

ABSTRACT

In June 1998 Oakland University's library migrated to a new online catalog. In order to determine user acceptance of the new OPAC, students receiving library instruction were asked to complete an open-ended questionnaire eliciting comments on their likes, dislikes and online catalog preference. From the data collected, a second questionnaire was designed and distributed that focused on specific features of the new catalog identified in the first survey. Results indicated that users overwhelmingly preferred the new OPAC and found it easy to use; however, they experienced some difficulty using special features like truncation. The most popular feature of the new catalog was its remote access capability. Second-generation OPACs possess features—such as electronic reserves capabilities and hypertext links—that are beginning to simplify the search process; but they have not yet developed into the intuitive, comprehensive systems that can empower users to seek information in new ways.

KEYWORDS

online catalogs

Voyager

university libraries

Michigan

user survey

user empowerment

Word Count: 7058

AUTOBIOGRAPHICAL INFORMATION

Shawn V. Lombardo, Assistant Professor and Information Literacy Librarian

Kresge Library

Oakland University

Rochester, Michigan 48309

email: svpatter@oakland.edu

phone: 248-370-2493

fax: 248-370-2474

Kristine S. Condic, Associate Professor and Electronic Resources Librarian

Kresge Library

Oakland University

Rochester, Michigan 48309

email: salomon@oakland.edu

phone: 248-370-2469

fax: 248-370-2474

INTRODUCTION

Online catalog users today face more search options than they realize and many they do not use. Prior to computers, identifying library materials was straightforward: the card catalog contained definitive searching methods—author, title, or subject. Whether this catalog was combined or divided was immaterial; patrons knew their options and used them. However, this simplicity disappeared with the advent of the online public access catalog. The original text-based electronic systems provided limited search avenues, but nonetheless required library patrons to know how to develop a viable search strategy; this was a knowledge that many users did not possess.

The development of second-generation online catalogs has launched many new search and display features that are beginning to empower library patrons to manipulate OPACs to meet their own needs. For example, remote access and electronic reserve features free users to search for—and view—information from their home or office at their convenience. Many systems allow patrons to place holds on charged items by themselves, eliminating the need for library staff to act as intermediaries between patron and OPAC. Besides remote access capabilities, newer online systems have taken advantage of other Internet technology; these include the adoption of search engine designs to OPAC interfaces, relevance ranking of search results, and the ability to download or email these results. These OPACs also support "one stop shopping" for users who can now link to remote Web pages and full-text information from within the OPAC. However, most searchers still encounter the same search problems they met with first-generation systems; that is, these systems are not yet designed to assist novice users of the online catalog in the development of productive search strategies. This article will

explore some of the new features available to OPAC users and report on a study conducted to determine if students in an academic library accept and fully utilize a new graphical second-generation online catalog.

BACKGROUND

Oakland University (OU) is a comprehensive public institution in the metropolitan Detroit area offering undergraduate, masters and doctoral degrees in many disciplines. The University population consists of 11,000 undergraduate students, 3,100 graduate students, 400 full-time faculty, 320 part time faculty, and 700 university staff. Kresge Library, OU's main library, houses over 654,000 books and bound periodicals and subscribes to more than 2000 periodical titles; it is also a selective depository of United States and Michigan government documents. Only one other library exists on campus: the Education Resources Lab, which contains teaching-related materials for students in the field of Education.

Characteristics of the Previous OPAC

In 1987 Kresge Library introduced patrons to its first online catalog, a NOTIS-based mainframe system called LUIS. Unlike many NOTIS sites, Oakland was part of a consortium: DALNET (Detroit Area Library Network), a group of more than 20 multi-type libraries that also included Wayne State University, Detroit Public Library, and area community colleges. These libraries banded together to form one massive union catalog that all member institutions could search; for example, in 1998 LUIS contained over 15,000,000 records. As much as this benefited library users who could search the entire

catalog or just the holdings of a single site, at times the catalog experienced performance problems or downtime that caused help desk telephones to ring frantically at the host site's systems office. Additionally, new enhancements and upgrades produced a proverbial study in cooperative group behavior as a substantive change in the OPAC meant an adjustment for all 20 online catalogs.

