, and notes (appearing under the title) on such things as missing volumes or volumes held on microfilm, microfiche, etc.

Problems with the list can probably be minimized by better labeling of information, the addition of a brief user's guide/key to format attached to the front cover, and avoidance of technical jargon. Vague terms should be replaced with more explicit language: for instance, "incomplete" to denote volumes with missing issues (example: "*Vol. 12 incomplete") should be replaced with the unambiguous "missing some issues." A user's guide with a key to abbreviations or terms used in the list, a short explanation of different formats and their locations (journals, newspapers and periodicals on microform), and maps showing library periodicals locations would enable reference librarians to save time by referring patrons to a clear, concise printed guide in lieu of a verbal periodicals "short course" delivered over and over again.

VII. Potential for Future Assessment of Library Programs and Practices.

A. The IO Computer Catalog. The recent replacement of five IO terminals in the IUSB Library reference area with microcomputers presents the opportunity to monitor usage and collect search logs in the same manner as the assessment study. The IO catalog can be run from the same or perhaps a slightly modified version of the communications program used in the study. Each search command entered by a user would be saved in a file on the microcomputer's hard disk. Such an operation would of course be invisible to the user, and confidentiality would be maintained. The program could be run at various times of the semester on randomly selected IO microcomputers in order to find out more about actual computer catalog usage. Daily or weekly logs could be collected and examined for such information as the breakdown of searches (author, title, subject, keyword, call number), use of keyword searching to limit to IUSB library holdings, types of search syntax/format mistakes, use of help screens, etc. Implications for library instruction are obvious, as instruction librarians could use the information to better tailor IO demonstrations and instruction to actual IO use (or misuse.)

B. Other Library Instruction Issues. For some time IUSB instruction librarians have discussed the possibility of using short pre- and post-instruction tests to better evaluate the impact of the sessions. The results of this study have suggested some areas of concern, particularly in the ability of students to use and interpret basic library systems and sources. Items adapted or culled from the General Skills portion of the study might be used in a program employing short pre- and post- tests with randomly selected library instruction classes.

VIII. Conclusion.

In an era of decreasing resources and increasing calls on the part of taxpayers and their representatives for greater accountability in public institutions, formal assessment programs in academia will continue to proliferate. In fact, academic program assessment may increasingly be mandated. Greer, et. al. (10) describe the University of Northern Colorado Libraries' participation in an assessment program mandated by the Colorado legislature. A bill passed in 1985 states that Colorado institutions of higher education "are accountable for demonstrable improvements in student knowledge, capacities and skills between entrance and graduation." (p. 549)

Academic reference librarians must continue to think of themselves first and foremost as educators, with a legitimate and necessary role in the educational life of every student. Ongoing assessment of library instruction *and* the library's day-to-day practices should be a feature of the library and not just an afterthought. Many faculty members and administrators think of the library as a building and a collection of books and databases: it is up to librarians to remind them that the library is also a classroom, and that the knowledge communicated there is an important part of a well-rounded education. One way librarians can improve the library's vitality in the educational process is to aggressively seek support for assessment, either through one-time "start-up" funds of the type that financed this study, or items in the library budget designed to sustain an ongoing program.

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APPENDIX A.: LIBRARY SKILLS EXERCISES

Part I. IO (Information Online) Computer Catalog Skills Exercise.

Instructions: Use the IO computer catalog to answer the following **multiple choice** questions. Circle the letter of the choice that best answers the question. You may use any printed materials located next to the computer (i.e., Library of Congress Subject Headings, IO "Quickstart" guide, etc.) to aid you in answering the questions.

