Evidence Based Library and Information Practice

Article

Testing an Academic Library Website for Usability with Faculty and Graduate Students

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Abstract

Objectives – This usability study was developed to observe faculty and graduate students' reactions to a recent redesign of the University of Kansas (KU) Libraries' website. The redesign included new navigational features, introduction of a federated search tool, a quick search box on the front page, and research subject pages. The study also provided the opportunity to observe the practices of faculty and graduate students in locating and retrieving information on the Libraries' website.

Methods – Ten participants (five faculty and five graduate students) representing diverse disciplines were solicited for the study. Participants were required to access the Libraries' website to answer a series of questions regarding new and updated features of the website. Observational analysis using Morae™ software was

conducted and interviews with each participant provided details of their opinions on how these new features would influence their research and teaching activities.

Results – Most of the participants either did not notice or ignored the major website changes. Links to and locations of commonly used resources (e.g. catalogue; databases; e-journals) had been changed minimally, and the faculty and graduate student participants gravitated to those familiar features to complete tasks. Prior to the study, participants had not accessed the new discovery tools; however, once previewed, responses to the tools' utility were generally favourable. After using the federated search tool on a familiar topic, several participants noted that, when directed to databases they had not previously considered, they were able to locate citations they had missed in the past. Observers noted pitfalls in navigating the site such as inconsistent underscoring of links, ambiguous terminology, and unclear icons meant to expand subject heading lists. Unexpected searching behaviours were observed, including inconsistent and lack of conceptual understanding in searching for e-journal content.

Conclusions – This study provides evidence regarding the usability of a library website with a population already familiar with library resources. It demonstrated that faculty and graduate students are not interested in experimenting with new discovery tools but are amenable to their potential value to undergraduate students. The recent trend toward minimizing content and links on websites satisfies this population, one which is already comfortable with the basic attributes of a library's website.

Introduction

Academic research libraries bear the challenge of meeting information needs of patrons varying from entering freshmen to eminent scholars. Historically, face-to-face transactions permitted staff to adjust to the needs, characteristics, and skills of the individuals before them. Using information gained from the reference interview, body language, and other visual clues, librarians easily guided diverse patrons to the sources that best met their informational needs. Today, patrons visit the library not only through the front door, but also electronically via library websites. Library websites bear the burden of serving the same range of patrons, but without the same capabilities for adaptation. As libraries work to better serve one group of patrons, does this hinder services to others?

During the summer of 2008, the University of Kansas Libraries revised their home page <http://www.lib.ku.edu/> to incorporate a variety of resource discovery tools (Figures 1

and 2). The main objectives were to incorporate tools for easier searching, such as a federated search, and to improve access to subject-focused resources and services. To achieve these objectives, a quick-access tabbed box for federated, catalogue, and e-journals searching was added to the home page along with a "Research by Subject" access point. Before the new website went live, the Libraries undertook a usability study with undergraduate students. Although the redesign was aimed to improve undergraduates' use of library resources, the design team desired to also understand how graduate students and faculty might use it as researchers and as instructors. Due to time constraints, a usability study with graduate students and faculty did not occur until two months after the redesigned website went live.

Literature Review

Leo Robert Klein declared in 2003 that, "The Expert User is Dead." Klein urged librarians to recognize that they could not create websites

or support databases with complicated searching interfaces, techniques, and countless options. Although librarians aspired to change users into experts, Klein reinforced that attempting to do so was unrealistic and impractical. Instead, he suggested librarians redefine their expectations of patrons and to work at giving users what they wanted (36). Commentators and critics like Klein advocated librarians to adapt technology to meet users' expectations.

As the Web matured and matriculating college students came of age with the Internet, libraries faced a stark reality. Although librarians suspected that college students turned to the Web for information before they visited the bricks-and-mortar library, a 2005 OCLC report confirmed this. The authors of *College Students' Perceptions of Libraries and Information Resources* concluded that 89% of undergraduates begin their research with a search engine (De Rosa et al. 7). Even prior to OCLC's quantification of undergraduate information-seeking behaviours, librarians looked for solutions to make using library resources more appealing. A number of commentators have argued that federated searching could match Google in ease of use and return better results than a Web search (Bell 107-108; Luther 36; Tennant 28). A simple search box integrated multiple databases, assumed the Boolean AND operator, and required little library knowledge from the user (Kitalong, Hoeppner, and Scharf 178). This seemed like the perfect solution to meet the needs of undergraduates because they "expect to take their Google searching skills and apply them to find library resources" (Ponsford and van Duinkerken 162).

