

BETH S. WOODARD

Central Information Services Librarian  
Library General Services  
Library  
University of Illinois at Urbana-Champaign

## Strategies for Providing Public Service with an Online Catalog

Dagmar Schmidmaier (1983) has written that:

The online catalogue is not simply a new tool which performs the same functions, via the same access points as the card catalogue. The online catalogue provides the user with an expanded and more convenient access to bibliographic records and it provides functional capabilities which are much more varied and powerful than those of any other form of the catalogue. The online catalogue is an interactive information retrieval system and its significance lies in the way the user can be assisted.... (p. 2)

In light of this viewpoint that the online catalog is not simply a card catalog on wheels, but a significantly different tool utilizing alternative approaches to providing the patron with not only the traditional card catalog information but also additional information, what strategies can librarians take to enhance service to their patrons both in answering specific questions and in providing instruction in catalog use?

### STRATEGIES FOR DIRECT SERVICE TO PATRONS

The online catalog at the University of Illinois at Urbana-Champaign (UIUC) consists of two separate systems—LCS, purchased from Ohio State University, is a short-record automated circulation system with limited access points by main name entry, title, and call number, and FBR, purchased from Western Library network, which provides full bibliographic records through multiple access points including Library of Congress Subject Headings. The two systems are linked so that those using the full record portion can enter a simple command to find the availability and location of a particular item. LCS, while limited in the number of access

points, has some advantages over FBR in that it is excellent for known items particularly one word titles since it uses words in order in the title. It also has all the items cataloged at UIUC. FBR, with its much more sophisticated structure, has unique access points such as keyword in title which can be manipulated in various ways providing different advantages. However, it provides access to a small number of items—i.e., those cataloged using OCLC which the library started using in 1975.

### IMPROVED USEFULNESS FOR VERIFICATION

The reference librarian or staff member attempting to find materials for patrons often notices that bibliographic citations for items may be totally correct and complete but incompatible with the form or choice of entry in the library's catalog. Examples of this type of citation would include items listed as monographs in a bibliography but which the library has cataloged as a series, or conference proceedings which may have either individual or series titles. The online catalog provides multiple access points to obtain the correct entry. For example, the patron looking for the First Congress of International Physicians for the Prevention of Nuclear War can simply type in Find Corporate Author (KAC—Keyword Author Corporate) Physicians Nuclear to find the papers which are cataloged under the title *Last Aid: The Medical Dimensions of Nuclear War*.

Librarians are also often challenged with incomplete or incorrect citations. Prior to the implementation of the online catalog, reference librarians expended a great deal of time and effort verifying an item with words out of order, extraneous words added, misspellings, or with the subtitle in place of the actual title, only to have to return to LCS or the card catalog when it was discovered in *Union List of Serials*, *NUC (National Union Catalog)*, or OCLC, that the University of Illinois actually owned the item in question. With an online catalog, when patrons give incorrect information it is easy to use keywords in those titles to identify the true or proper title. For example, one patron requested a University of Illinois Press book called *Daughters of Misery; Sisters of Shame*. A keyword in the title search "Find Title Daughters Misery" retrieves nothing. A librarian can either eliminate words such as "Find" "Title" "Daughters" "Misery" or search the stem of the ISBN number to identify works by the University of Illinois Press and combine with a keyword in the title, "Find ISBN 025201# .and. title Daughters." Either search would bring up the correct title *Daughters of Joy, Sisters of Misery: Prostitutes in the American West, 1865-90*. While using a card catalog would have retrieved the correct title immediately because the first word is correct, this example illustrates the reliance of the card catalog on alphabetic cues. If the first word in the title is

incorrect, it would not be retrievable in the card catalog. Similarly, verifying the item by checking *Books in Print* also relies only on alphabetic cues. A patron bringing a title *Economic Problem-Solving in Brazil, 1956-1969* would not be able to identify the title in the card catalog because the actual title is *Politics of Export Promotion*, and the title the patron brought is the subtitle. A keyword title search would have found the item easily.

Access to other materials through the online catalog has greatly expanded its usefulness to librarians. Reference librarians previously had to consult the card catalog, the serial record, the shelflist, the thesis file, individual department circulation files, as well as order files and check-in records in the acquisitions department to gain access to the information that is now available in the online catalog. While librarians in the reference department always had access to the thesis file, main catalog, and serial record, they were frequently asked by other libraries on campus to search these files. Now author and title from the main catalog, full record information for items cataloged from 1975, approval plan materials, orders, and serial check-in files are available to anyone who has access to a terminal. Not only are items not traditional to a card catalog added, but they are added at a much faster rate. While the card catalog filing backlog at one time was two years, the time lag for adding materials to the online catalog is now approximately two weeks.