1. How many libraries in the IU system own a copy of the book Cosmos by Carl Sagan?

   a. 2

   b. 1

   c. 7

   d. 8

2. How many titles are listed under the subject heading "Art and science"?

   a. 4

   b. 1

   c. 57

   d. 16

3. How many libraries in the IU system own a book about author Theodore White?

   a. 7

   b. 6

   c. 8

   d. 0

4. How many titles are there in the IU libraries on the topic of freedom of information in the Soviet Union?

   a. 16

   b. 47

   c. 0

   d. 29

5. How many titles does the IUSB library have by Farley Mowat?

   a. 36

   b. 3

   c. 5

   d. 0

6. How many editions of the Statistical Abstract of the United States does the IUSB library keep in the reference collection?

   a. 1

   b. 5

   c. 3

   d. 11

7. The first year for which the IUSB library has back issues of the Journal of Dental Education is:

   a. 1936

   b. 1959

   c. 1969

   d. 1976

8. How many books dealing with the subject of computer crimes does the IUSB library own?

   a. 15

   b. 3

   c. 1

   d. 0

When finished with Part I., press Q and [Enter] on the keyboard to quit the IO program. Proceed to Part II.

Part II. About Using the IO Computer Catalog

Section A.

1. I used the following in answering the IO computer catalog exercise questions:
(Mark **all** that apply)

a. The "Quick Start" printed guide to the IO computer catalog....   ( )
b. <u>Library of Congress Subject Headings</u> volumes.................   ( )
c. The help screens available in the IO computer catalog...........   ( )

Section B.

Instructions: Mark the single choice for each statement that corresponds most closely to your opinion about using the IO computer catalog.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know/ Doesn't Apply
2. The answers I provided in the IO computer catalog exercise are for the most part accurate.....	( )	( )	( )	( )	( )	( )
3. Overall, searching IO is easy..	( )	( )	( )	( )	( )	( )
4. Searching IO by title is difficult..	( )	( )	( )	( )	( )	( )
5. Searching IO by author is easy......................................	( )	( )	( )	( )	( )	( )
6. Searching IO by subject is difficult....................................	( )	( )	( )	( )	( )	( )
7. Searching IO by keyword is easy..	( )	( )	( )	( )	( )	( )
8. Understanding explanations on the screen is difficult.............	( )	( )	( )	( )	( )	( )
9. Understanding which IU libraries own a particular item is easy...	( )	( )	( )	( )	( )	( )
10. Understanding the screen display that shows more than one item (book) is difficult..	( )	( )	( )	( )	( )	( )
11. Understanding the screen display that shows authors' names or subject headings is easy..............................	( )	( )	( )	( )	( )	( )
12. Understanding the screen display for a particular item (book) is difficult...	( )	( )	( )	( )	( )	( )
13. Limiting a search to items owned by the IUSB library is difficult.....................................	( )	( )	( )	( )	( )	( )
14. The Help screens in the IO computer catalog are easy to understand...	( )	( )	( )	( )	( )	( )

Part II. About Using the IO Computer Catalog

Part II, Section B. cont'd. Mark the single choice that corresponds most closely to your opinion.	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know/ D/A
15. The "Quick Start" printed guide to using the IO computer catalog is difficult to understand.................................	( )	( )	( )	( )	( )	( )
16. Overall, my attitude toward the IO computer catalog is favorable..	( )	( )	( )	( )	( )	( )
17. In general, I am uncomfortable working with computers.......	( )	( )	( )	( )	( )	( )

Part III. General Library Skills Exercise

Section A. Multiple choice. Circle the letter of the choice that best answers the question.

