Online Search Services in the Academic Library

Planning, Management, and Operation

Janice F. Sieburth

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Preface

Management of online information services denotes planning and control of many different activities: equipment purchase and servicing; online vendor contracts and continuing communication; selecting, training, and coordinating searchers; securing funding and deciding on fees; developing procedures, forms, and records; public relations; making reports; and future development. The online search service is not an isolated unit within the library; it must be integrated into reference activities, absorbed into the budget process, and coordinated with other services and library responsibilities such as collection management. Concurrently, the major focus must be aimed at serving the needs of the academic clientele.

An online database search service may start slowly, with one searcher and a few databases; it will usually expand to include all of the reference librarians, several vendors, and the choice of more than 200 databases. In the intense, rushed work day there may be little time for planning and thinking through the most effective method of organization. Changing search techniques, friendlier systems, greater numbers of larger and more complex databases, choices of software, increased costs of information and decreasing costs of computers—all present great challenges for academic librarians who must be aware of current developments and be able to plan for the future.

This book is primarily intended to assist the manager or coordinator of online search services in the academic library. It covers planning and organization, beginning at the preliminary stage as an online services proposal is prepared, continuing through the establishment of the search service, the expansion of services, to the selection of database systems for patrons to do their own searching. Chapters include the management tasks, the responsibilities of searchers, and the procedure manual that guides the organization and insures consistent patron service. Forms are illustrated to help manage the flow of requests and the collection of data for reports. A chapter on finances deals with the dilemma of finding funds for a potentially expensive service and meth-

ods of charging fees. Microcomputers and software are considered in another chapter, and a bibliography of sources is included to encourage keeping up with the information field. The overall approach of this book is intended to be practical and to provide a basis for decision making. Since it is impossible for a printed source to be completely current, principles rather than specific choices have been stressed.

This book was written at the suggestion of Herbert Bloom, senior editor at the American Library Association. He analyzed rough drafts, guided the focus of the book, and advised on content. His interest and encouragement have been instrumental in achieving this final product. Bettina MacAyeal, associate editor, did the final editing, and her comments were very helpful.

My experience as an online searcher began in 1975 at the University of Rhode Island (URI) Library; about the time OCLC was adopted, I began my career as a science reference librarian. Thanks to the Northeast Academic Science Information Center (NASIC), a federally funded project to introduce online searching to academic librarians in New England and adjoining areas, excellent training was available and procedures and forms were developed as needed. Training sessions could last two or three days. A few databases on Dialog or System Development Corporation (SDC) were covered thoroughly, with almost half the time spent on the structure and organization of the equivalent printed index. Management philosophy was discussed, and we followed the established pattern. Even today many of the forms used in Northeast academic libraries are similar, based on the NASIC experience. NASIC staff members even came to the library to help us when we offered demonstrations for faculty in order to answer questions and assist in the uncertain task of connecting up to Dialog.

As the NASIC contract expired, the responsibilities of an expanding online service became greater and I assumed the role of URICA coordinator (URI Computer Access), working with my colleagues to develop schedules, logs, procedures, fees, demonstrations, lectures for classes and better quality services. Most procedures simply evolved, and many ideas for improvements were never implemented because we did not have the time to consider changes. We were indebted to the library's first systems analyst, David Carlson, who installed microcomputers in place of leased terminals, selecting a modem that screened out troublesome line noise. David purchased Pro-Search and encouraged us to automate our collection of search statistics. As other changes were considered, it was not only very difficult to keep up with current online literature, but time consuming and often frustrating to try to find helpful information on a particular search service topic. Therefore, the opportunity to gather together a cohesive manual on search service management was an irresistible challenge.

The material in this book is a combination of personal experience,

discussing with other academic librarians similar problems, attending meetings, and reading the literature. I have admired the outstanding and dedicated work being accomplished by academic librarians in research and college libraries across the country and appreciate their contributions to our collective body of knowledge. The selected references listed are those that particularly contribute to the subject matter of each chapter. Examples are primarily from Dialog and Bibliographic Retrieval Services (BRS) because these are the most widely used online vendor systems. I hope that this book will encourage the staff in any academic library without online reference services to establish them, and that it can provide assistance for library administrators and those who manage and/or participate in online search services. Students will find an overview of the complexities of integrating electronic and printed reference sources.

I am indebted to Arthur Young, dean, University of Rhode Island Libraries, who has encouraged the university librarians to meet the challenges of academic status by allowing research time and providing travel funds and support services. He took the time to carefully read and correct this manuscript. Both Dean Young and Mimi Keefe, chair of Public Services, have supplied good examples of the administrative planning that must be accomplished long before implementation of new systems. They have emphasized services for the academic community and their foresight has guided the development of the university library's computer-assisted services.

