Patterns of Searching and Success Rates in an Online Public Access Catalog

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A survey of 430 users of the online catalog (LCS) at Ohio State University Libraries found that most users are undergraduate students (68 percent) and that the majority of users (95 percent) choose the online catalog as their first source of information. Of the users surveyed, fewer performed known-item searches than previous catalog use studies have shown, and their success rates for these searches generally were higher than reported in earlier studies. Success rates also suggest that there is a group of online catalog users who are highly motivated to seek out instruction and learn to use the catalog well.

n July 1, 1982, Ohio State University Libraries announced the closing of the card catalogs, terminating the dual catalog system which had existed since 1975, when the first online public access terminal became available. In anticipation of the change to a single, online catalog the libraries conducted an intensive informational and instructional program, and had in place more than 115 public-use terminals. Because the few existing studies of OSU's online catalog are either quite limited in scope or predate the changeover by several years, the closing of the card catalogs raised a number of questions regarding the use of the Library Control System (LCS) as an online catalog.[1] The questions which this study addressed are:

- What are the characteristics of the online catalog users?
- Are LCS users aware that the card catalogs are closed?
- Do patrons use LCS first, in preference to the card catalogs? Do they check the card catalogs if a desired item is not found in LCS?

- What types of searches are performed in the online catalog and how successful are they? How do search patterns and success rates compare to previous catalog use studies?
- What effect, if any, do length of experience and group instruction have on search success?

At this point, it is appropriate to describe briefly the online catalog at Ohio State University.

THE ONLINE CATALOG

The online catalog at OSU evolved over a period of more than twelve years.[2] LCS first became operational in 1970 as a circulation system for a large, decentralized library. As such, it was a command-driven system designed for staff use only, which allowed remote searching and charging using brief records converted from the shelflist. In 1975 the first public-access terminal was made available and in June 1978 the capability for full MARC storage was added. Eventually, full bibliographic records became available in LCS for OSU titles added since 1974. In addition, in 1979

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full records were added for all State Library of Ohio books. The system also lists OSU titles on order or in process, as well as some special microform collections.

Access to all records is available by author, title, and call number. Access by added entries and subject headings is available for OSU titles added since 1974 and for all State Library of Ohio titles. As indicated in the list of search commands in figure 1, all searches require a three-letter command, followed by full words or a search key. This list includes only those commands for which patrons are given instructions.

OSU maintained a dual catalog system, card and online, until July 1982. In preparation for the changeover to the online catalog, a campus-wide informational and instructional program was undertaken. The program was designed to perform several functions: inform faculty and students of the changeover (i.e., the freezing of the card catalogs), promote the use of LCS, allay fears about rumored removal of the card catalogs, and provide an avenue of voluntary instruction for anyone who needed it.

The opportunity for instruction was considered especially important with the changeover. Patrons now had no choice in looking for the latest material. Since 1979, all freshmen have been receiving basic LCS training through a required library instruction program. A workshop, intended primarily for upper classmen and graduate students, has been offered since January 1980. Brief printed instructions have been available at the terminals since 1975, and a longer manual since 1980.[3] Online help displays, still under development, were first added to LCS in 1982.[4] Given this variety of options for learning to use LCS, the study was designed to identify how many of the users surveyed had had group instruction and what effect, if any, this instruction had on search success.

METHODOLOGY

The Main Library of the Ohio State University Libraries system was chosen as the survey site, as there are twenty-four public access terminals in a large open area near the Circulation Department as well as three terminals in the union card catalog area. The survey questionnaire was distributed from 9:00 a.m. until 5:00 p.m. over a period of four days in November 1982 to five hundred patrons who were asked to supply the following information while they worked at the terminals: college major or subject discipline, sex, university status, length of use of LCS (weeks, months, year or more), and whether, if the item searched is not found in LCS, the patron will check the card catalog. The next section asked what the patron was looking for (known item and/or subject), if it was found and, if so, what the call number was, and what commands were used for the online search.

Subsequent questions were: Had the patron tried to locate any of the desired items in the card catalog before using LCS? Had the patron received LCS instruction in a user education class or li-

LCS Initial Search Commands

Author	AUT/ name, all or part
Title	TLS/ 4 + 5 search key
Author and title	ATS/ 4 + 5 search key
Subject	SUB/ subject heading, all or part
Call number	DSC/ call number, specific item
Call number	SPS/ call number, shelf position (browsing)

LCS Secondary Commands and Options

Short record	DSL/ line number	
Full record	FBL/ line number	
List of authors or subjects	TBL/ line number	(follows AUT/ or SUB/)
Serial modifier	TLS/ 4 + 5 /SER	(limits search to journals, magazines,
	ATS/ 4 + 5 /SER	and other serials)

FIGURE 1
LCS Public Search Commands

brary workshop? Was the patron aware that only LCS lists newly acquired books? Comments also were solicited.

At the end of the survey period, all the questionnaires were checked, replicating the search patterns the patron specified, and 430 questionnaires were judged to be complete enough for analysis. Although the questionnaires included responses about subject searching, this report focuses on known-item searches.