1. The best index for locating references to current articles in the field of experimental psychology is:

    a. Readers' Guide to Periodical Literature

    b. Social Sciences Index

    c. Biography Index

    d. Business Periodicals Index

2. To locate a review of the movie "Platoon," begin by looking in:

    a. a periodicals index

    b. a bibliography

    c. IO computer catalog

    d. an encyclopedia

3. The best index for locating references to articles on the subject of modern art is:

    a. Readers' Guide to Periodical Literature

    b. Social Sciences Index

    c. Humanities Index

    d. Education Index

4. The best source to use in locating a critic's evaluation of the book Iacocca, An Autobiography is:

    a. Business Periodicals Index

    b. Book Review Digest

    c. Dictionary of Literary Biography

    d. IO computer catalog

5. The best place to begin looking for an introductory summary on a topic such as astronomy is:

    a. the IO computer catalog

    b. a periodicals index

    c. an encyclopedia

    d. an almanac

6. You would use a bibliography to locate:

    a. statistical tables

    b. biographies of famous people

    c. a list of books and articles on a topic

    d. definitions of specialized terms

7. The best source for locating information about the latest developments in Eastern Europe is:

    a. a newspaper index

    b. government publications

    c. the IO computer catalog

    d. an almanac

8. The best source for locating a book owned by the IU libraries on the subject of drug abuse is:

    a. Criminal Justice Periodical Index

    b. Encyclopedia of Drug Abuse

    c. IO computer catalog

    d. Sociology Abstracts

Part III. General Library Skills Exercise

Part III, Section A. (multiple choice) cont'd.

9. A short summary of the contents of a journal or magazine article is often called a(n):

   a. reference

   b. abstract

   c. citation

   d. monograph

10. When beginning a research paper you should:

    a. start with specific information and eventually get general material.

    b. always find as much information as you can.

    c. go from general background material to specific information.

    d. use only one source of information.

Section B. True/False. Circle "True" or "False" to answer the following questions.

Using the excerpt from the Library of Congress Subject Headings list below, answer the following true/false questions:

11. "Foreign trade policy" is a term that may be used to perform a subject search in the IO computer catalog or card catalog...   True   False

12. "Commercial policy" is a term that may be used to perform a subject search in the IO computer catalog or card catalog......   True   False

13. "Foreign trade promotion--law and legislation" is a term that may be used to perform a subject search in the IO catalog or card catalog..   True   False

```
Foreign trade control
  USE Foreign trade regulation
Foreign trade enterprises
  USE Trading companies
Foreign trade policy
  USE Commercial policy
Foreign trade promotion (May Subd Geog)
    [HF1417.5]
  UF Export promotion
     Export trade promotion
  BT Commercial policy
  RT Export credit
     Subsidies
  NT Export premiums
     Export processing zones
     Fairs
     Insurance, Export credit
     Trade missions
     Trading companies
  --Evaluation
  --Law and legislation (May Subd Geog)
    BT Foreign trade regulation
```

Part III.   General Library Skills Exercise

Part III, Section B. (True/False) cont'd.

Using the excerpt from the <u>Readers' Guide to Periodical Literature</u> below, answer the following true/false questions:

14. The article entitled "The Joy of Risk" starts on page 122 of the
    May 1989 issue of <u>Harper's Bazaar</u>... True   False

15. There are 3 references to magazine articles under the subject
    heading "Adventure stories"... True   False

16. References to articles on adventure video games are found under
    the subject heading "Video games".. True   False

```
ADVENTURE  AND  ADVENTURERS
        See also
     Voyages
     Voyages around the world
  The joy of risk. J. Etra. Harper's Bazaar 122:162-3+ My '89
  On the royal road to adventures with 'Daring Dick' [R. Halliburton]
   D. M. Schwartz. il pors Smithsonian 19:159-60+ Mr '89
ADVENTURE  STORIES
        See also
     Detective and mystery stories
     Publishers and publishing--Adventure stories
     Western stories
ADVENTURE  VIDEO  GAMES  See  Video  games
```

Using the excerpt from the <u>IUSB Library Periodical Holdings</u> list below, answer the following true/false questions:

17. Back issues from volume 70 of <u>Modern Language Notes</u>
    are in paper form in the IUSB library................................. True   False

18. The first letter in the call number you would use to locate
    back issues of <u>Modern Language Quarterly</u> is "M"................. True   False

19. The magazine <u>Modern Packaging</u> ceased publication altogether
    in 1979.. True   False

LOCATION	JOURNAL	VOLUME	YEAR
PER PB 1 .M6	MODERN LANGUAGE NOTES Continued as MLN, BEG. V.77, 1962 *Vol. 72 incomplete *Vol. 19-65 on microfilm. *Vol. 1-23 on microcards.	*Vol. 1-76	1886-1961
PER PB 1 .M642	MODERN LANGUAGE QUARTERLY *Vol. 27 incomplete *Vol. 25 not owned	*Vol. 1-	1940-
PER HF 5770 .A1 M6	MODERN PACKAGING Continued as PACKAGE ENGINEERING BEG. V.25, JAN 1980	*Vol. 40-52	1967-79

Part III. General Library Skills Exercise

Part III, Section B. (True/False) cont'd.