As NOTIS enhancements and capabilities increased with each system upgrade, so did the search options available to OPAC users. As a result, effective patron use of the catalog was possible only with instruction. Even then, success was not guaranteed: patrons found it frustrating to begin each search with a command (i.e., t=, a=, s=, or k=). Additionally, most patrons could identify whether they required an author or title search but they could not determine correctly when to use subject and keyword searches. Hildreth (1997) has shown that users most often search by keyword but do not comprehend how it differs from a subject search; and these keyword searches fail more often than not. By observation, this type of confusion existed at Oakland University. Upon completing a week of instruction and practice on LUIS, patrons still used Boolean operators inappropriately with subject searches, or typed stopwords in keyword searches (i.e., "United States of America"), slowing down the search process tremendously.

Other aspects of the search process were equally frustrating. Help screens were not from point of use but consisted of blocks of text that displayed when users typed "help." The desired information, if it existed at all, might not appear until page 10 out of 15 help screens. Additionally, NOTIS used IBM mainframe terminals to access its software; these terminals used a communications protocol that made a distinction between "Enter" and the traditional carriage "Return" keys. The average user,

unfortunately, did not grasp this difference, and as a result library staff spent a good deal of time explaining to patrons that pressing the "Return" key did not execute their searches.

Another weakness of the LUIS catalog was its accessibility. LUIS was available via direct dumb terminals within the library or remotely via a telnet application. (Web access to LUIS was developed later, but this feature was added at a time when DALNET already was planning a system migration.) Because many users found telnet software difficult to load and use at home, remote access to LUIS was challenging at best.

However, once users adjusted to the idiosyncrasies of the system, the rewards were plentiful. Patrons could access the holdings of one DALNET institution, or could search the entire DALNET catalog. Additionally, they also could access bibliographic indexes such as the Wilson databases, MathSci, PsycLit, and ERIC. However, here too, patrons required instruction on the use of these databases because they could not differentiate between the online catalog and the numerous available indexes. As a result, users became confused when they needed to identify whether their library owned a particular periodical; many would seek this information within the index database instead of the online catalog.

Despite these difficulties, reaction to the introduction of LUIS was enthusiastic. Nevertheless, the OPAC itself was a far cry from the ideal catalog Hildreth (1984) defined:

A user-oriented library catalog is a usable, pleasant, rewarding, multidimensional, multifunctional online information retrieval tool which enables and facilitates full exploitation of the local collection and any linked collection by supporting

efficient known-item searching, efficient related-item searching, and effective subject searching for works and information in those collections. (p. 39)

In that same article, Hildreth (1984) identified three generations of online catalogs that have come to be the standard definition used by commercial vendors and information professionals. First-generation catalogs provided limited access points such as author and title, and were useful primarily for known-item searching. Second-generation systems introduced controlled vocabulary, keyword searching, and other advanced search strategies. They also included multiple display formats, and contained informative error messages. In addition, these systems provided online help for first-time users overwhelmed by their search options. Third-generation catalogs should provide an integration of keyword and controlled vocabulary searches, natural language search expressions, and context-based, automatic error correction.

As systems are enhanced they either remain within the same generation or cross over to the next generation. LUIS developed into a second-generation system, eventually providing subject access via controlled vocabulary and keyword searching. Other enhancements included Boolean logic, truncation, search history, and limiting features. These new properties empowered the user to perform more effective searches, but still they were not easy to execute. In order to employ these enhancements, users generally needed to scour the help screens or ask a reference librarian. These features represented clunky additions instead of integrated software enhancements that could be used easily by searchers. Additionally, the mainframe environment could not keep in step with the advantages of a client/server environment, and so Kresge Library staff decided it was

time to migrate to a new OPAC system. In summary, OU migrated to a new OPAC for the following reasons:

- personal computers provide more flexibility than dumb terminals because Web and Windows online catalog records can be transferred to other applications
- remote access via the Web is more universal than remote access via telnet
- a graphical online catalog may be inherently easier to use than a telnet-based catalog
- OU sought to eliminate its dependency on a host site for system maintenance and enhancements
- the client server environment encourages faster development time and quicker enhancements
- cost

Characteristics of the New OPAC

Once library staff determined that OU needed a new integrated system, a committee was formed within the library to explore its options. Four systems were identified and Request for Proposals (RFP) were submitted to each vendor. In addition, vendors held onsite demonstrations for library staff, and features of the various systems were evaluated. Endeavor Inc.'s integrated library system eventually was selected; the OPAC portion of the system was called "Voyager." OU completed the migration from LUIS to Voyager in June 1998.

