

Research Notes

User Characteristics of Keyword Searching in an OPAC

Pat Ensor

Keyword and Boolean searching modes are now becoming more commonly available on online public access catalogs (OPACs), and questions have arisen regarding their use by library patrons. Which patrons use keyword searching, and which do not? This study attempts to begin providing answers to this question in the context of an academic library that uses the Northwestern Online Total Integrated System (NOTIS) online catalog.



any Northwestern Online Total Integrated System (NOTIS) libraries that had their online catalog available prior to the advent of keyword searching tended to look upon the capability as a frill, an advanced function to be taught after other forms of searching. This neglect was encouraged initially by slow response time for keyword searches, by questions about how many people could use keyword simultaneously, and by the complexities of keyword. This unenthusiastic response to keyword searching was not, indeed, limited to NOTIS libraries; librarians at other institutions approached it in a similarly cautious manner.¹

After the keyword mode became available at Indiana State University (ISU) Libraries, questions began to arise. The percentage of searches performed in keyword mode rose steadily, from 15.6% in November 1988, to 21.4% in November 1989, when it leveled off. Did certain

users prefer keyword searching all the time and not use the other modes? Who tended to use keyword searching more?

The author studied patron perceptions and demographics related to keyword searching on NOTIS to try to answer some of the questions posed above. The guiding thesis of the study is: The use or nonuse of keyword searching on LUIS is related to variables such as age, computer experience, subject area, status, and frequency of searching the OPAC. (The full project report, submitted to ERIC, details other aspects of patron keyword searching.)²

The findings of this study represent users' early reception of keyword searching. Future studies could compare these findings to similar data collected about keyword searching and user reactions to proposed OPAC features.

The University. ISU has approximately 9,000 undergraduate and 2,000 graduate students. A few doctorates are

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offered in the fields of education and psychology. Master's degrees are awarded in all schools, including the college of arts and sciences, and the schools of business, education, nursing, technology, and health, physical education, and recreation. The university has approximately 700 faculty members.

The Library. ISU Libraries include a main library, Cunningham Memorial Library, as well as a science library that covers chemistry, biology, and geology. Since March 1985, the ISU Libraries have made the NOTIS online catalog, LUIS, available to the public. It lists more than 99% of the library's holdings, with 1,751,000 bibliographic records. It also includes the holdings of two nearby smaller institutions—Rose-Hulman Institute of Technology, an engineering school, and St. Mary-of-the-Woods College, a liberal arts institution.

Keyword Searching. ISU Libraries made the keyword mode of searching available on LUIS in the late spring of 1988; thus, it had been available for almost two years when this study was conducted. Prior to the introduction of keyword/Boolean searching, NOTIS had three modes of searching available: author, title, and subject.

Keyword searching on LUIS is executed in its most basic form by entering "k=[word or phrase]." More elaborate searching may be done using the syntax of BRS search language. LUIS has a series of eight easily accessed keyword help screens. The keyword searching mode is listed on the LUIS welcoming screen, along with author, title, and subject searching options.

LITERATURE REVIEW

The author did not discover similar attempts to survey patrons extensively about their use of keyword searching on any online catalog. A relevant Council on Library Resources study report appeared in November of 1982; Joseph Matthews surveyed users of six computer systems in seven libraries, including the Mankato State University's (MSU's) OPAC, which provided early keyword searching. About 45% of the

searching on MSU's catalog was keyword searching, as compared with about 19% subject heading searching.³ The overall Matthews report about the massive 29-institution CLR OPAC study reports that keyword searching was used frequently when available but was not usually a requested future enhancement where it was not. Systems with the keyword/Boolean feature logged more subject searching and were more successful in known-item searching than systems without keyword.⁴

The percentage of respondents who learned of the availability of keyword searching from library instruction classes or workshops drops as individuals progress from underclassmen to upperclassmen and from graduate students to faculty.

In 1983, researchers at Bell Laboratories built two online catalog systems for their library: one was a menu-based system, using a hierarchy based on Dewey Decimal categories, and one allowed keyword searching of author, title, and subject heading terms. The keyword system was overwhelmingly preferred (80% of all searches). Keyword searchers tended to do simple one- to two-word searches.⁵ The users of this system would, of course, have been quite sophisticated technologically.