Federated searching has not been without criticism. Critics direct their frustration toward the duplicated results from multiple sources, slowly executed searches, and results presented in no particular order (Belliston, Howland, and Edwards 474; Tang, Hsieh-Yee, and Zhang 216). Yet librarians have generally accepted its use as a discovery tool for users lacking basic searching skills. For these reasons it is perceived as a tool to initiate

searching for undergraduates and not for extensive use by graduate students or faculty.

Librarians have adopted usability testing as an essential step in the Web design process. Jakob Nielsen, an authority on usability, advocates that websites undergo frequent examination. Nielson asserts that testing more than five participants is a waste of resources because it is the point of diminishing returns. According to Nielsen, the only time testing needs to extend beyond five is when a site has many distinct user groups (Nielsen).

Library literature contains many usability studies involving federated searching, with the majority focusing on undergraduates. This is not surprising since undergraduates make up the largest portion of users in academic libraries. Their lack of awareness of library resources and tools is reflected in their perception of library websites (Kitalong, Hoeppner, and Scharf 178). Ed Tallent found in an early study that students do not care to learn about the various avenues available to obtain information. Instead, an individual user desires to have everything "combined for searching and sees little need to separate the access" by resource (71). But federated searching is not without its problems. As Tang, Hsieh-Yee, and Zhang found, patrons do not understand what they are searching or how to interpret results (216). Belliston, Howland, and Roberts emphasize that even with these problems, federated searching remained the choice of undergraduates. In their examination at three Brigham Young University campuses, the authors determined that undergraduates favoured the speed of the federated search over traditional searching (479-480). There are no published studies focusing solely on graduate students and faculty, and those studies that do include these more advanced users among the participants make few references to the reactions of this subset of patrons. Belliston and his fellow authors suggested the need for studies specifically exploring graduate student and faculty perceptions of federated searching (480).

Usability studies focusing on library websites have consistently documented the typical behaviours of users. Overall, patrons have clearly established expectations of websites based on their prior Web experiences (George 14; Ponsford and van Duinkerken 162). Patrons are most likely to read and use links on the left-hand side of the screen. (Fichter 8; Whang and Ring 80). Users do not want anything elaborate; they expect the basics. Links, for example, need to be clearly identifiable as links and library jargon should be avoided. In a 2005 test, patrons sought help on the "Library Instruction" page. Unaware of the meaning, they assumed the page provided instruction on using the library (Cobus, Dent, and Ondrusek 237-238). The simplicity and success of Google reinforces that sites can be uncomplicated and still be effective. Jung et al. determined, "by attempting to make all resources visible, the library has perhaps made none very accessible" (384). In creating a more user friendly website and not one just for information professionals, the need for multiple access points leading to the same place has become apparent (Fichter 7).

The majority of usability studies explored only the reactions of undergraduates or a combination of undergraduates along with an insignificant number of graduate student and faculty participants. Overall, reported findings inform the profession only about the habits of undergraduates and not those of advanced researchers. A gap in the literature exists regarding graduate student and faculty opinions about and usage of these new discovery tools. This study set out to address these gaps.

Methods

Ten participants consisting of five faculty and five graduate students were solicited for the study. The participants were recommended to the observers by library faculty subject liaisons, and were selected to represent the four main disciplines from across the university: Humanities, Social Sciences, Science/Technology, and International Programs. The graduate students represented

English, Geology, Journalism, Musicology, and Russian, East European & Eurasian Studies (REES). The faculty included individuals from Business, English, Linguistics, Math, and Spanish/Portuguese.

Prior to each observation session, the panel of five observers selected one spokesperson to recite the set of Institutional Review Board-approved questions (see Appendix), which directed each participant to access several features of the Libraries' website, including a new federated search tool. The questions were intended to address new and updated features of the website and to ask participants' opinions of how these features would influence their research and teaching activities. A specific goal was to understand how and whether the federated search tool, structured as a Google-like search and located at the top-center position of the home page, might be utilized. Each participant was interviewed separately during a one-hour session, and participant mouse clicks and audio were captured using Morae™ software, a well-known product for recording usability testing sessions. Morae™ allowed the researchers to later review participants' actions as they navigated the site and to match written observations with actual screen captures.