Voyager is accessible using three different interfaces: a Web-based format, a graphical format known as the "Windows" version, and a telnet format. Library reference

personnel decided to provide access to both the Windows and Web versions in the reference area because, while the Windows version is more robust than its Web counterpart and has more sophisticated search and sorting features, the Web version provides remote access to users who would otherwise be forced to use a telnet interface. Depending upon their preference and teaching style, instruction librarians teach only the Windows version, or the Web version, or both.

The successful installation and implementation of any new integrated library system requires planning and training of library personnel. Because one of the main goals of the migration was to provide an enhanced online library catalog for patrons, a major part of the adjustment phase also focused on user instruction. As a result, we initiated the present study to determine user acceptance of the new online catalog at Oakland University. In addition, we sought to identify specific Voyager features that users liked and whether users believed the new catalog was easy to learn. The purpose of this article is to describe this study and to explore the ways in which these systems empower users as they seek information.

REVIEW OF THE LITERATURE

Much of the present literature on the use of online catalogs can trace its origin to a hallmark study done in the early 1980s. Commonly called the CLR Project, this study was sponsored by the Council on Research Libraries who in turn commissioned the Research Libraries Group (RLG) and the Online Computer Library Center (OCLC) to assess how online catalogs are used (Matthews, Lawrence, and Ferguson, 1983). More than 8000 online users from 29 libraries, with 17 different OPACs, participated in this

study by completing a questionnaire describing their search experiences. In addition, almost 4000 non-users completed a questionnaire detailing, among other things, their reasons for not using the catalog. This project identified a number of user behaviors and characteristics. The researchers found that over 90 percent of OPAC users liked the online catalog; this is a remarkable finding considering that online catalogs were still novel. This high rate of acceptance might be explained by the fact that 85 percent of the users found some relevant material from their online searches. However, not all of the users were overjoyed by the new online catalog; the study found that frequent users of the card catalog preferred it to the online catalog.

CLR Project researchers also discovered that most users searched by subject or topic, and keyword searching was heavily used when it was available (many of the sites did not have keyword searching available at the time of the study). Most users, however, did not employ the more advanced OPAC features, such as Boolean logic, truncation or limiting. The study also demonstrated that a perception exists that online catalogs were user-friendly: non-users believed the catalog would be easy to use even though they had never used the catalog before! Furthermore, 64 percent of non-users estimated that—although they did not have time for OPAC instruction—it would take 30 minutes or less to learn a new online catalog.

Matthews and Lawrence (1984) examined the CLR Project data further and discovered that subject searching was more prevalent for less experienced library users. In addition, undergraduates tended to search by topic more frequently than graduate students or faculty. The researchers also found that initial guidance or instruction played a factor in satisfaction with the online catalog: users who obtained initial instruction or

assistance during their searches (by using search aids, help screens, or library staff) were more successful than those who did not receive help.

Other studies have linked instruction and overall patron satisfaction. Stamatoplos and Markoy (1998) asked students who had received library instruction whether they were satisfied with the library in general, and found that user satisfaction was related to the ease of use of the library computers. They also concluded that "increasing patrons' confidence in their skill at using libraries in itself has a positive impact on their perception of the library." (Stamatoplos and Markoy, 1998 p. 333)

Moore (1981) detected that users adapted their search strategies quickly to the idiosyncrasies of the online computer. In addition, users indicated that the online catalog was easy to use and they were able to use it with minimal instruction. However, "all systems' users mentioned the need to be shown how to use the system the first time or to have better instruction sheets." (Moore, 1981 p. 298)

Other studies have not revealed a strong need for OPAC instruction. Carter and Park (1993) placed survey forms next to the online catalog, and 75 percent of respondents indicated that they did not require additional instruction to use the catalog. Cherry and Clinton (1992) established that computer users tended to learn how to use a new system by trial and error but not by classroom instruction. Ashoor and Khurshid (1987) also found a high satisfaction rate without instruction; only 25 percent of survey participants acknowledged a need for an instruction program. In contrast, Berger and Hines (1994) discovered that users would be willing to give up library classes and tours but not librarian assistance with online searching.

Nitecki (1993) investigated OPAC features that users valued or found expendable. She interviewed online catalog users to determine which OPAC characteristics they felt were most important. Novice users believed that ease of use and selection information were the two most important factors in an online catalog's effectiveness while frequent users identified location information as a meaningful factor of quality. Interestingly, remote access and printing both were considered incidental features.