I am especially appreciative of my intelligent and energetic colleagues in the Reference Department who provide great inspiration as they cope with high pressure schedules, complex questions, and inundations of students, and still manage to make appointments with faculty and graduate students, study search terms and strategy, and perform excellent quality searches.

This book would not have been completed if it had not been for the faithful and very competent assistance of Mary Tate, who worried over spellings, terminology, and deadlines; struggled with her word processing system; and took pride in turning out a high-quality manuscript.

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Introduction to Academic Online Search Services

The computer-assisted retrieval of information from remote databases has generated substantive changes in the information services provided by the academic library. Vast resources are available to the librarian with access to a computer linked to a telephone line and a password that allows communication with another computer's storage of database files, each composed of thousands of records. These files may contain references to articles, books, reports, and other sources of information; numerical data; full texts of articles; or directories of individuals, companies, or associations. The ability to select from these records only the items that contain information relevant to the question being asked provides a powerful tool for assisting individual patrons seeking specific bits of information or comprehensive coverage of everything that can be found on a particular topic.

Access to online resources has developed at a time when individuals in the research community have found it extremely difficult to adequately survey the accumulated literature on a subject and to keep up with the increasing volume of publications that appear every year. Further, most research today is accomplished by individuals or teams working in highly specialized areas, some of which are in rapidly developing fields such as those in medicine, robotics, and biotechnology, where it is essential to keep up with current developments on a worldwide basis. The combination of evolving computer technology, electronic communication systems, and machine-readable databases has resulted in interactive systems that can be searched online and then directed to transmit a selected list of records concerning the most recent advancements in the field of interest.

As more information has accumulated in machine-readable form, these resources have become even more valuable for supporting the needs of scientists and scholars. The resulting online search service has now become an essential component of the information resources of most larger libraries. In order to integrate computer-assisted information retrieval into the public services provided by the academic library,

however, there must be a considerable investment in equipment, materials, training of librarians, and continuing funding to pay for the information as it is received. Most databases are supplied by commercial vendors who contract with the producers of indexes and abstracting services to acquire and market their online files. Information can be efficiently extracted, but charges can accumulate rapidly unless effective controls are in place. The problem of costs generated each time a search for information is accomplished has required a different view of paying for online resources from the usual purchase procedures for reference books and materials. Coping with these costs, which can be substantial, has often resulted in charging the patron a fee for the information received, a much discussed and controversial policy.

Online search services utilize a trained librarian, or search specialist, as an intermediary between the patron who needs the information and the databases that store an increasing accumulation of records. The necessity of knowing what online resources are available, the protocols for communicating and interacting online, the content and structure of each database, and the techniques necessary for skilled information retrieval have required librarians to attend workshops, training sessions, and classes to become efficient online searchers. This experience forms the basis for working with faculty and students to execute an online search that satisfies their needs.

Workloads must change to accommodate this time commitment to work on an individual basis with patrons, to develop search expertise (which takes practice), and to make schedules flexible enough to provide a responsive service orientation. These efforts must be supported by public service policies that emphasize effective information services. At the same time, continuing costs must be controlled and monitored to insure that budgetary commitments are not exceeded.

The online search service, first set up to meet the needs of research faculty and graduate programs, is gradually becoming assimilated into everyday reference activities. As database resources have broadened, the clientele has changed from a predominance of those involved in research activities to a wider scope, including teaching faculty in business and humanities and students on all levels seeking literature for class projects, term papers, or other assignments. Librarians have learned to use databases as an extension of the sources utilized at the reference desk—another access tool to augment printed indexes and reference resources.

Online bibliographic searching has been a component of the public services of many academic libraries since the early 1970s. Approached with both enthusiasm and skepticism by public service librarians, the electronic delivery of information has forced a reevaluation of the skills necessary for reference work, made charging for service a legiti-

mate, but still controversial, activity, and has reinforced the librarian's intermediary role in the reference process. This personal involvement with faculty and students in the academic library has enriched the interactive process of reference service, but has also required the individual librarian to learn mechanical skills for working with machines; to acquire more knowledge about terminology, indexing procedures, contents of databases, and abstracting services; and to achieve more depth of subject expertise. Increased job satisfaction among librarians has often been mentioned as a result of these accomplishments, along with a recognition of higher value by patrons and academic colleagues.