In 1984, Nancy C. Kranich and others from New York University reported the results of interviews carried out with patrons who used the library's Geac OPAC, the card catalog, or both to find information. Of 34 OPAC users, only one performed a keyword search. The researchers believed that the users were not generally aware of this option. The authors hypothesized that the users confused keyword and subject heading searches.⁶

In a study that surveys faculty use of subject searching in card and online catalogs at the University of Houston—University Park, Carolyn Frost found that 27.5% of the faculty used keyword searching "always" or "frequently." She

noted that "the percentage of frequent users of the keyword search was twice as high among humanities and social science faculty as it was among science and engineering faculty."⁷

An interesting United Kingdom study about retrieval modes for pictorial information on videodisc shows that 51% of the users prefer keyword modes to browsing and using a joystick. Of the four groups of users, librarianship students and librarians were twice as likely to do a keyword search as where school children and postgraduate students.⁸

METHODOLOGY

The Questionnaire

The author concluded that a questionnaire would be the most useful and feasible way to obtain the information desired. Questionnaires have some shortcomings but are more affordable than individual interviews. Because the author wished to have a large sample size to work with, individual interviews were not feasible.

Seventy-three percent of all respondents had done a keyword search, and more than 20% of those who had not done a keyword search planned to do one.

The final form of the survey had 27 questions, with one question having ten parts. Questions 1 through 16 were designed for both users and nonusers of keyword/Boolean, and the first ten of them were designed to elicit demographic and other user characteristics. Question 17 was aimed at nonusers of keyword/Boolean searching, and the rest were written for users of keyword/Boolean searching. (Copies of the questionnaire are available from the author.)

Questionnaire Administration

The author personally administered the questionnaire from the end of January 1990 to April 1990. Users of the main LUIS terminal cluster on the first floor of the university library were approached

and asked to fill out the survey, primarily during evenings and weekends. Library workers were not approached to answer the questionnaire.

An attempt was made to approach anyone using a LUIS terminal during the sampling period, although with only one questionnaire administrator, some users were inevitably missed. Even though the campus has a science library, questionnaires were not given out there because the collection covers a narrow range of subject areas. Nevertheless, approximately 25% of the respondents were in a science or technology area anyway.

The only exception to the above procedure was made in an attempt to elicit adequate faculty response. Because few faculty members were doing searches at the main cluster, the author chose approximately 60 faculty in all disciplines that she knew to be LUIS searchers and mailed the questionnaire to them. This effort produced a nearly 50% response rate.

Ultimately, 400 usable questionnaire responses were obtained. The author estimates the response rate to have been about 35%. The data retrieved were processed using the Kwikstat statistical program.

RESULTS FOR DEMOGRAPHIC AND OTHER USER CHARACTERISTICS

Keyword Search Performance

Seventy-three percent of all respondents had done a keyword search, and more than 20% of those who had not done a keyword search planned to do one. These figures indicate widespread knowledge of the concept of keyword searching and its availability. The user characteristics varied significantly with performance of keyword searching, future keyword searching plans, or lack of keyword searching.

Status

Status (type of student, faculty) proved to be a useful factor for classifying respondents. The raw numbers and percentages are shown in table 1. Aggregate totals are 312 students (78%) and 60 faculty (15%). Analysis using only ISU respondents showed meaningful variation with use of keyword searching. In some

TABLE 1
STATUS OF RESPONDENTS

Status	No.	(%)
ISU freshman/ sophomore	126	(31.5)
ISU junior/senior	114	(28.5)
ISU graduate student	49	(12.3)
ISU faculty	57	(14.3)
ISU staff/administration	5	(1.3)
Blank	1	(.3)
Rose-Hulman student	21	(5.3)
Rose-Hulman faculty	2	(.5)
St. Mary's student	2	(.5)
St. Mary's faculty	1	(.3)
Other	22	(5.5)

Percentages do not exactly equal 100% because of rounding.