Given these new features and enhancements, it stands to reason that online catalogs would empower users to search effectively to retrieve the information they desired. However, Hildreth (1987) disagrees. He presents a strong case for the failure of second-generation online catalogs: they do not automatically provide the user with search alternatives when a search has failed; they do not accommodate open-ended searching; and they do not provide abstracts and book reviews for the user. Borgman (1996) concurs that these systems have failed because their design is based upon the card catalog model instead of a model rooted in an understanding of user search behavior. Users still need to think like librarians in order to perform effective searches.

METHODOLOGY

During the Fall 1998 semester, we designed a study to measure users' opinions about Voyager, the new catalog. A brief, two-page questionnaire was distributed during library instruction sessions for five graduate Education and Counseling classes, and six undergraduate classes (composed of five first-year level Rhetoric classes and one Education class). Additionally, we placed questionnaires in the reference area of Kresge Library so that these users of the new system would be included in the study. Opinions

were not sought systematically from online catalog users in the reference area; rather, it was a self-selected sample of users. A total of 212 questionnaires were returned: 206 from the library instruction sessions and six from users in the reference area. This initial survey was not designed to be a scientific study; rather, our goal merely was to acquire as much feedback as possible from our users about the new system.

As a result, we designed the initial questionnaire using primarily unstructured questions to gather opinions from respondents. First, we asked respondents to identify generally what they liked and disliked about the new OPAC. In addition to answering these open-ended questions, survey participants rated, on a scale of one to ten, how difficult Voyager was to use. Then respondents were asked whether they had used LUIS and which OPAC they preferred. We also gathered demographic data, including age and academic study level, and asked users to evaluate their computer literacy by rating the extent of their experience using computer keyboards and mice, operating systems, and the Internet.

After collecting the completed questionnaires, we reviewed participants' comments about the OPAC, noting trends and common themes in the data. We used the results of this initial survey to design a second questionnaire to collect quantitative data focusing specifically on the characteristics and features of Voyager that respondents had mentioned in the first questionnaire. This second instrument—another brief two-page questionnaire—employed structured questions such as Likert and itemized rating scales to measure participants' opinions of Voyager. In this survey, we asked respondents to rate their agreement with statements regarding the OPAC's ease of use, and to assess the value of particular features and characteristics of the system including emailing, downloading,

marking multiple records and other features, as well as remote access and search and navigation capabilities. Besides these structured questions, we provided space on the questionnaire for respondents to add written comments. We also collected the same demographic data as from the first survey, and again we asked participants to rate their computer literacy. It took participants approximately ten minutes to complete the questionnaire. The questionnaire purposely was kept brief for two reasons: first, library instructors had little time to distribute and collect the survey during their classes; and second, we wanted to ensure that a large number of completed questionnaires would be returned.

During the Winter 1999 semester, the second questionnaire was distributed to students in 18 of 61 Rhetoric 160 sections that received library instruction that semester. Rhetoric 160 is an introductory writing course that all students must complete. A total of 334 usable questionnaires were returned. We targeted the Rhetoric 160 classes for the survey for a number of reasons. First, all students in these classes receive similar OPAC training and searching exercises, regardless of the librarian assigned to teach the class; in this way, each of the students had very similar experiences in the instruction and use of Voyager. Second, because all students must enroll in Rhetoric 160, and all Rhetoric 160 classes receive instruction from library faculty, we were guaranteed a large pool of subjects. And third, although the Rhetoric 160 classes are 100-level classes, many students delay enrolling in Rhetoric 160; as a result, while the subject pool comprised primarily first-year students, a number of sophomores, juniors, and even seniors would be included in the population, thereby creating a more diverse sample. We also ensured that we included sections of Rhetoric 160 that were taught in the evening; in this way, we

would be able to include in our sample non-traditional students who are more likely to enroll in night classes.

In each Rhetoric 160 section, library faculty first demonstrated, using a variety of presentation tools, how to perform searches and use various features of the Voyager catalog. Depending upon the instructor, students were shown either the Windows or the Web version of Voyager, or both. Following the demonstration, students practiced searching skills on Voyager by completing exercises using the OPAC. After this hands-on experience, librarians asked survey participants to complete the questionnaire. For the second survey, we obtained results only from library instruction classes; no questionnaires were collected in the reference area, as had been done with the initial survey.

At the conclusion of the survey period, the data was compiled, coded and analyzed using Microsoft Access database and Microsoft Excel spreadsheet applications.