The Libraries' home page (Figure 1) was redesigned in August 2008 (Figure 2) to serve as a database and subject portal, facilitating the linking of researchers to the information that would meet their needs. The federated search tool, 360 Search™ from Serials Solutions, was added in the fall of 2008 to provide a means for a quick search of selected databases directly from the Libraries' home page. The databases selected for inclusion in the basic search were Academic Search Premier, Business Source Premier, Project MUSE, and Wilson OmniFile. Tabbed searching also included quick access to the library catalogue and e-journal search boxes (Figure 3).
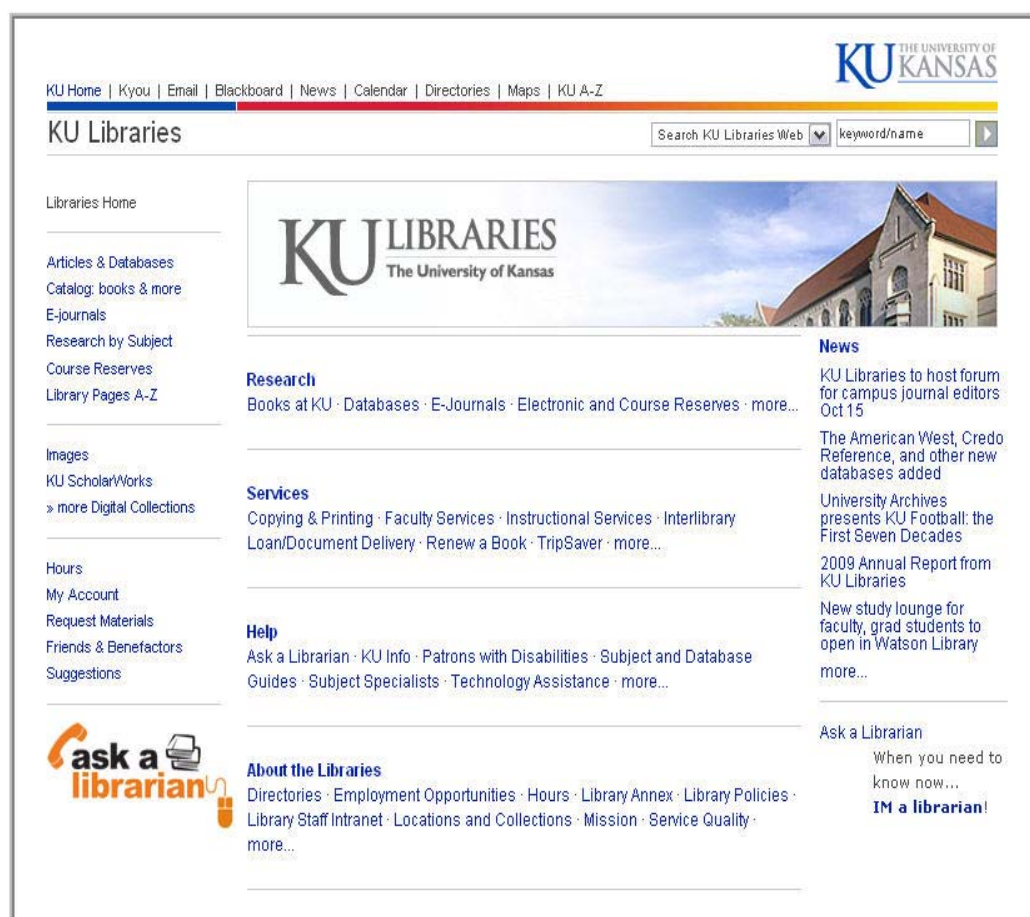
Fig. 1. KU Libraries Home Page Prior to the Redesign.
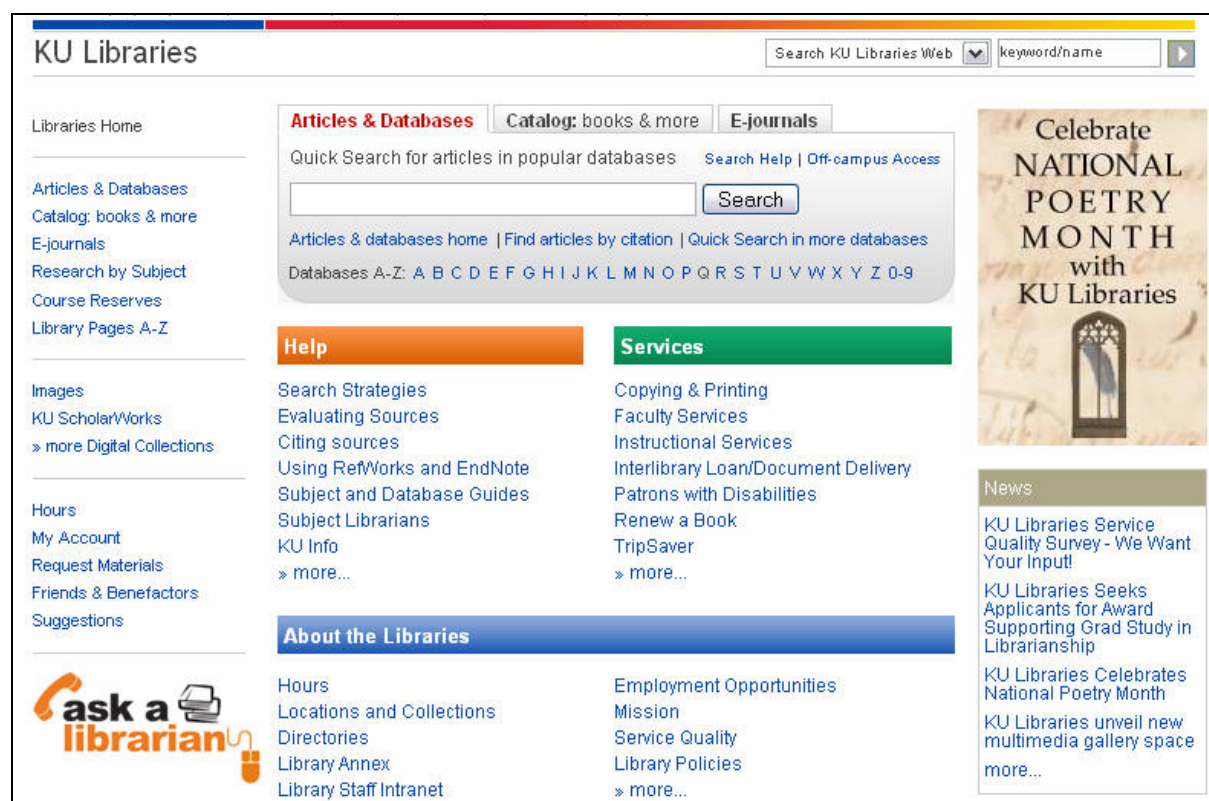
Fig. 2. KU Libraries Home Page as Presented for the Study.
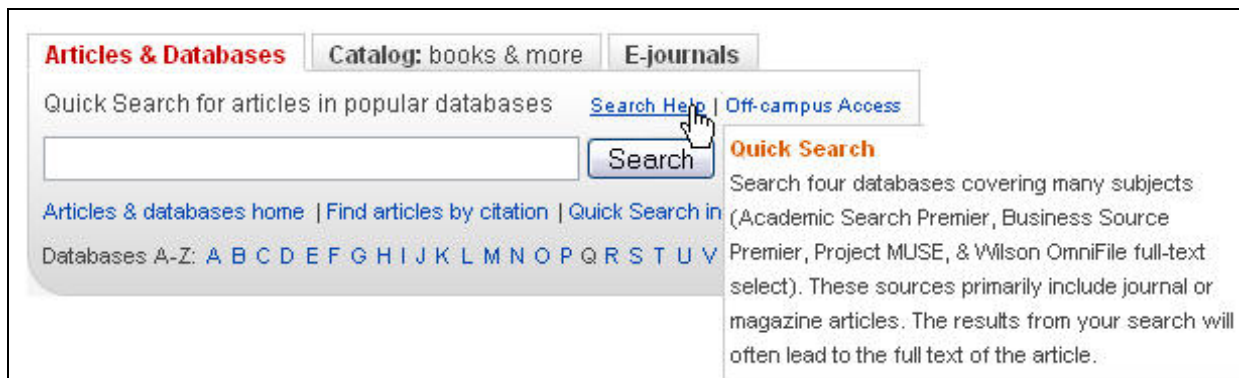
Fig. 3. Quick Search Tabs on Libraries' Home Page.