RESULTS AND DISCUSSION
User Characteristics

In response to the first group of questions, it was found that characteristics of the participants are similar to those reported in previous studies (see table 1). Most catalog users are undergraduates and, in this survey, 68 percent identified themselves as such. Another 26 percent were graduate students. Only 3 percent were faculty, while another 3 percent did not give their status or were not OSU students or faculty. The results of the Council on Library Resources online catalog use study indicate that most *online* catalog users are male.[5] In this survey, 47 percent marked this category. Another 32 percent identified themselves as female and 21 percent chose not to indicate their sex.

Nearly half (49 percent) of the respondents indicated they have used LCS for a year or longer. Another 23 percent have used LCS for several months, and 28 percent for less than a month. With respect to their awareness of the changeover to an online catalog, 75 percent indicated they were aware that only LCS lists newly added titles. That 95 percent did *not* check the card catalog before using LCS indicates a definite preference for or willingness to use the online catalog as a first source of information. However, 58 percent said that if their LCS search failed, they would try the card catalog. This suggests distrust of LCS or lack of confidence in the searcher's own ability to use it successfully.

The results of the question regarding group instruction were of special interest. Of the responses analyzed, 35 percent had had LCS instruction in the undergraduate user education program or other class, and another 13 percent had attended a library-sponsored workshop. This is nearly half of the online catalog users who were surveyed.

Search Patterns

Previous card catalog studies have shown that users prefer to search by author rather than title, even when both pieces of information are available. LCS search commands permit the use of either one or a combination of both. As shown in table 2, of those indicating the command used, only 18 percent searched by title. Another 14 percent used author only and 16 percent used a combination of author and title. Thus, at least 30 percent used some form of author access. Altogether, known-item searching represents 48 percent of the total number of searches performed. Subject searching represents 35 percent of the total. This result is similar to previous card catalog use studies but is lower than the results of the CLR study.[6] If

TABLE 1
CHARACTERISTICS OF ONLINE CATALOG USERS

Sex (N=430)		Status (N=427)	
Male	47%	Undergraduate student	68%
Female	32%	Graduate student	26%
Unspecified	21%	Faculty	3%
		Other/Unspecified	3%
Length of use (N=422)		Group instruction (N=418)	
Month or less	28%	Class	35%
Several months	23%	Workshop	13%
Year or more	49%	Neither	52%
New titles only in LCS (N=410)		Use card catalog	
Yes	75%	Before LCS (N=421)	5%
No	25%	After LCS (N=410)	58%

N=Number of responding online users.

TABLE 2
SEARCH PATTERNS AND SUCCESS

Type of Search	Patterns				Success	
	N	%	% – U	%K	N	%
Author	96	14	17	30	74	77
Author and title	112	16	19	34	95	85
Title	124	18	22	37	100	81
Known-item	332	48	58	101	269	81
Subject	244	35	42	—	165	68
Unspecified	122	18	—	—	81	66
Total	698	100	—	—	515	74

N = Number of searches performed; % = Percent of number of searches.
% – U = Percent of number of searches performed, excluding unspecified.
%K = Percentage of the number of known-item searches.
Percentages have been rounded to the nearest whole figure.

unspecified searches (representing 18 percent of the total) are discounted, known-item searches go up to 58 percent, and subject searches increase to 42 percent, a pattern similar to the CLR results and to that reported by Moore in her 1979 study of LCS.

When only known-item searches are considered, patrons show a slight preference for searching by title, which accounted for 37 percent of all known-item searches. Author-title searches followed at 34 percent, and author searches were the lowest number at 30 percent.[7] Pease and Gouke, in a recent study, found that 70 percent of online catalog searches in the OSU Main Library were for known items.[8] They also found that a much higher percentage (68 percent) of search approaches were by title. The reasons for the higher percentages of known-item, and specifically title searches, in the Pease and Gouke study are not known, but might be attributable to their small sample size, to differences in research design and data analysis, or to some other unknown factor.

Success Rates

The success rates for known-item searches in this study are similar to, or slightly higher than, those reported in previous card and online catalog use studies. Overall, known-item searches had a success rate of 81 percent. The author-title search had the highest success rate (85 percent), and the author search had the lowest rate of 77 percent. This difference might be due to the more "forgiving" nature of a search key; that is, the user only needs to know, and enter correctly, four letters from a last name and five from the first title word to perform an author-title search, but the author search requires more complete information. The title search success rate of 81 percent is higher than that found by Pease and Gouke. This could be due to some of the factors mentioned above or to others, such as a larger number of experienced users in this study or to improved LCS system features. It also should be noted that, in this study, most failures to find known items were user failures rather than collection failures (i.e., item not owned).

The low success rate of 68 percent for subject searches was not surprising. The LCS subject search requires the use of a correct Library of Congress subject heading and, at this point, the online catalog has limited cross-references for the subject file. The results of the CLR study indicate that subject searching, while more popular than previous studies have shown, also is problematic for many users. In-depth analysis of the subject searching data from this survey is being completed for a separate study.