As Leigh Estabrook (1983) has pointed out: "Potentially, the online catalog can provide access to more recent materials more quickly; and, when it is used for interlibrary loan, the online catalog can more easily provide access to a wider range of materials" (p. 73). The UIUC online catalog has extended its users' capabilities to find information outside the Urbana campus collection through the additional holdings available from the other twenty-eight schools in the LCS network which can be directly charged and borrowed from an online catalog terminal. William Potter's (1986) study shows that this statewide resource sharing via LCS using the interface "resulted in an increase in interlibrary borrowing at one library from 3 percent to 8 percent of the total circulation in just two years" (p. 244). To further service, the Illinois State Library supports an LCS terminal in all eighteen regional headquarters of ILLINET, the state network. As Betsy Wilson (1986) describes it, this access "expands exponentially the ramifications of known-item searching" (p. 6).

The relationship of the statewide LCS with direct patron borrowing also affects strategies patrons take when identifying a title they need in the local collection but to which they cannot gain access because the item is checked out. While some of the LCS direct borrowing use of other schools is for items not owned by this library, some are also for items owned but unavailable such as those which are checked out or on reserve. To most patrons this means only one thing—that they cannot take the book home.

The implication is that LCS direct borrowing may actually serve different needs than traditional interlibrary loan since those statistics are completely separate. In following ILL codes, items owned and checked out to another patron or on reserve are normally not requested from other libraries unless they are missing. Through LCS, patrons can go directly to another school for both unique items in other collections and duplicate items and obtain them in a more timely fashion.

The statewide LCS system also helps reference librarians make better referrals. Students going home on spring break often do research in their hometown college library or travel to nearby locations and wish to know if certain items are held there. This function of reference service will presumably be even better with statewide full bibliographic records.

### READY REFERENCE QUESTIONS

The use of the catalog to answer questions was probably never better illustrated than by Isadore Mudge (1935), who cited the example of the student who used the catalog to study for an exam (p. 11). Winifred Ver Nooy (1940) illustrated the variety and breadth of biographical information available on R. R. Bowker in the card catalog (pp. 313-20). Similar kinds of information also exist in an online catalog, of course, although it may not be so readily apparent.

An example of a ready reference question which can be answered with the online catalog is "how is 'Demming' spelled?" In this case, the patron knew only that "demming" is a concept concerning quality control in factories, that it might be spelled with two *ms*, that it is probably named after someone, and that it is a recent concept. After cursory examination of some dictionaries of terms, a librarian could easily try the online catalog to see if a book was written about this topic. A keyword in title search of "demming" only reveals one title which is a children's book. A keyword in title search of an alternate spelling "deming" reveals eleven bibliographic items with "deming" in the title. A quick examination shows item nine as *The Keys to Excellence: The Story of the Deming Philosophy* to be a likely title. After viewing the full record, the librarian can see that the subject heading "Quality Control" is assigned and is also assured that this is the correct spelling. The online catalog, then, may be used to successfully answer ready reference questions as well as bibliographic or holdings questions.

This example also illustrates that reference librarians must be even more aware of variant spellings because the computer will retrieve only what is entered into it. A certain amount of inconsistency can be absorbed in a card catalog because of the "fumble factor" and because a human

being can examine each element of information and make allowances for variation. Another example of the elimination of the "fumble factor" would be hyphenated words such as test-tube babies or the title *Cultural-Ecological Perspectives on Southeast Asia* in which the hyphenated word must be entered as one word on LCS.

### STRATEGIES FOR SEARCHING A SUBJECT

Douglas Ferguson (1982) notes that the online catalog "users report subject search objectives in numbers almost as high as specific item search objectives. The percent of subject searching is far higher than reported in studies of manual catalogs" (p. v). Subject searching in any catalog is a difficult proposition. In an online catalog, there has been much debate on the extent to which the traditional subject headings are adequate.