From the illustration below, answer the following True/False questions:

20. The books are in their proper order on the shelf..................... True   False

21. The book with the call number HF 5343 .B8 should
     come after the book labeled HF 5343 .B42....................... True   False

22. The book with the call number HF 5343 .C59 should come
     before the book with the number HF 5343 .C584............... True   False
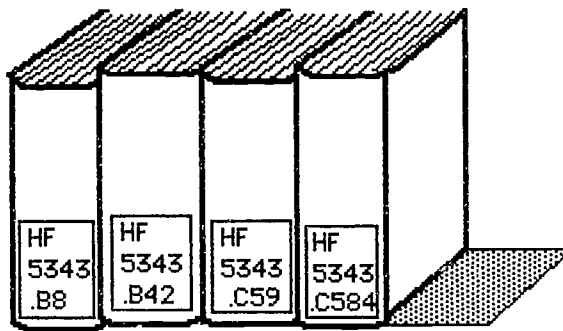
Part IV. About General Library Skills.

Instructions: Mark the single choice for each statement that corresponds most closely to your opinion.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know D/A
1. The answers I provided in the General Library Skills exercise are for the most part accurate	( )	( )	( )	( )	( )	( )
2. It is often difficult to know what index to use to find periodical articles on a particular subject	( )	( )	( )	( )	( )	( )
3. An index like the Readers' Guide to Periodical Literature is easy to use	( )	( )	( )	( )	( )	( )
4. The Library of Congress Subject Headings list is difficult to use	( )	( )	( )	( )	( )	( )
5. The IUSB Library Periodical Holdings list is easy to use	( )	( )	( )	( )	( )	( )
6. The call number system used by the IUSB library to organize books on the shelves is difficult to understand	( )	( )	( )	( )	( )	( )
7. Terms like "bibliography," "abstract," and "periodical" are easy to understand	( )	( )	( )	( )	( )	( )
8. Knowing where to begin a search for information in the library is difficult	( )	( )	( )	( )	( )	( )

Part V. Library and Computer Use Survey

Part V, Section A.

1. I use computers at work, school, or home:

a. Every day.. ( )
b. Frequently.. ( )
c. Occasionally....................................... ( )
d. Rarely.. ( )
e. Never... ( )

2. I come to the IUSB library:

a. Daily... ( )
b. Weekly.. ( )
c. Monthly... ( )
d. About once per semester............................ ( )
e. Less than once per semester........................ ( )
f. Never before today................................. ( )

IF YOU MARKED "f. Never before today" SKIP TO PART VI ON PAGE 9.

3. I use the IUSB library for (Mark **all** that apply):

a. Studying for quizzes or exams.................. ( )
b. Researching a course paper or report......... ( )
c. Class or course reading......................... ( )
d. Meeting with classmates to work on
    a class project................................. ( )
e. Finding out more about a topic of
    personal interest............................... ( )
f. Recreational reading............................. ( )
g. Finding out more about a topic relating to
    my job/work outside of IUSB.............. ( )
h. Other _____

4. I have used the following IUSB library
    resources before today:
        (Mark **all** that apply)

a. IO computer catalog............................ ( )
b. Card catalog..................................... ( )
c. Other computer indexes/databases........... ( )
d. Print indexes to magazine,
    journal, or newspaper articles................ ( )
e. Magazines/Journals/Newspapers.............. ( )
f. Reference materials (Encyclopedias,
    dictionaries, bibliographies, etc.)........... ( )
g. Reserve materials................................ ( )
h. Books in the general collection (i.e.,
    books that can be checked out).............. ( )
i. Sound recordings or videotapes................ ( )
j. Typewriters in the typing room.............. ( )
k. Other (please specify)........................... ( )
_____
_____
l. None of the above............................... ( )