The analysis of the effect of length of use and group instruction on search success produced some interesting results. Viewed separately, neither of these factors has much effect on search success, but there does appear to be a wider variation in success rates when group instruction is linked to length of experience. As shown in table 3, users who have not had group instruction seem to do as well as, or

TABLE 3
TYPE OF INSTRUCTION
AND SUCCESS RATE
FOR KNOWN-ITEM SEARCHES

Class (N=91)	Workshop (N=59)	Neither (N=145)
79%	83%	86%

N = Number of searches performed.
% = Percentage of successful known-item searches.

TABLE 4
LENGTH OF ONLINE CATALOG
EXPERIENCE AND SUCCESS RATE
FOR KNOWN-ITEM SEARCHES

< M(N=48)	M+ (N=82)	≥Y (N=173)
81%	79%	82%

< M = Less than a month of online catalog experience.
M+ = A month or more of online catalog experience.
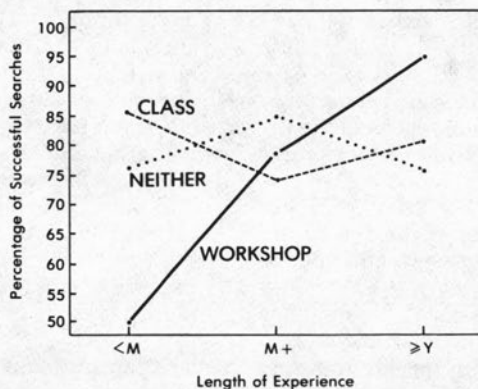≥Y = A year or more of online catalog experience.
N = Number of searches performed.
% = Percentage of searches which were successful.

slightly better than, users who had LCS training in a class or workshop. All still hover around the overall success rate of 81 percent for known-item searches. A similar pattern appears with respect to length of experience with the online catalog (see table 4). Users with only weeks of experience appear to be as successful as users with more than a year of experience, with success rates respectively of 81 percent and 82 percent.

However, when length of experience was analyzed in conjunction with instruction, it was found that users with a year or more of experience who also had attended

a library workshop had the highest success rate of 95 percent (see figure 2). This could indicate that the workshop is meeting the users' instructional needs, but also it is probable that these users are more motivated than others to learn to use the system.

CONCLUSION

This study provided the answers to the initial questions but also raised some new ones. It was found that the characteristics of online catalog users are similar to those

	N	%	N	%	N	%
CLASS	21	86	19	74	51	76
WORKSHOP	2	50	37	78	20	95
NEITHER	25	76	26	85	102	82

N = Number of searches; % = percent of successful searches.
< M = Less than a month of online catalog experience.
M+ = A month or more of online catalog experience.
≥ Y = A year or more of online catalog experience.

FIGURE 2
Success Rates for Known-Item Searches:
Correlation of Length of Experience with Instruction

reported in previous card catalog use studies and the more recent CLR study of online catalogs. The majority of these users (75 percent) report that they are aware that the card catalog has been frozen and only LCS lists newly acquired material. Most of the users (95 percent) surveyed also are willing to or prefer to use the online catalog as their first source of information, although more than half will check in the card catalog if their online search fails.

Patterns of searching are similar to those found in previous studies, except that known-item searching represents a slightly lower portion of the total number of searches. Of the known-item searches, 81 percent were successful, a higher rate than that reported in previous studies. In addition, users who had had a year or more of LCS experience and who had received instruction in a library workshop had much higher success rates than users with classroom instruction or no group instruction.

Overall, this analysis indicates that LCS users have a positive attitude toward the online catalog and generally are successful in using it. However, the authors are curious about the large number of users (21 percent) who avoided specifying their sex. Gender differences in attitudes toward the online catalog, and in search patterns and success rates, remain to be analyzed.

REFERENCES

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4. Examples appear in *User Instructions for Online Catalogs* (SPEC Kit 93). (Washington, D.C.: Assn. of Research Libraries, Office of Management Studies, Systems and Procedures Exchange Center, 1983) p.30-33.
5. Of the 1,197 OSU patrons who gender-identified themselves, 37 percent were female and 63 percent were male. Karen Markey, *Online Catalog Use: Results of Surveys and Focus Group Interviews in Several Libraries*, final report to the Council on Library Resources, v.II (Dublin, Ohio: OCLC Online Computer Library Center, 1983), p.242.
6. Markey, p.213. Known-item searches represented 62 percent while subject searches were only 32 percent.
7. The OSU component of the CLR study (Markey, p.213) reveals a similar pattern with title searches representing 30 percent and author searches representing 32 percent.
8. Sue Pease and Mary Gouke, "A Comparison of Patron Success in an On-line Catalog and a Large Union Card Catalog," in *Options for the 80s, Proceedings of the Second National Conference of the Association of College and Research Libraries* (Greenwich, Conn.: JAI, 1982), p.197-205.