FINDINGS

First Survey Results

Although we only collected a few completed questionnaires in the reference area, the comments by these users reveal a number of common issues that did not appear in the responses of survey participants who received library instruction. Of the six reference area respondents, four had used LUIS; and of these, three users preferred LUIS. They expressed dissatisfaction with the new OPAC in their written comments: one participant noted, "It was easier to locate items in the library [with LUIS]"; and another respondent described Voyager's search syntax as "very picky." In responding to the question, "What

do you like about Voyager?" one student wrote, "Not much—I'm lost in here; I'm trying to get resources and I'm just lost and frustrated." The frustration generated from using an unfamiliar system may have compelled these survey participants to complete the survey without any urging from library staff.

However, these responses contrast sharply with the majority of respondents who received library instruction. These users overwhelmingly were positive about the new OPAC. Of the 193 participants, 31.6 percent (n=61) had used LUIS before; 58 of these 61 (95.1 percent) preferred Voyager. In fact, a number of the subjects expressed very positive sentiments about the new OPAC: in noting her preference, one subject wrote, "Voyager-hands down!"

Generally, subjects found the new OPAC easy to use. Of the 193 survey participants, 184 completed the Likert scale measuring ease of use. When asked to rate Voyager's ease of use on a scale of 1-10 (1=easy, 10=difficult), 73.9 percent (n=136) gave Voyager a 1, 2, or 3 rating. Only 11 subjects rated Voyager's user-friendliness above 5 (plus one frustrated user who gave it 11). Clearly, the majority of respondents found Voyager very easy to use.

More important than these results, however, were the comments elicited by the questionnaire. Our analysis of this data revealed a number of common issues, preferences, and complaints that users had concerning Voyager. Table I summarizes the issues that users mentioned most frequently on their questionnaires. Interestingly, some of these issues appear in both the "Likes" and "Dislikes" columns.

Take in Table I

Technological fears lay behind a number of comments. One participant wrote plainly, "I dislike computers"; and another student admitted, "I don't feel confident on any computer." Other criticisms focused not on the new system itself, but rather on the traditional way in which information is organized and retrieved, and the traditional problems accompanying this model; for example, one participant stated, "It is a little confusing to figure out what words to use to conduct your search." Another subject complained about being forced to use "the red books" to find Library of Congress subject headings. And one participant noted that even with the new system, "[You] still need to get the books to do the research." A number of students wished for the ability to search for books and journal articles simultaneously within the same database.

Overall, most of these comments demonstrate students' appreciation for library systems that: provide users with multiple search techniques; allow users to manipulate data by sorting, marking, downloading, and emailing records; and permit users to search at their own convenience from their home or office. Clearly, though, even advanced second-generation OPACs—such as Voyager—that enhance users' control over the search and retrieval process cannot yet provide students with all that they need. Students still desire the ability to search for information—book or journal article—using one common interface. They demand systems that provide full-text information rather than merely citations. In summary, the data collected from this initial survey suggests that patrons want library systems that empower them as users by providing them with simple, intuitive search interfaces, advanced sorting, downloading, and emailing features, and value-added content in the form of full-text information.

To examine these issues in greater depth, we conducted a second survey, using the ideas and issues garnered from this first survey to serve as the basis for the follow-up questionnaire.

Second Survey Results

Because the Rhetoric 160 classes are designed as first-year writing courses, the majority of our respondents were first-year students. Of the 334 survey participants, 76.6 percent (n=256) identified themselves as freshmen. Sophomores constituted the next largest academic class (11.4 percent, n=38), followed by juniors (6.9 percent, n=23) and seniors (4.5 percent, n=15). The age of the respondents reflects that most of them were also traditional students: 86.8 percent (n=290) were between the ages of 0-20, and only 3.3 percent (n=11) of the respondents were over 30 years old. The sample, then, consisted primarily of traditional-aged college students.

Results indicate that students seem to like Voyager, the library's new system. About 15.0 percent (n=50) of the survey participants had used LUIS, the previous online catalog; of these, 86.0 percent (n=43) preferred Voyager. Not a single respondent preferred LUIS; the rest of the subjects either indicated no preference or were not sure. These results suggest that our Rhetoric students overwhelmingly prefer Voyager to the previous system.

This preference seems to be based, at least in part, on the fact that survey participants found the system fairly straightforward to use. We asked students to evaluate Voyager by indicating their agreement with seven statements about the system; participants responded by choosing one of the following categories: “strongly agree,”

“agree,” “neutral,” “disagree,” and “strongly disagree.” Our data shows that 92.2 percent (n=308) of our survey participants strongly agreed or agreed with the statement, “Voyager is easy to use.” Not a single respondent strongly disagreed with this statement, suggesting that, overall, participants found the OPAC to be a user-friendly system.