5. I attended a library instruction session for
    the following classes (mark **all** that apply):

a. U205 (University Life Seminar)................... ( )
b. W131 (Elementary Composition)................. ( )
c. W231 (Professional Writing Skills).............. ( )
d. Other (indicate course no. and title)................. ( )
_____
_____
e. None; I have never attended a library
    instruction session at IUSB.......................... ( )

6. I have seen a librarian demonstrate the following
    computer systems at the IUSB library:
    (Mark **all** that apply)

a. IO computer catalog................................ ( )
b. Computerized index(es), i.e.,ERIC (Education);
    PsychLit (Psychology); CINAHL (Nursing);
    Social Sciences Index, etc............................ ( )
c. None; I have never seen a demonstration of
    a library computer system at IUSB................. ( )

7. I have used the following **computer**
    indexes/databases at the IUSB Library:
        (Mark **all** that apply)

a. Social Sciences Index................................ ( )
b. Humanities Index.................................... ( )
c. ERIC (Education).................................... ( )
d. PsychLit (Psychology)............................... ( )
e. GPO (Government Publications)................. ( )
f. CINAHL (Nursing).................................. ( )
g. COMPUSTAT (Business)........................... ( )
h. Other_____
i. None; haven't used any of the above listed
    computer indexes/databases at
        the library... ( )

8. I use the IO computer catalog:

a. Every library visit.................................... ( )
b. Almost every visit.................................... ( )
c. Occasionally.. ( )
d. Rarely... ( )
e. Not before today..................................... ( )

9. I use the IUSB library card catalog:

a. Every library visit.................................... ( )
b. Almost every visit.................................... ( )
c. Occasionally.. ( )
d. Rarely... ( )
e. Never... ( )

Part V.   Library and Computer Use Survey.

Part V, Section   B.

Instructions: Mark the single choice for each statement that corresponds most closely to your opinion about using the IUSB library.	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know/ D/A
10. Overall, the IUSB library is difficult to use.............	( )	( )	( )	( )	( )	( )
11. Library instruction classes are generally helpful........	( )	( )	( )	( )	( )	( )
12. The card catalog is difficult to use...........................	( )	( )	( )	( )	( )	( )
13. Finding books by call numbers is easy.....................	( )	( )	( )	( )	( )	( )
14. Locating government publications in the library is difficult..	( )	( )	( )	( )	( )	( )
15. Using a **computer** index like ERIC or <u>Social Sciences Index</u> is easy.............................	( )	( )	( )	( )	( )	( )
16. Finding out where various collections and departments are located in the library is often difficult...............	( )	( )	( )	( )	( )	( )
17. Reference librarians are generally helpful....................	( )	( )	( )	( )	( )	( )
18. The IUSB library often does not have the materials needed to satisfactorily complete an assignment.........	( )	( )	( )	( )	( )	( )
19. Overall, my attitude toward the IUSB library is favorable...	( )	( )	( )	( )	( )	( )

Proceed to Part VI. on the next page.

Part VI.   About yourself.

Instructions: The information provided on this form is completely confidential. Do not write your name anywhere on this form.   Mark only a single choice for each question.

1. I am:

         a. Male................................. ( )
         b. Female.............................. ( )

2. My age group is:

a. 19 or under.................................. ( )
b. 20 - 24 years............................... ( )
c. 25 - 34 years............................... ( )
d. 35 - 44 years............................... ( )
e. 45 - 54 years............................... ( )
f. 55 - 64 years............................... ( )
g. 65 and over................................. ( )

3. I have attended classes at IUSB for:

a. Less than a year........................... ( )
b. 1 - 2 years .... ( )
c. 3 - 4 years .... ( )
d. Over 4 years .... ( )

4. My current class status is:

a.   Freshman.. ( )
b.   Sophomore..................................... ( )
c.   Junior.. ( )
d.   Senior.. ( )
e.   Graduate student............................. ( )
f.   Other... ( )
Please specify if "Other": _____
_____

5. My academic major is (please be as specific as possible):

_____

Major not declared............................... ( )

6. My current grade point average (GPA) at IUSB is:

a.   Less than 2.00............................... ( )
b.   2.00 - 2.49................................... ( )
c.   2.50 - 2.99................................... ( )
d.   3.00 - 3.49................................... ( )
e.   3.50 - 4.00................................... ( )

This ends the library exercises and survey.   Thank you for your participation.