In an online catalog such as UIUC's, there are many ways a librarian can help a patron gain access to library materials by subject. The most obvious one is through the use of Library of Congress Subject Headings available online in an authority file. By accessing this authority file, all instances of a subject heading, whether in the first subfield (which would show up in an alphabetic LCSH or in a card catalog), or in subsequent subfields (which would not show up in the regular alphabetic listing), are brought together in one listing. This ability to see all subject headings at a terminal is a very useful feature. For example, a "Term Subject Somalia" or T S Somalia search brings together such alphabetically-dispersed headings as Explorers—Somalia—Biography and Somalia—Discovery and Exploration or Herders—Somalia and Nomads—Somalia or Military Bases, Russian—Somalia and Russian—Foreign Relations—Somalia and Somalia—Foreign Relations—Russia.

The use of the Boolean operators AND, OR, and NOT combining subject headings or subject headings with corporate authors or words in the title is a potentially powerful tool. At present it is somewhat hampered by the arbitrary limitation of the number of items searchable at one time in an effort to keep computer search time from being too lengthy. This "intermediate hit" problem, so called because of the message given by the computer, keeps subjects with large numbers of items, such as Illinois or United States, from being searched. When used appropriately, users can combine such different headings as "Narcotics, Control of" and "Smuggling" in order to find books with both subject headings.

Implied Boolean searching is a very powerful strategy available to online catalog users. This allows the user to find a subject term anywhere in a subject heading in the bibliographic file and to combine it with another subject term anywhere in a subject heading merely by connecting

the two terms with a double-dash. For example, instead of entering "Find Subject Narcotics, Control of .and. Subject Smuggling," all that is necessary is to type in " Find Subject Narcotics, Control of—Smuggling," as if smuggling was a subfield. This search will retrieve items that contain both terms wherever they appear in the subject tracings. They need not be part of the same tracing. While implied Boolean searching is very useful, the librarian must be careful to watch for false drops. For example, if "Find Subject United States—Defense" is entered, the patron and the librarian will be surprised to find a book by the title *Football's Fierce Defenses* retrieved. If one looks at the tracings or the access points for that record, it is obvious that all the subject headings are strung together making defense from "Football—Defense" and United States from "Football Players—United States—Biography" retrievable as if they were together in one subject heading. If the patron or librarian had gone into the authority file first, inputting "Term Subject United States—Defense" and finding the bibliographic records directly from that file, only five records would have been retrieved, all with the exact heading United States—Defense such as the record for *Defense Challenges of the 80s*. Implied Boolean searching allows manipulation of subject subfields, allows the user to narrow or broaden the number of items found, and sometimes eliminates the problem of intermediate hits.

Probably the most useful strategy for finding subjects in an online catalog is using the keyword in title approach. While librarians have always tried to teach their clientele the usefulness of tracings in subject searching, the prior necessity of a known title precluded all but a few users from taking advantage of this knowledge. Using keywords from probable titles helps identify both titles and subjects because nonfiction titles are often indicative of subject matter. For the patron looking for a few books on the Strategic Defense Initiative or drug use in sports, entering "Find Title Star Wars Defense" or "Find Title Drugs Sports" is a good way to get around LC's inevitable time-lag in keeping up with terminology. Using the ability to look at the full record to identify tracings or the headings or expand commands which list tracings and tracings along with *see* and *see also* references, respectively, allows the patron to identify relevant subject headings such as Ballistic Missile Defenses, Weapons Systems, Space Weapons, or Strategic Defense Initiative or Doping in Sports or Anabolic Steroids to use for a more comprehensive search.

Truncation is another strategy online catalog users, both librarians and patrons, can use to identify all items in the system on a particular subject. A person entering "Find Subject Smoking" retrieves 156 bibliographic items. Combining the search with a Boolean "OR" with cigarette# and smok# retrieves 171 items—15 more than the subject search alone.

## PATRON USE AND INSTRUCTION

### Physical Access

Patrons can physically access the UIUC online catalog in a number of

ways. With a card catalog, patrons had to use the central card catalog to access the entire collection. Individual departmental libraries' card catalogs listed only what was in that individual library. It was especially difficult for people in interdisciplinary studies to access the library's holdings in several locations, and it also meant that undergraduates sometimes limited themselves just to what was located in the undergraduate library because the library system was too intimidating.

For the online catalog, 250 terminals, at least one in each of forty departmental libraries, are provided. Busier units, like the undergraduate library or the information desk in the main card catalog area, have multiple terminals—twelve and twenty-four respectively. Patrons can also dial up the system from campus offices, from dorm rooms using a local computer hookup called Localnet, or from across the state or the country through the use of a modem and a personal computer. Not only can patrons search the database from outside the library but also charge out the materials to themselves and have materials sent to their campus address. This remote access to the entire collection has affected not only how patrons access the collection but also the questions reference librarians receive over the phone. Librarians answer fewer holdings questions from other libraries within the campus but answer more procedural and instructional questions about the online catalog from patrons.