Users' responses to statements about specific aspects of the OPAC upholds this finding. For example, 77.8 percent (n=260) responded negatively to the statement, “Navigating from screen to screen is complicated,” indicating that most users felt comfortable navigating through Voyager. Similarly, 74.0 percent (n=247) of the students found the information provided in the catalog easy to understand, and only 3.9 percent (n=13) disagreed or strongly disagreed with the statement, “Information given about library materials is easy to interpret.” These findings suggest that navigation among screens, and comprehension of the information provided on each screen, presented little difficulty for our students.

However, users were more ambivalent about the ease with which search statements are entered into the OPAC. In response to the statement, “It is difficult to know when to use asterisks, capitals, and other symbols when typing a search,” 37.4 percent (n=125) of participants agreed or strongly agreed that entering a search statement can be confusing, while 30.2 percent (n=101) responded negatively to this statement. It seems, then, that although students felt that they did not experience problems navigating through the system or understanding the information that they found, they did encounter difficulties in the actual search process. This finding supports research done by Borgman (1996) and Hildreth (1987), among others, who assert that although new generation

catalogs seem easier to navigate, they nevertheless present the same difficulties in searching that were manifest in earlier online catalogs.

In our first survey, we encountered mixed reactions to the fact that the online catalog contained only the holdings of Oakland University, and not other area libraries. LUIS, as the catalog of DALNET, contained the holdings of over twenty public, academic, and special libraries in the Detroit area. Interestingly, in the past many patrons became frustrated at wading through records for materials not found in their home library, or manipulating the OPAC's search capabilities to retrieve only their library's records. Many students, especially undergraduates, found it simply too time-consuming to page through numerous records for materials not found in their home library. In contrast, some patrons expressed a desire to know what was available at other libraries. We were interested, then, in determining whether our students liked that only OU-held materials constituted the holdings found in Voyager. The results of our survey indicate that, indeed, the majority of students do prefer it: 53.9 percent (n=180) of respondents agreed or strongly agreed with the statement, "I like that Voyager contains information about materials in OU's library only," and only 16.2 percent (n=54) voiced a negative opinion about this statement. However, almost one-third of the students surveyed (29.9 percent, n=100) showed their ambivalence about this issue by indicating a neutral score on this question.

In addition to asking students how easy Voyager is to use, we also wanted to discern how easy they thought it would be to learn without assistance. All respondents completed the second questionnaire after they had received library instruction. Given this premise, and given the fact that most students felt that Voyager was easy to use, it is

interesting to note that only 47.9 percent (n=160) of survey participants responded positively to the statement, "Voyager can be mastered without instruction from library staff." The remaining students were either ambivalent (29.0 percent, n=97) or thought that prior instruction was needed (23.1 percent, n=77). In fact, 20.8 percent (n=64) of the 308 participants who agreed that Voyager was easy to use nonetheless disagreed or strongly disagreed with the statement, "Voyager can be mastered without instruction." Another 29.5 percent (n=91) of these 308 respondents answered neutrally to this question. These results suggest that, from our students' perspective, even a user-friendly system requires instruction.

Generally, though, Rhetoric students were positive about the experience of learning to use a new catalog. In response to the statement, "It takes a long time to learn a new online catalog," 64.4 percent (n=215) of the survey participants disagreed or strongly disagreed, while only 9.3 percent (n=31) supported this assertion. A cross-tabulation of the results from two statements sheds some additional light on this issue. Importantly, 74.2 percent (n=23) of the 31 participants who agreed that learning to use a new online catalog was time-consuming also agreed that typing in a search statement was confusing. It seems, then, that those students who found search input confusing also believed that learning to use a new OPAC was time-consuming.

We wanted to investigate whether these results were related to the variables of age, academic level, or computer experience. Unfortunately, the homogeneity of the RHT 160 classes precluded us from exploring age or academic level as potential factors. As we have seen, the vast majority of students polled were 20 years old or younger and most were also first-year students; this homogeneity did not allow for additional data analysis.

Age did seem to play a role in whether users felt OPACs in general took a long time to master. For the statement, "It takes a long time to learn a new online catalog, 8.7 percent (n=28) of participants 0-30 years old agreed or strongly agreed. In contrast, of the students were older than 30, 27.3 percent (n=3) agreed or strongly agreed that mastering a new catalog was time-consuming. It should be noted that the number of students over the age of 30 was small (n=11), so no definitive conclusions can be drawn from these statistics.