Results

Overall Response

Ninety percent of the participants did not know about, ignored, or found ways to work around the major website changes. For example, the Spanish/Portuguese professor indicated he had noticed the changes prior to participating in the study but had chosen to avoid them entirely by utilizing a link to the library catalogue from the University's Libraries page. All of the participants were interested in knowing more about the purpose and function of the new features. The main navigation scheme of the site had been purposely maintained with minimal changes to facilitate a smoother transition for users who were already familiar with the site. Observers noted that the participants gravitated to familiar features to complete many of the tasks requested of them. Once the tools had been previewed, participants' responses were favourable regarding their utility for some purposes and users.

Federated Search

Participants were asked to give their impressions of the quick search and to explain the purpose of each tab in the search box (see Appendix). The "Articles & Databases Quick Search" tab puzzled the REES graduate student. She stated, "I know there's a way to select specific databases to search at once," but was not sure how to determine which databases were included in the search. Participants were then asked to conduct a basic search using the federated search tool

and to comment on the results. Some of them found results that related to their topic, but the majority commented that the results were unrelated or too broad. The graduate student in Musicology tried a search for "Peter, Paul and Mary" and got results as varied as authors' names in a medical journal and Peter, Paul, and Mary Magdalene. When she ran the search a second time with her search terms in quotations, she was pleased to find a citation that she had not previously discovered. Another participant stated that, while some of the results might be useful, it would take too much time to filter through all of the citations. After using the federated search tool on a familiar topic, several participants noted that by being pointed to databases they had not previously thought of using, they were able to locate citations they had missed in the past.

When asked if they would recommend the federated search tool to their peers or their students, all participants stated that they would recommend the tool to undergraduate students as a good place to begin their research. According to one person, "Students don't often know where to start. A more restricted database set in a federated search can be helpful and less intimidating." While most participants had a favourable view of the multidisciplinary nature of the results presented in the federated search, a few remarked that they would not be very likely to use the tool themselves, as they tended to rely on one to three subject-specific databases for the bulk of their research activities.

In some subject areas, a subject-specific federated search tool was made available to
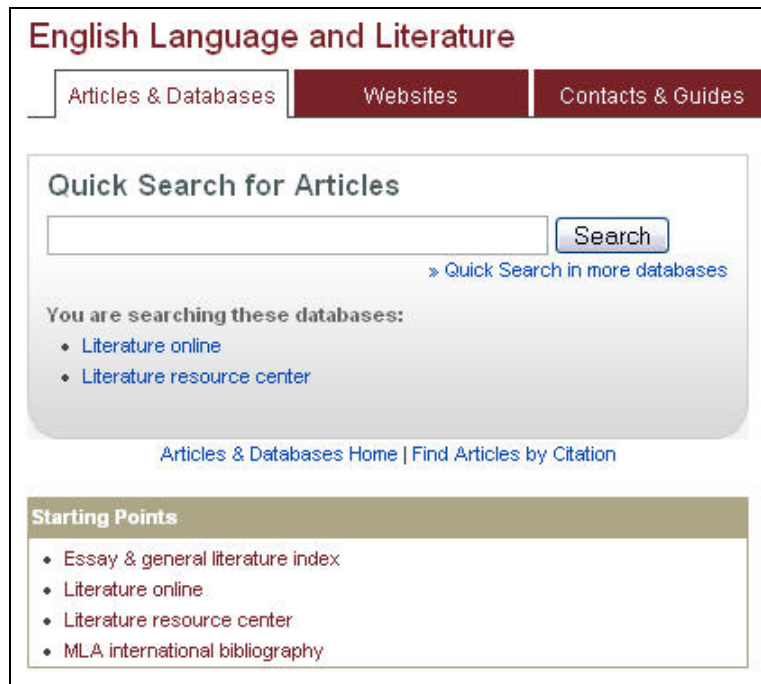
Fig. 4. Example of Subject Page for English Language and Literature.

allow users to narrow their search to databases selected by a subject librarian (Figure 4).

Responses to this tool were similar to reactions towards the quick search on the home page. Some participants were surprised to be presented with a search tool tailored to their discipline. Two commented that there were databases included in the search tool that they had not been aware of previously and that they would be more likely to use the subject-specific tool as a result.

Journal Article Search

The investigators asked participants to take a citation for an article from *Social Science Quarterly* and demonstrate how they would identify whether the article was available in the Libraries (see Appendix). The results of this exercise were varied; half of the participants utilized the E-journals link in the left-hand navigation section of the home page and searched for the journal title. Other methods included searching for the article title using the "Articles & Databases Quick Search", using the online catalogue to search for the journal title, and navigating to a

specific social science database to search for the article title. The least successful methods employed by participants involved searching for the journal title in a search box that was set up to search for database titles, and searching for the article's author in the online catalogue. The investigators were surprised that half of the participants began the exercise by searching for the article title or author rather than the journal title. Of the five who used this approach, two were faculty. This may point to a changing perception among scholars that journal articles are unique entities apart from the journals in which they are published. As a result, search structures or tools that force scholars to navigate to an article through a database-to-journal-to-article path may present a challenge.