TABLE 2
KEYWORD SEARCHING
USE BY ISU STATUS

ISU Status	Have Used Keyword No. (%)	Haven't Used Keyword No. (%)
Freshmen/ sophomores	112 (88.9)	14 (11.1)
Juniors/seniors	96 (84.2)	18 (15.8)
Graduate students	36 (73.5)	13 (26.5)
Faculty	37 (64.9)	20 (35.1)

TABLE 3
AGE RANGES

Age	No.	(%)
Under 18	3	(.8)
18-22	216	(54)
23-30	60	(15)
31-40	69	(17.3)
41-50	25	(6.3)
51-60	20	(5)
61 or above	5	(1.3)
Blank	2	(.5)

Percentages do not always equal 100% because of rounding.

cases, small numbers in each status make results only indicators.

A steady regression in keyword use from ISU underclassmen to faculty exists (see table 2). More than one-third of the ISU faculty responding had not used keyword searching, versus no more than about one-fourth of any group of students.

Because other survey results showed that the different groups have not used LUIS for significantly different lengths of time and because freshmen and sophomores used LUIS significantly less frequently, LUIS experience would not seem to account for this difference.

One possibility is that faculty are doing more known-item searching. One question in this study asked what respondents entered on their last LUIS search. The answers did not vary significantly based on status, but faculty tended to do more author searching and less subject searching. Thirty-six percent of ISU faculty reported doing an author search the last time they used LUIS, versus 13% to 16% of the different student groups. Only 44% of the ISU faculty reported searching for a Library of Congress subject heading or topic words, versus 54% to 62% of the students.

Another possibility is that faculty have not received as much instruction in this area. The percentage of respondents who learned of the availability of keyword searching from library instruction classes or workshops drops as individuals progress from underclassmen to upperclassmen and from graduate students to faculty. Almost half (48%) of ISU freshmen and sophomores learned of keyword instruction classes and workshops, compared with 26% of juniors and seniors, 27% of graduate students, but only 14% of the faculty. ISU freshmen and sophomores had been introduced to keyword searching in their English classes in the last two years, but the other groups have been taught in the same way.

Age Range

Age differences are similar to the status-based differences. In some cases, older respondents from a returning student population performed similarly to

TABLE 4
FREQUENCY OF LUIS USE

Frequency	(%)
Several times a week	(22.8)
No more than several times a month	(44)
No more than several times a year	(14.8)
Only a few times	(16)
Never	(2)
Unusable answer	(.3)

faculty. The small under-18 category was dropped, and the highest three categories, 41 to 50, 51 to 60, and 61 or above, were collapsed (see table 3).

Whether or not the respondent has performed keyword searching varies significantly with age, and the results are somewhat similar to those for status. At the highest level, 87% of the 18- to 20-year-olds had done keyword searching. The range that searched at the lowest rate was 23- to 30-year-olds, at 39 of 60 (65%). Fifty-one of 69 (74%) 31- to 40-year-olds had done keyword, and 35 of 50 (70%) of the oldest range had done it. Around 70% of all the older groups had done keyword searching, versus almost 90% of the youngest group.

Frequency of LUIS Use

Question six elicited the reported frequency of LUIS use. Basic numbers for different replies are given in table 4. The tendency to have done a keyword search drops steadily with less frequent LUIS

use. Ninety percent of those who search LUIS a few times a week have done keyword searching. Of those who searched LUIS no more than a few times a month, 83% had done a keyword search, as had only 70% of those who searched it no more than a few times a year. Even 69% of those who had used LUIS only a few times had done keyword searching. Forty-four percent of those who had never searched LUIS before that day had, nonetheless, still done a keyword search.

The most frequent users of LUIS were much more likely than other groups to say they planned to use keyword again—more than 90% (see table 5). Generally, the lower the frequency of LUIS use, the less likely the respondent was to plan to use keyword searching again. The steady drop was interrupted by those who had searched LUIS only a few times; a higher percentage of them planned to do a keyword search again than those who searched LUIS a few times a year. The less frequent the use of LUIS, the more ambivalent the respondent was about whether keyword searching would be used again.