Responses to the question about computer experience displayed greater variation. Most respondents (Table II) answered that they had "a lot of experience" with keyboards, mice, and operating systems such as Windows or Macintosh. However, responses deviated more significantly when participants evaluated their Internet experience. Although a large proportion of students (49.4 percent, n=165) rated themselves as having "a lot of experience" on the Internet, 14.4 percent (n=48) felt that they had little or no experience online—three times the number of respondents who responded similarly to the other computer experience categories.

Take in Table II

Because of the graphical nature of the new OPAC, we believed it would be valuable to execute a cross-tabulation of students' Internet experience level with their perceived need for instruction in using the OPAC. The subgroup of students with little or no Internet experience also seemed to feel that instruction was needed to master Voyager: 56.3 percent (n=27) of this group also disagreed with the statement, "Voyager can be

mastered without instruction from library staff.” In contrast, only 17.5 percent (n=50) of the participants claiming to have at least some Internet experience felt that instruction was necessary to learn the new OPAC.

We also performed a cross-tabulation of Internet experience data with results from the statement, "It takes a long time to learn a new online catalog"; we found that only 6.3 percent (n=18) of the participants who possessed at least some Internet experience responded positively to this assertion. In contrast, the 48 participants with little or no Internet experience were much more likely to feel that new OPACs in general took a long time to master: 27.1 percent (n=13) of these individuals agreed with this statement.

These results suggest that Rhetoric students with little or no Internet experience are less comfortable learning a new OPAC on their own, while those more familiar with Internet technology find these graphical systems much more intuitive to use. Indeed, those without Internet experience seem to be more pessimistic about learning *any* new OPAC. If this is true, then it seems that even the most advanced OPAC must contend with users' technological fears and inexperience.

A second set of questions also offered insight into what Rhetoric students liked about Voyager. Here we asked students to rate the importance of seven OPAC features by choosing one of the following categories: “of great importance,” “some importance,” “little importance,” “no importance,” and “don’t know.” The features chosen for this question were ones that students had highlighted, either positively or negatively, in the first survey.

Voyager's most popular feature was its remote access capability (Figure 1): 73.7 percent (n=246) of the respondents rated remote access as "of great importance"—26.4 percent more frequently than the second-most popular feature (the ability to mark and print multiple items). Interestingly, LUIS, through a telnet—and therefore text-based—interface, also provided remote access; but it seems that many members of our community did not take advantage of this feature. It may be that users prefer the graphical interface, and Web-based design, of the Voyager OPAC, which requires no special software other than a Web browser. As noted earlier, Berger and Hines (1994) and Nitecki (1993), in studies performed in the early 1990s, found that remote access capability was not valued as highly as other OPAC features. Obviously, in just a few years, the perceived value of remote access has increased dramatically. As Internet use has expanded, so too has the desire for convenient remote access to library resources.

Take in Figure 1

Figure 1 illustrates the frequency with which specific OPAC features were judged "of great importance." Students rated keyword search options and author/subject heading hyperlinks as "of great importance" least often. An analysis of the data generated from the question on prior computer experience suggests that students favored the features that facilitated the collecting of information: remote access, marking and printing multiple records, manipulating data by limiting search results by date. Our students' preferences support the findings of Nitecki (1993), who observed that remote access, navigation, printing, speed, and online instruction all contributed to a system's ease of use—judged

by users to be one of the most important factors contributing to OPAC effectiveness. However, these features do not assist patrons in the actual search process itself—in finding relevant information. In fact, our students seemed least concerned with those features that enhanced searching capabilities: keyword search options and hyperlinks.

DISCUSSION

From our survey, we ascertained that participants found Voyager, the new OPAC, easy to use and preferred it to the old online catalog. According to respondents, the most significant features of the new catalog were those that made the search process easier including remote access, the ability to save search results to a floppy disc, and the ability to mark and print multiple records. However, none of these features assists users in constructing effective search strategies. A good search strategy will lead the user to many relevant items, but in fact our participants indicated that search strategy development was one of the most difficult features of the new online catalog. Respondents in the first survey commented on their confusion in generating appropriate Library of Congress subject headings and keywords. And although we did not ask about Boolean searching in the second survey, many respondents experienced difficulty using truncation, capitalization and other symbols when typing their searches. Therefore, although most students found Voyager easy to use, many of them were unable to take advantage of more sophisticated searching techniques because these features are not intuitive. One of our respondents said it best: “I don't think one can necessarily master the program without instruction, but one can definitely use it without being taught first.” Users can perform basic—but not necessarily the most effective or efficient—searches. Voyager, a second-

generation system, is not yet capable of empowering patrons to manipulate the system on their own to suit their needs.