### **Modes of Access**

Two searching modes are available for patron use. The first is the command mode in which the patron must know the command structure in order to access the online catalog. This mode is available on all terminals, but it is the only mode available on almost all staff terminals on over half of the patron terminals in the library and on all dial-up ports. While LCS has a fairly simple and easy to use command structure, FBR is a little more complex. This complexity often creates problems for users who are not familiar with the two systems and their separate command structures. For example, a patron wanting a book about Enuma Elish, the Babylonian creation myth, would normally just look in the card catalog under the title of the work not realizing what kind of entry it was. He or she would have no idea that to find this in the online catalog necessitates an author-uniform title search. A key search entering "Key Enuma Elish" would identify the number of times the term or phrase is used in FBR and the appropriate search keys such as "Term Author Uniform Title" or "Find Author" in the bibliographic file.

In an attempt to free the user from questioning the librarian as Dagmar Schmidmaier (1983) suggests, an interface program was written to allow the patron to use the system by answering simple questions without

knowledge of system commands and protocols (pp. 3-4). The interface works on a personal computer rather than on the mainframe allowing customizing of individual terminals with specific locations or local idiosyncrasies and borrowing policies rather than reliance on a universal statewide system. This allows interaction to be at the local level within the personal computer rather than consuming time with long-distance telecommunications. Some of the advantages are that a personal computer cannot formulate a "wrong" search as in mixing LCS commands with FBR or in entering the wrong number of letters. It is especially good for first time users and for searching other LCS campuses. Normally, those commands would have to be reentered for each campus searched, but the interface strings the same command with different location codes very quickly. Terminals with the interface program can also access the system by commands so that both modes are available at one terminal. Unfortunately, the interface is not yet available for purchase by individuals so that all dial-up users must learn the commands.

An analysis of online catalog questions recorded by the information desk staff before and after the introduction of the interface program indicates that patrons asked fewer questions about the online catalog after it was implemented. Monthly LCS terminal statistics created from transaction logs indicate that for the month of December 1986, interface terminals averaged 11,000 LCS transactions per month while dumb terminals ranged from 326 to 5,400 depending on their location.

### **Administrative Structure**

These divergent methods of physical access and searching modes have created demands for different services. The library has responded administratively to devise strategies to deal with these service demands.

Douglas Ferguson (1980) stresses "that public service librarians cannot sit on the sidelines while patron access systems are being discussed, planned, and built" (p. 9). The notion that reference librarians can make meaningful contributions in the planning stage is one that has been addressed substantially in the literature. "It is essential that the reference librarian, as a knowledgeable and frequent user of the catalogue, help to shape the product, particularly in terms of content, format and the man machine interface" (Schmidmaier, 1983, p. 6). Similarly, public service librarians should also be represented on committees involving maintenance of the online catalog to provide essential representation of the user's perceptions in the ongoing development of the system. At UIUC, the Online Catalog Advisory Committee is made up of both technical services and public services librarians who make recommendations about changes in the interface program, port assignments or allocations, etc. This way the

people who observe the problems that patrons encounter with the system have input into potential solutions.

### **Telephone Center**

Since library users no longer need to be physically in the library to utilize its collections or services, a large number of phone requests are received. The UIUC Library has set up a Telephone Center for phone queries dealing with routine online catalog procedures such as renewals, saves, charging, or simple known-item searches of both systems and state-wide LCS. As was the case at Ohio State University, UIUC library users have also found that the ability to renew books over the phone or to have books charged out and sent to their dorm or campus office "has funneled many of the questions formerly asked of the reference desk to the student workers in the Telephone Center, saving the professional staff for more involved information and reference needs" (Hodges, 1982, p. 329). The Telephone Center also doubles as a central reporting system for terminal problems from departmental libraries as well as for dial-up problems.

### **Information Desk**

The Information Desk at UIUC was established in its present form and with its current mission in 1980, two years after the implementation of LCS. The reference staff experienced an increased workload in helping patrons learn the system finding that they not only needed to go through a careful problem analysis process, but also needed to share this process with their clientele so that patrons could do it on their own (Ferguson, 1986, p. 30). It was decided to use paraprofessional staff to ease the burden on the reference desk. Among other duties, information desk staff instruct patrons in the use of the card catalog, but particularly in the use of the online catalog in an informal impromptu manner. In addition, a great deal of time and effort is spent in troubleshooting and interpreting results and messages on the computer. Similar needs for user assistance were identified by Pauline Hodges at Ohio State University (Hodges, 1982, pp. 331-32).