DEVELOPMENT OF ONLINE SERVICES

Much of the initial development of online services occurred during the time when academic library budgets were being reduced and any plan to add services, particularly one that was new and incurred costs difficult to determine, required extensive and thoughtful consideration. Some institutions recognized immediately the value of this improved access to information and plunged right into implementing computer-assisted bibliographic retrieval. Others waited for funds, expertise, and assurance that this was a service that could be managed by librarians. Waiting gave the industry time to improve the search procedures, time for the machine-readable databases to become larger and more extensive, time for computers and computer storage to become less costly, and time for librarians to become more accustomed to working with computers and electronic files.

Academic and research libraries often added online databases to their resources as a result of pressure from faculty involved in active research programs. Professors who had worked for government departments where agency databases were being utilized soon asked for the same service in their library. Sometimes a computer search could be ordered by mail or the campus computer center purchased magnetic tapes from the producer of an index and batch searches were performed. Many smaller academic libraries, predominately serving institutions with a more general or applied undergraduate program, may have sent the few patrons needing search services to a neighboring institution. For some librarians serving a medical clientele, online searching began with training at the National Library of Medicine and the use of MEDLARS. Others incorporated ERIC searching into the services of a library serving an active education department.

Sara D. Knapp describes searching at SUNY Albany during the "early days" of the late 1960s before the advent of interactive communication and some of the important changes in technology that have

affected the development of an online service. [1] Searching at 120 characters per second on a machine connected directly to a main computer required much patience. Even though there was access to only a few databases and the machine searched one complete strategy at a time without intervention, users were still enthusiastic. It was a totally new concept for most librarians—the service was dependent upon working with a machine and it was very difficult to envision the practical use in the everyday workplace, particularly since each negotiation had a variable charge that could mount up substantially.

By the mid 1970s, computerized searching of bibliographic databases was available in most large libraries. Nevertheless, a survey in 1984 showed that less than half of the academic libraries in the study offered online searching for their patrons. This figure included 83 percent of the universities, 50 percent of the colleges, and 18 percent of the junior colleges. [2] The *Marquis Who's Who Directory of Online Professionals* in 1984 listed 1,929 individuals from academic institutions, 32 percent of the entries. Twenty-six percent spent from one to four hours per month online, while one percent spent more than eighty hours online. [3]

Even among libraries with well-established search services, there is wide variability in the amount of searching being done; the amount of fees, if any; and the location and conduct of the service. Certainly the costs that increase with use, the growing array of resources provided, and the time necessary to work with individual patrons have combined to affect the utilization and implementation of online services. However, as databases have become more diverse and equipment less expensive, even smaller libraries are increasingly accessing online databases for their faculty and students.

Today, patrons are ready to do at least some of their own searching for information. This aspect of online searching, known as end-user searching, presents a challenge for reference librarians to provide an informational retrieval service that combines different approaches and methods. It is exceedingly important that online services be utilized in a manner appropriate to an institution and its clientele, and the organization, utilization, and provision of these online components of an information service must be effective and efficient.

1. Sara D. Knapp, "Online Searching: Past, Present, and Future," *Online Searching Technique and Management*, ed. James J. Maloney (Chicago: American Library Assn., 1983), pp. 3–15.

2. Gayle McKinney and Anne Page Mosby, "Online in Academia: A Survey of Online Searching in U.S. Colleges and Universities," *Online Review* 10:107–124 (1986).

3. Fred Chatterton and Jeff Pemberton, "The Online Professionals—Who Does What. . . . The Marquis/Online, Inc., Project," *Online* 9:15–24 (1985).

GROWTH OF RESOURCES

The development of publicly accessible computerized bibliographic files has been of greatest benefit to those working in the scientific and technical areas. Fast retrieval of up-to-date information on narrow research specialties in actively developing areas of scientific investigation could suddenly be achieved on demand. Databases in aeronautics, chemistry, medicine, and the biological sciences were soon joined by those in education and psychology. This limited number of databases quickly expanded in both quantity and subject areas. The time period of coverage is still variable, but at present may include fifteen or more years. Sources for information on business affairs and management have increased to cover economic data, company information, and a long list of databases on industry, trade, and finance. Databases in the humanities had a slow development, but recently there has been increasing growth in the areas of art, music, and literature. Bibliographic files have been joined by numeric, directory, and full-text databases. Quantity, quality, and complexity have all increased dramatically.

Changes occur so rapidly that it is difficult to maintain an adequate knowledge of the newest databases, the latest improvements in search procedures, and the increasing opportunities for finding information. Two hundred forty-two different databases were used by academic libraries in a survey reported by Martha E. Williams in 1985. However, only seven of them were used 83 percent of the time.[4] While this shows the value of a few basic databases, it also indicates the resource potential that is available as search services expand to meet the needs of a wider group of patrons.