In fact, some of Voyager's system enhancements may not be enhancements at all, depending upon the skill level of the searcher. Many of Voyager's advanced search features resemble enhancements found in later versions of LUIS; they merely are dressed up in a more attractive graphical interface. For example, keyword searches still require the use of Boolean operators, which presupposes the user's knowledge of Boolean logic; and the effective use of truncation still requires the user to understand its potential disadvantages. One Voyager enhancement—three diverse keyword search methods—may not be an improvement for patrons who are confused by the number of search options. And, in fact, none of these three search options employs a natural language approach that would be more intuitive for the searcher. Furthermore, users still must make initial search decisions as to whether to search by author, title, subject, or keyword; this represents a search pressure that potentially could be alleviated in the future by system designers. Additionally, many bibliographic entries do not include tables of contents or book review information or hyperlinks to either of these. While the latter weakness cannot be attributed to Voyager, but rather to the way bibliographic data traditionally has been formatted, it is a deficiency that our survey participants found problematic.

Instruction certainly can play a factor in efficient use of the OPAC. All of the participants in this study received library instruction, so it is interesting to note that only 48 percent felt that Voyager could be mastered without instruction. This implies that even a user-friendly interface may require instruction—but perhaps not too much instruction:

only ten percent of the respondents felt that it takes a long time to learn a new online catalog. Overall, then, it appears that a little bit of instruction goes a long way in helping Rhetoric students to become accustomed to basic, unsophisticated search and navigation skills.

Librarians must also address the "technofear" of their OPAC users. As we found in our first survey results, some of our online catalog users still fear, or remain at least uncomfortable with, computers. Furthermore, as shown in Rhetoric 160 students' evaluations of their own online experience, many of them still are unfamiliar with Internet technology, and so Web-based OPAC interfaces are not as "user-friendly" to them as they are to more experienced Internet users. In fact, our study reveals that Rhetoric students with less Internet experience were more likely to feel that the Voyager system could not be mastered without instruction from library staff. These inexperienced Internet users were also more likely to feel that *any* library catalog would take a long time to learn. Thus, no matter how easy an online catalog is to use, technological barriers still exist and will for some time to come.

It must be noted with caution that most of the participants of this study were first-year students enrolled in a writing course. These online catalog users tend to perform more subject searches than known-item searches, which could potentially affect their opinion of Voyager. Therefore, it would be interesting to study graduate student and faculty members who tend to perform more known-item searches. In addition, most survey participants, especially in the second survey, had not used LUIS previously; LUIS users may have a greater tendency to prefer the old online catalog—as we found with the first survey participants who had not received library instruction. Those who have more

experience with the old online catalog may prefer it to the new one, even though the new OPAC may offer greater flexibility of search, sort, and retrieval options.

CONCLUSION

Although library system vendors, especially those marketing the latest second-generation systems, would have us believe that online catalogs are now so user-friendly as to require no instruction, many library patrons still feel that some level of instruction is needed. However, our study has shown that a library instruction session will not solve all of the users' concerns; current online catalogs are still designed as technologically-enhanced card catalogs. Since current systems do not have the functionality of third-generation systems, users will remain frustrated because they do not possess the professional skills of librarians to input effective search strategies in these second-generation systems.

As online catalogs move in the direction of electronic reserves, patron-initiated electronic holds and charging of materials, and hypertext links to full-text articles, librarians must be aware that the initial search strategy is the primary link to all of this valuable information. However, it is precisely the search strategy development that users find most difficult to comprehend. Many of the advanced system capabilities favored by librarians and marketed by OPAC vendors remain underused and undervalued by library patrons. The features users prefer are those that make the search process easier, but not necessarily more effective: features such as downloading to floppy disks, marking and printing multiple items simultaneously, and remote access. Those features that enhance search capacity—i.e., multiple keyword search options, subject and author hyperlinks,

and other search features—are irrelevant to most users' needs. It behooves librarians and system designers to study search behavior in order to develop systems whereby users do not have to think like librarians in order to find effective results. Only then will library users find the online catalog, and the library itself, a place of empowerment.

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