APPENDIX B.: SAMPLE IO (INFORMATION ONLINE) COMPUTER
CATALOG SCREENS (NOTIS system version 4.6)

```
                    IO: Information Online
        The Online Catalog of the Indiana University Libraries

Use IO to find BIBLIOGRAPHIC and HOLDINGS information (title, publisher,
publication date, etc.), LOCATIONS, and CALL NUMBERS for items held
by the IU Libraries, statewide. IO does not yet contain records for
all items owned by the IU Libraries.


              TO SEARCH BY:          SAMPLE COMMAND:
              Title                  t= american in paris
              Author                 a= poe edgar allan
              Subject                s= sports medicine
              Keyword                k= mars and exploration


For help or information about sending a comment, type H and press ENTER.


_____
COMMANDS:      E Start over    A= Author      T= Title      Q Quit
               R Revise search K= Keyword      S= Subject    H Help

  TYPE COMMAND AND PRESS ENTER==> t=cosmos
```

Figure 1. IO Introductory Screen.

```
IO search request:   T=COSMOS
 AUTHOR/TITLE GUIDE -- 53 ENTRIES FOUND
   1      COSMOS <
   2      COSMOS *
  12      COSMOS A
  21      COSMOS C
  22      COSMOS D
  24      COSMOS E
  32      COSMOS O
  37      COSMOS R
  38      COSMOS S
  40      COSMOS T
  51      COSMOS 1
  52      COSMOSGR




Type NUMBER of guide term that matches desired entry.
Type R to Revise, H for Help, E FOR IO introduction.
 TYPE COMMAND AND PRESS ENTER==> h
```

Figure 2. Author/Title Guide Screen.

```
IO search request:  T=COSMOS

        HELP FOR AUTHOR/TITLE GUIDE -- 53  entries FOUND

Since your request resulted in more entries than can be displayed
on one screen, a GUIDE screen was created. The entire set of
records retrieved (the number is shown above) is condensed on the
GUIDE screen. Choose the point in the alphabetical sequence to
begin browsing the entries and type one of the numbers shown on the
left side of the GUIDE screen. You will then be shown the INDEX
entries beginning at the point shown by that number.



Press ENTER to return to Guide.
Type A for introduction to Author searches, T for Title.
Type S for introduction to Subject searches, K for Keyword.
Type R to Revise search. Type E for introduction to IO.
You may start a title, author, subject or short keyword search from any
screen.


If you need more information, ask a library staff member.

 TYPE COMMAND AND PRESS ENTER==> t
```

Figure 3. Author/Title Guide Help Screen.

```
 TO SEARCH BY TITLE:                        EXAMPLES
Type t=   followed by title or first part   t=distant mirror
of title. Omit initial article (the, a, an, t=journal of social
la, die, etc.) and accent marks.

If you do not know the correct form of a word
in a title, try alternate forms of the word:
- Initials, acronyms  (as such,             t=ama  t=a m a
       or spelled out)                      t=american med
- Abbreviations (as such or spelled out)    t=mr  t=mister
- Numbers (in numeric or word form)         t=25  t=twenty five
- Hyphenation (words with or without)       t=on-line  t=online
- Different spellings                       t=color  t=colour
- "and" (in word form or as "&")            t=past and present
                                            t=past & present


If unsure of title or if search results in "no entries found,"
try shortening title ("t=gone with the" instead of
"t=gone with the breeze") or search by AUTHOR, SUBJECT or KEYWORD.
_____
COMMANDS:      E Start over    A= Author    T= Title    Q Quit
               R Revise search K= Keyword   S= Subject  H Help

 TYPE COMMAND AND PRESS ENTER==> a=sagan carl
```