The falling costs of computer technology, the development of telecommunication networks, and the increased sophistication of the database providers have all had a significant role in this development. While most searching is done in the larger research libraries, electronic networks have made abundant resources available to the smallest library, most remote branch library, or outlying campus. Information can be retrieved as needed and documents printed out or ordered online. Many scholars no longer need to travel to larger institutions to have access to worldwide information. Database searching has become indispensable for research in all areas of endeavor.

ONLINE INDUSTRY

The growth of the information industry has been substantial over the past twenty years, and the marketing of databases of bibliographic in-

4. Martha E. Williams, "Usage and Revenue Data for the Online Database Industry," *Online Review* 9:205–210 (1985).

formation has become a big business. The company (vendor) providing the largest number of databases is Dialog Information Services, Inc., with more than 200 files covering subject fields from business and history to chemistry and engineering. Dialog and the System Development Corporation (SDC) established the first markets in the early 1970s and their methods of mounting databases and charging for access to the files have continued to the present time. Fees for use of the early databases were based on connect-time with the company's computer at rates that varied with the individual databases. Additional costs were incurred for printing citations offline, but charging only for use with no minimum fee and no charge for a password insured that even a library with limited use could maintain access.

Bibliographic Retrieval Services, Inc. (BRS) offered the first competition to Dialog and SDC in the mid 1970s by requiring a subscription fee that allowed access to their databases at a standard rate. In order to reduce fees for users, some older files were maintained offline, but searches of these files could be ordered and the results mailed. BRS led the way to increased competition in the online field and additional companies have become database vendors in the 1980s. Most of these, such as Pergamon InfoLine, Wilsonline, and Mead Data Central, offer fewer databases and may specialize in a particular subject area such as law and legal information. Each vendor of databases has its own procedures and protocols for searching and retrieving information from their databases. Charging rates differ and some vendors require subscriptions or charge for passwords. Contracting with one of these vendors allows a library to have access to a range of information resources with one contract, a single billing system, and a uniform search procedure.

The producers of the databases marketed by the online vendors are often publishers of indexes, periodicals, or books for whom the production of the electronic version is a by-product of the publication process. Other producers may only create the online file. Databases are purchased or leased by the vendors and the producers are usually paid royalty fees for the information retrieved from their databases.

Vendors mount these files on their system and arrange and tag the components so that they can be searched using the system's procedures and search language. The charge generated for a database search includes the vendor's connect-time fees, the royalty charges of the producer, communications charges of the networks used to link the library's and the vendor's computers (such as Tymnet or Telenet), and sometimes printing and mailing fees. The search results can be printed in several formats, with the choice of the entire record or selected parts of it; bibliographies can be sorted by title, author, or date; and delivery can be by mail, by immediately printing at the terminal, or by transferring the results to a computer disk. Many vendors have also made it possible to order entire documents through the online system. As ven-

dor's bills are based on use of their databases, the varying needs of a library's patrons make it extremely difficult to judge the budgetary impact. The arrangement is different from buying a book or taking out a subscription, as the charges are not incurred until the database is utilized. The discussion of whether or not to pass on these variable costs to the consumer, or patron, has been heated and continues. Some libraries have absorbed these costs as part of their information retrieval activities, some share the fees with patrons, and others charge users the full cost of a search.

The number of databases available from these vendors continues to grow and there are more choices of systems, each with particular advantages of subject coverage or specific files of interest. Increasingly, vendors are also expanding their markets from institutions to individuals who wish to do their own searching without using the information specialist as an intermediary. A simpler search language, special selections of databases, and different pricing schemes may be utilized in these end user systems.

ACADEMIC CLIENTELE

The type of institution and composition of the academic community will determine the demand for online services. Faculty, graduate and undergraduate students, staff, and administration make up the academic library clientele. Their information needs may be for research, teaching, publications, or decision making. The increasingly computer-literate community will come to expect online information retrieval to be a constituent of the services available to them.

Large research facilities; physical, biological, and medical science faculty; institutes of business and social science; and other programs where knowledge of the latest results of worldwide investigations may be critical, require convenient access to online services. Scientists, engineers, and scholars writing grant proposals, tomorrow's lecture, or a literature review for a new publication will find that an online search will quickly give them a list of pertinent articles, the very latest developments, or confirmation that no one else has reported work on a proposed research topic.

Students in graduate programs writing research papers, theses, and dissertations on very specific subjects usually find that securing information with a computer-assisted search will be quicker and more comprehensive than working with the equivalent printed index. The ability to combine various components of a search topic and to use terminology of the field and names of events or processes for an online search makes it possible to produce results relevant to the student's problem. The graduate student population is an ideal group to benefit from bibliographic