Navigation

Observers noted pitfalls in navigating the site, such as inconsistent underscoring of links and unclear library verbiage. When participants were asked to identify the purposes of the three tabs on the search box on the home page, their difficulty pointed to shortcomings in the labeling and help links on the tabs.

Additionally, 70% of the participants, including four graduate students and three faculty members, did not know how to click on the plus symbol (+) to expand the main subject headings to view the second tier of database subject headings on the "Research By Subject" page (Figure 5). This came as a surprise to the observers, given that the tree structure of the subject list was assumed to be a ubiquitous navigation feature.

libraries for information, it is crucial for institutions to learn how resources are being accessed not just by undergraduates but also by more advanced researchers (Housewright and Schonfeld 5). For many constituents, a library's website may be their only interaction with its services and collections. How can websites be augmented and improved to enhance the patrons' experiences and,
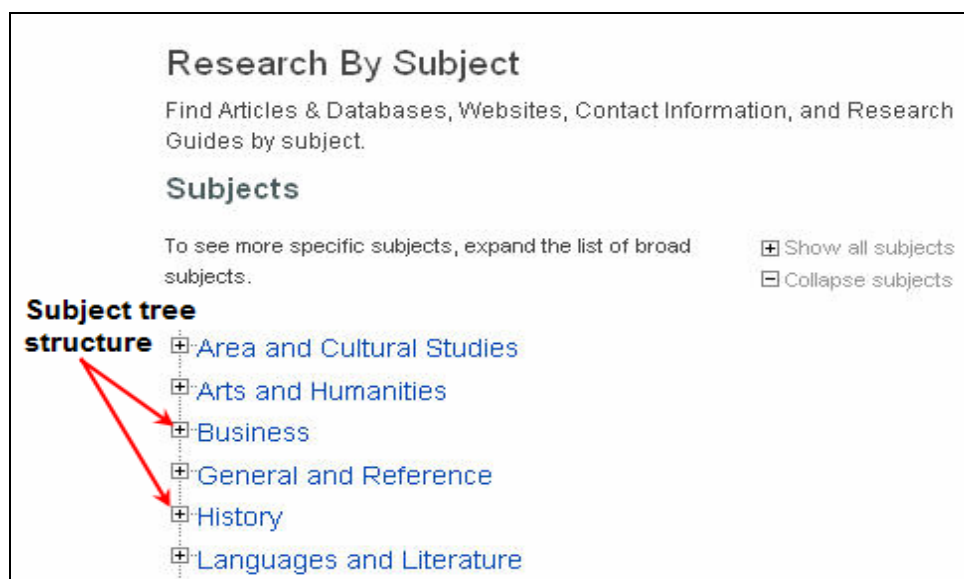
Fig. 5. Research By Subject Page with Subject Tree Structure.

Research Help

An unexpected result of the study was that, when asked the question "If you need detailed information about a subject in your area, where would you go for information?" 80% of the participants responded that they would contact their subject librarian first. This response was evenly divided between faculty and graduate students. Other responses included clicking the "Research by Subject" link or seeking help at a reference desk. This contradicts the current literature that suggests that declining statistics of face-to-face reference interviews are indicators of a changing perception of librarians as a primary source for research assistance (Applegate 184).

Discussion

With studies indicating less reliance on

hopefully, encourage them to return again? The presentation and ease of use are crucial. Clear navigational features such as font size, unambiguous links, and comprehensible terminology are minor attributes when compared to content, but unless these simple features are obvious, the content will not be read. Usability studies such as this one inform and often supplant misinformation and assumptions of library staff about how patrons access library websites.

One of the major objectives of the study was to learn how the participants reacted to the quick search box introduced on the front page, which included a federated search across four pre-selected databases (Figure 2). Several years previously, a similar attempt to introduce a federated searching tool, from a vendor now out of business, was technologically unmanageable and perceived

as not user-friendly by the library staff. The decision to implement a federated search tool a second time supported the commitment to improve resource discovery and make the search easier and more familiar to patrons. Even with an improved federated search product, some staff stated that the research process was being "dumbed down" and that more effort should be placed on instructing patrons to effectively apply proven database search techniques. The prominent quick search box, resembling a Google-like search, was intended to grab the attention of those undergraduate students who are unaware of where to begin a search for information from the Libraries' website. The federated search would hopefully retrieve a few good articles to start them on a research project. The observers wondered if the faculty, in particular, would have similarly negative reactions to simplifying the initial search procedure. Several participants identified the potential value of the tool. Two of the faculty recognized that students often do not know where to start conducting research or which database to select. The English faculty member noted that the clustered results identified common keywords that students might not think of using as search terms. Even though the faculty might not use the federated search tool in their research, they acknowledged the benefit of the tool for undergraduate students. This study indicates that federated searching as a resource discovery tool would not be extensively used by faculty and graduate students for their own research projects.