### **Instruction**

Strategies for instructing patrons to use the online catalog must have greater variety and depth than those used for the card catalog. Although patrons may not have really known how to use the card catalog, they could usually depend on the alphabetical arrangement and browsing to find what they wanted. This is not the case with an online catalog.

Betsy Baker (1986) has stressed the need to teach patrons concepts such as file structuring and indexing and not just procedures. She contends that

teaching concepts makes what patrons learn transferable to other situations (pp. 39-40). Betsy Wilson (1986), in a presentation at the 1986 ALA Conference, also discussed the online catalog as a teaching tool to teach concepts of Boolean searching and keyword searching that patrons can use in other databases (p. 7). A recent article stresses that "attention to information-seeking strategies and judging relevancy should be the ultimate goals of most user training, not the mechanics of using a particular index or system (Marchionini & Nitecki, 1987, p. 105).

One of the major concerns of a public services librarian attempting "to help and train users to harvest the benefits the library catalogue can yield" (Satija, 1982, p. 218), is that people learn in different ways. Reference librarians are well aware that no one method of instruction can meet the needs of all users (Baker & Nielsen, 1983, p. 160; Baker 1986a, p. 91). Not only do people have different backgrounds, widely-varying experiences with libraries and computers, and various expectations, but also various learning styles which are best approached with the development of a variety of instructional methods.

Pat Swanson reported on a survey concerning reference staff involvement in planning and implementing online catalogs by the RASD Reference Services in Large Research Libraries Discussion group. She cited recognition of a need for several instructional formats including "signs, printed handouts suitable for wide distribution, printed instructions affixed near terminals, detailed user manuals, instructions on the CRT screens, audiovisual presentations and structured presentations to groups" (Swanson, 1983, p. 24). Kranich et al. (1986) have also reported that AV programs, training sessions, manuals at the terminals, manuals for purchase, and posting of command charts have been listed as desirable improvements to computer catalog service (p. 139). Research at Ohio State University reported that 34 percent of online users "learned from printed instruction materials at the terminals" and suggested that "it is important, in addition to offering formal and informal instruction, to concentrate efforts on providing simpler terminals and instruction sheets both of which are designed to prevent patron errors at the point of use" (Pease & Gouke, 1982, pp. 290-91).

Self-instruction materials for patrons at UIUC include a series of online help screens for both systems, eight handouts describing the content of the database and general search techniques, and four handouts describing special techniques such as Boolean and truncation searching and the separate system commands and codes. The FBR Starter Kit and Workbook, originally prepared by Gary Golden, is a good introduction to the system but is not available to the public. The reference library, in addition to creating terminal help sheet summaries, is preparing a more detailed manual for patrons to use beside the terminals. The Online Catalog User

Services Office is also developing a manual which would be sold to patrons wanting more detailed information about the system.

Sandra K. Ready (1983, p. 123), Donna Senzig (1983, p. 85), and Mary E. Caspers (1984, p. 201) have all written about the importance in all instruction of hands-on experience during training and the actual interaction with the system using a terminal. The Undergraduate Library sponsors a series of workshops each semester which involve first a demonstration of the features of the system using slides and then an opportunity for guided practice searching.

While these training sessions are "beneficial to those who attend them,... research suggests many users will not be reached through such instructional programs" (Caspers, 1984, p. 200). Noticeable throughout a great deal of literature about online catalogs is the emphasis that "self-paced and self-directed methods for learning OPAC are appreciated and will be used by patrons" (Ferguson et al., 1982, p. 67). One possibility that should be explored further is computer aided instruction (CAI) tutorials for both patron instruction and training of library staff members. CAI could encompass the desirable aspects of self-paced instruction with the interactive hands-on training at a terminal as well as its capacity to be moved out of the library to wherever the user needs it.

The expanding of the system to the rest of the state in the near future provides a unique opportunity for sharing public service strategies. Every library in the state can become a laboratory for testing methods of online catalog instruction, training staff members, and finding new strategies for providing public service. Librarians must stop thinking of online catalogs as computerized cards and remember that: "The card catalog, then, is not an end in itself, but a means to the end of more effectively serving the reader in his attempt to utilize the library's resources. The catalog should be a dynamic and flexible instrument, molded to its user and the collection which it records" (Kuhlman, 1951, p. 269).

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