Figure 4. Title Search Help Screen.

```
IO search request:  A=FARLEY MOWAT

                NO ENTRIES FOUND.  Possible reasons:

1. Common errors:
     a.  Incorrect command (e.g., using a= to search for a title)
     b.  Typing or spelling error
     c.  Using alphabetic 'l' or 'O' instead of numeric '1' or '0'
     d.  Including the initial article in the title (e.g., using t=the fox
         instead of t=fox; using t=an apple instead of t=apple.)
     e.  Not typing the author's last name first
     f.  Variations in spelling or form (e.g., mueller and muller;
         co-operation and cooperation; four and 4; "and" and "&".)
         When unsure of spelling or form, try shortening the search
         term (a=prokof instead of a=prokofieff)

2. Item may not be in IO. You might find the item by checking a card
   catalog, or the library might not own it.
   Contact your local IU library for more information.
   _____
COMMANDS:      E Start over     A= Author     T= Title      Q Quit
               R Revise search  K= Keyword     S= Subject    H Help
Type R to Revise search. Type E to start over.
 TYPE COMMAND AND PRESS ENTER==> r
```

Figure 5. "No Entries Found" Screen.

```
 Hints:

 - Try a different type of search command (AUTHOR, TITLE, SUBJECT,
      or KEYWORD). Type HOW for help on which search to do.

 - Common errors:
      Spelling or typing error
      AUTHOR:  Name must be inverted (a=hemingway ernest)
      TITLE:   Initial article (a, an, the) must be excluded
      SUBJECT: You must use official headings. Some subject headings
               must be inverted (s=chemistry inorganic)

 - KEYWORD: Use features of KEYWORD searching, such as
      Boolean operators, field codes, and truncation (Type k
      for keyword help).



   _____
COMMANDS:      E Start over     A= Author     T= Title      Q Quit
               R Revise search  K= Keyword     S= Subject    HOW

 TYPE REVISION AND PRESS ENTER==> a=mowat farley
```

Figure 6. Revise Search Screen.

```
IO search request:  S=COMPUTER CRIMES
 SUBJECT/TITLE INDEX -- 5 TITLES FOUND, 1 - 5 DISPLAYED

COMPUTER CRIMES -BIBLIOGRAPHY
  1 computer crime security and priv (1979)BB busp:Z5640 .L57
  2 computer crime security and priv (1979)BB rsch:Z5640 .L57
  3 computer crime security and priv (1979)BB swn:Z5640 .L56
  4 computer crime security and priv (1979)BW blaw,clas:Z5703.4.C63 L56
  5 new criminals: a bibliography of (1979)BB swn:Z5703.4.C63 D44 1979




Type LINE NUMBER for bibliographic record and call no.

Type G for Guide. Type R to Revise, H for Help, E FOR IO introduction.
 TYPE COMMAND AND PRESS ENTER==> 1
```

Figure 7. Subject/Title Index Screen.

```
 IO search request:  S=COMPUTER CRIMES
  Bibliographic record -- NO. 1 of 5 entries found

Lin, Joseph C.
  Computer crime, security, and privacy : a selected bibliography / by
Joseph C.
Lin. -- Monticello, Ill. : Vance Bibliographies, c1979.
  22 p. ; 28 cm. -- (Public administration series : Bibliography ; P-284)
  Cover title.
 SUBJECT HEADINGS (Library of Congress; use s= ):
     Computer crimes--Bibliography.
     Electronic data processing departments--Security measures--
Bibliography.
     Computers--Access control--Bibliography.
     Privacy, Right of--Bibliography.

LOCATION: Blgtn BUSINESS/SPEA LIBRARY
CALL NUMBER:  Z5640 .L57




         FOR ANOTHER COPY AT THIS OR ANOTHER LOCATION, press ENTER

 Type M for next record. Type I for Index, G for Guide.
 Type R to Revise, H for Help, E FOR IO introduction.
  TYPE COMMAND AND PRESS ENTER==> m
```

Figure 8. Bibliographic Record Screen.