Years of LUIS Experience

Thirty-one percent of the respondents had zero to one years of LUIS experience, 30% had one to two years, and 39% had three to five years. Years of LUIS experience related to a difference in reasons for not having used keyword searching. Because very small numbers were being dealt with, however, the results should be looked at with caution (see table 6).

TABLE 5
FUTURE KEYWORD SEARCHING PLANS BY FREQUENCY OF LUIS USE

Frequency	Yes (%)	No (%)	Don't know (%)
Several times/week	82 (90.1)	3 (3.3)	6 (6.6)
Several times/month	139 (79.4)	3 (1.7)	33 (18.9)
Several times/year	37 (62.7)	1 (1.7)	21 (35.6)
Only a few times	43 (67.2)	3 (4.7)	18 (28.1)
Never	4 (44.4)	0	5 (55.6)

Percentages do not always equal 100% due to rounding.

TABLE 6
REASONS FOR NOT USING KEYWORD
SEARCHING BY LENGTH OF LUIS EXPERIENCE

Reason	0-1 Yrs. (%)	1-2 Yrs. (%)	3-5 Yrs. (%)
It is too difficult to learn	4 (10)	0	3 (6.7)
It takes too long to learn	0	0	3 (6.7)
I don't need to; other forms of searching are adequate for me	10 (25)	13 (40.6)	10 (22.2)
I don't search very often, so I wouldn't remember how to do it	2 (5)	3 (9.4)	6 (13.3)
I haven't been able to go to a library instruction session on it	8 (20)	1 (3.1)	3 (6.7)
There hasn't been staff available to assist me	2 (5)	2 (6.3)	0
I wasn't aware of this form of searching at all	14 (35)	10 (31.3)	20 (44.4)
Its response time is too slow	0	3 (9.4)	0

Percentages do not always have to equal 100% due to rounding.

No one with one to two years' experience said keyword searching is too difficult to learn, as opposed to 7% for the more experienced and 10% for the less experienced. The only people who said keyword searching takes too long to learn were those who had been using LUIS for three to five years. A comparatively high percentage of those with the longest LUIS experience said they did not search often and tended to forget how to do keyword searching. Understandably, a comparatively high percentage of the least experienced group said that they had not had a chance to go to a library instruction session on keyword searching. A surprisingly high percentage of the most experienced LUIS searchers said they were not aware of keyword searching at all.

Previous Computer Experience

Respondents' previous computer experience is reported in table 7. Those who had no other computer experience were less likely to plan to do keyword searching in the future. Sixty percent of those with no other computer experience said they planned to do keyword searching in the future, as opposed to 78% of those who had other computer experience. Eight percent did not know, as opposed to 2% of the latter group. Thirty-two percent of those who had not

searched other computer systems did not plan to do keyword searching in the future, versus only 20% of those who had searched other systems.

Users of OCLC (who were probably in a beginning library science course, where they have to do OCLC and keyword exercises) were much more likely to have used keyword searching on

TABLE 7
PREVIOUS COMPUTER EXPERIENCE

Experience	No. (%)
No other computer systems	37 (9.3)
Another library's computerized catalog	88 (22)
CD-ROM databases (like ERIC, ABI/Inform)	140 (35)
Online dial-up databases (like Dialog, BRS)	32 (8.0)
OCLC terminal	41 (10.3)
Computer at home	211 (52.8)
Computer at work	185 (46.3)
Computer at school for a noncomputer course	178 (44.5)
Computer at school for a computer course	191 (47.8)
Other	15 (3.8)

Each percentage given is from the total 400 respondents, since any number of options could be checked.

TABLE 8
ENTRY TYPE OF LAST LUIS SEARCH

Entry Type	No.	(%)
Author's full or last name	67	(16.8)
Author's first name	3	(.8)
Complete title or the first part of it	86	(21.5)
Part of the title other than the first part	5	(1.3)
Library of Congress Subject Heading	69	(17.3)
Topic words	150	(37.5)
Unusable response	13	(3.3)
Blank	7	(1.8)

Percentages do not always equal 100% due to rounding.

LUIS. Ninety-five percent of them had done a keyword search. Those who did not say they had used an OCLC terminal had done keyword searching at a rate of 77%.