Apart from the quick search box, the visual and contextual changes to the website were not obtrusive, as these modifications were mostly unnoticed by this study's participants. Familiar links and labels had been carried over from the previous version to the updated version of the Libraries' home page. "Articles & Databases", "Catalog", and "Request materials" links were recognizable to the participants and their presence overshadowed the new features (Figure 2). These links were retained on the left-hand navigation panel on the redesigned website and were typically selected as access options.

A new feature intended to inform patrons of available resources in a subject area was entitled "Research by Subject" (Figure 2). This link leads users to organized lists of databases, websites, contacts, and research guides by subject. No participants in the study had previously reviewed the content, and none seemed overly enthusiastic about the organization of these sources by subject, nor expressed an interest in using this feature as a teaching tool. The organization attempts to compartmentalize "databases" and scholarly "websites" which appeared to be a foreign concept. The English faculty member had previously attempted to locate a noteworthy Middle English website was not aware that the Libraries' divided scholarly websites and licensed databases into two distinct silos (Figure 4). The participants believed they were knowledgeable of the major resources in their area and consequently did not express a need to consult a "Resources by Subject" site. The reactions to the subject pages indicate that this grouping of resources would not be of any particular value for research or teaching for these participants. Subject guides are most pertinent when designed for specific courses where context helps to reinforce resources introduced during classroom instruction (Reeb and Gibbons 126). KU Libraries will continue to address subject organization with the implementation and development of LibGuides™ by Springshare and emphasize the application specifically for courses.

Locating journal articles from known citations is a difficult concept even for some advanced researchers. The traditional paradigm of a journal with issues and articles identified within those issues is shifting even though many electronic journals continue with those traditional enumerations. Articles can be identified through the searching of databases and Google, and are therefore not necessarily tied to the context of an issue and volume as with the print version. Patrons often successfully find journal articles by searching for the article title in a federated search or database, rather than by the traditional means of searching for the journal title and locating the volume (George 13). An awareness of how

patrons are locating articles will help library staff to guide patrons to other access options. Each participant had his/her own unique approach to searching the Libraries' website and locating sources. Several had previously identified their favourite databases and did not deviate from using them. MathSciNet was the exclusive database for the Mathematics professor. The Musicology graduate student relied on ProQuest Dissertations and Theses for recent data not available elsewhere. The Journalism graduate student only considered resources with full-text articles available in the database or through the link resolver. The Linguistics faculty member found library hours by searching Google. To locate databases or websites, the English faculty member used the "find" application on the browser particularly helpful if the exact title was not known. The participants' attention was channeled to those links and sites that had worked well for them in the past, and they tended to avoid taking the time to explore the potential value of uninvestigated links and resources.

Conclusion

Faculty and graduate students participated in a usability study of the University of Kansas Libraries' redesigned website two months after its launch. The redesign included new navigational features, introduction of a federated search tool, a quick search box on the front page, and subject-specific research pages. Most of the participants reported that they had not paid much attention to the changes. The left-hand navigation links on the page had been minimally changed during the revision process, and most participants were content with using the familiar links to databases, e-journals, library catalogue, and interlibrary loan. Very little interest was exhibited in experimenting with the new features implemented during the redesign. Once prompted to try the federated search tool, participants noted the potential value for novice researchers and interdisciplinary research, along with discovery of relevant citations in databases not previously searched. This evidence proved that the website design could satisfy the information needs of the advanced researchers while introducing resource discovery features intended for undergraduates. This study revealed how faculty and graduate students struggled to locate the full text of a specific article from a citation. To improve navigation of the website, recommendations for highlighting links, improving labels, and particularly changing the tree structure to expand database subject lists were submitted to an internal Web services council. No suggestions for changes to the federated search tool were included in the final list of recommendations. Studying faculty and graduate student researchers as a separate population from undergraduate students generated distinct data, and reinforced the need for adequate representation from the varied populations that the University of Kansas Libraries serves when conducting usability testing.