Users of a school computer for a non-computer course were somewhat more likely to have done a keyword search than the rest of the respondents—85%, as opposed to 75%. Users of a school computer for a computer course were more likely to have done a computer search—86% had, versus 73% of those without that experience.

Those using a computer for a computer course varied in their future keyword-searching plans. Eighty-three percent planned to do keyword searching in the

future, compared with 71% of the rest of the respondents. Only one person with this kind of computer experience reported plans to do another keyword search, whereas nine of the other respondents did plan another search. Twenty-five percent of those without this type of computer experience said they did not know if they would do another keyword search, versus 17% of those with school computer experience in a computer course.

LUIS Search Type

Table 8 shows the entry type of the last LUIS search executed. Performance of keyword searching varied significantly (to .05) with this factor (see table 9). Non-keyword users tended to search by title or the first part of the title more than the keyword users. Nonkeyword searchers also did substantially more searching with LC subject headings than did keyword searchers, and they did less topic word searching (searching by words that are not necessarily LC subject headings), but they still did some; more than one-fourth of them checked this option.

Keyword Searching Plans

Seventy-six percent planned to do a keyword search in the future. Only 3% did not plan to; 21% did not know. Ninety-one percent of those who had done keyword searching before planned to do it again in the future. Only 1% of them did not plan to do it again; 8.2% did

TABLE 9
PERFORMANCE OF KEYWORD SEARCHING
BY ENTRY TYPE OF LAST LUIS SEARCH

Entry Type	Keyword Srch. Done		Keyword Srch. Never Done	
	No.	(%)	No.	(%)
Author's full or last name	56	(18.4)	11	(14.7)
Author's first name	3	(1)	0	
Complete title or first part of it	63	(20.7)	23	(30.7)
Part of the title other than first	5	(16.4)	0	
Library of Congress Subject Heading	48	(15.7)	21	(28)
Topic words	130	(42.6)	20	(26.7)

Percentages do not always equal 100% due to rounding.

TABLE 10
REASONS FOR NEVER HAVING USED KEYWORD SEARCHING*

Reason	No.	(%)
It is too difficult to learn	7	(5.9)
It takes too long to learn	3	(2.5)
I don't need to; other forms of searching are adequate for me	34	(28.6)
I don't search very often, so I wouldn't remember how to do it	12	(10.1)
I haven't been able to go to a library instruction session on it	12	(10.1)
There hasn't been staff available to assist me	4	(3.4)
I wasn't aware of this form of searching at all	44	(37)
Its response time is too slow	3	(2.5)

* Respondents could check up to two items; percentage is of total number of reasons checked, 119. Percentages do not always equal 100% due to rounding.

not know. More interestingly, 21% of those who had not done a keyword search before planned to do one in the future. Only 9% said they would not ever be doing one. Seventy-one percent were not sure. This means that 84% of the respondents had either done a keyword search or were planning to do one. Only 2% of the respondents had never done a keyword search and never planned to.

Reasons for Never Having Done Keyword Searching

Respondents were asked to check up to two reasons for never having done a keyword search. The most frequently cited response was that people were unaware of the existence of keyword searching. This implies that these people might do keyword searching in the future and not that they are opposed to it (see table 10).

CONCLUSION

The reported use of keyword searching in this study varies significantly with status, age range, frequency of LUIS searching, use of an OCLC terminal, school computer use for computer and noncomputer courses, and type of last LUIS search entry. Faculty, older respon-

dents, and less-frequent LUIS searchers were less likely to have done keyword searching. Those who had used an OCLC terminal or a school computer used keyword more, as had those who said their last LUIS search entry was for topic words.

Those who searched LUIS frequently, those who had used a school computer, and those who had already done a keyword search were more likely to plan to do one in the future. Those who had never used a computer system before were less likely to plan to do a keyword search in the future.

Those who had not done keyword searching before were quite likely not to have been aware of its existence, but some thought that they did not need to do it. Whether or not they have done keyword searching seems to relate most to age factors and computer experience, with gender and subject area not relating to significant variations in keyword searching usage. Future studies could profitably examine the use of keyword search capabilities in other OPACs, among other audiences, and with periodical article databases to see if these conclusions are supported.

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