Works Cited

Applegate, R. "Whose Decline? Which Academic Libraries are "Deserted" in Terms of Reference Transactions?" <u>Reference & User Services Quarterly</u> 48.2 (2008): 176-89.

Bell, Colleen. "'Don't Make Me Think': A Plea for Simplicity and Transparency." <u>Public Services Quarterly</u> 2.4 (2007): 103-9.

Belliston, C. Jeffery, Jared L. Howland, and Brian C. Edwards. "Undergraduate Use of Federated Searching: A Survey of Preference and Perceptions of Value-Added Functionality." <u>College & Research Libraries</u> 68.6 (2007): 472-86.

Cobus, Laura, Valeda Frances Dent, and Anita Ondrusek. "How Twenty-Eight Users Helped Redesign an Academic Library Web Site." <u>Reference & Users Services Quarterly</u> 44.3 (2005): 232-46.

De Rosa, Cathy, Joanne Cantrell, Janet Hawk, and Alane Wilson. <u>College Students' Perceptions of Libraries and Information Resources</u>. Dublin, OH: OCLC Online Computer Library Center, Inc.: 2006. 13 March 2009 <<u>http://www.oclc.org/reports/pdfs/studentperceptions.pdf</u>>.

Fichter, Darlene. "Designing a Better Subject Page to Make Users' Searches More Successful." <u>Computers in Libraries</u> 25.9 (October 2005): 6-8, 54, 56.

George, Carole A. "Lessons Learned: Usability Testing a Federated Search Product." <u>The Electronic Library</u> 26.1 (2008): 5-20.

Housewright, Ross, and Roger Schonfeld. "Ithaka's 2006 Studies of Key Stakeholders in the Digital Transformation in Higher Education." 18. August 2007. Web. 28 April 2009.

<<u>http://www.ithaka.org/ithaka-s-r/research/Ithakas%202006%20Studies%20of%20Key%20Stakeholders%20in%20the%20Digital%20Transformation%20in%20Higher%20Education.pdf</u> >.

Jung, Seikyung, Jonathan L. Herlocker, Janet Webster, Margaret Mellinger, and Jeremy Frumkin. "LibraryFind: System Design and Usability Testing of Academic Metaserach System." <u>Journal of the American Society for Information Science and Technology</u> 59.3 (2008): 375-89.

Kitalong, Karla Saari, Athena Hoeppner, and Meg Scharf. "Making Sense of an Academic Library Web Site: Toward a More Usable Interface for University Researchers." <u>Journal of Web Librarianship</u> 2.2/3 (2008): 177-204.

Klein, Leo Robert. "The Expert User is Dead." <u>Library Journal</u> 128.17 (Fall 2003 Net Connect): 36.

Luther, Judy. "Trumping Google? Metasearching's Promise." <u>Library Journal</u> 128.16 (2003): 36-9.

Nielsen, Jakob. "Why You Only Need to Test with 5 Users." *Jakob Nielsen's Alertbox* 19 March 2000. Web. 16 February 2009 <<u>http://www.useit.com/alertbox/20000319.html</u>>.

Ponsford, Bennet Claire and Wyoma van Duinkerken. "User Expectations in the Time of Google: Usability Testing of Federated Searching." <u>Internet Reference Services Quarterly</u> 12.1/2 (2007): 159-78.

Reeb, Brenda and Susan Gibbons. "Students, Librarians, and Subject Guides: Improving a Poor Rate of Return." <u>portal: Libraries and the Academy</u> 4.1 (2004): 123-30.

Tallent, Ed. "Metasearching in Boston College Libraries—A Case Study of User Reactions." New Library World 105.1 (2004): 69-75.

Tang, Rong, Ingride Hsieh-Yee, and Shanyun Zhang. "User Perceptions of MetaLib Combined Search: An Investigation of How Users Make Sense of Federated Searching." Internet Reference Services Quarterly 12.1/2 (2007): 211-36.

Tennant, Roy. "The Right Solution: Federated Search Tools." Library Journal 128.11 (2003): 28-9.

Whang, Michael and Donna M. Ring. "Student-Focused Usability Study of the Western Michigan University Libraries Home Page." Journal of Web Librarianship 1.3 (2007): 67-88.

Appendix

Questions:
A. Please explain for what purpose(s) you use the Libraries' Web site.
B. Think of a previous project where you had to consult the Libraries' Web site, preferably before the redesign. Please show us how you would go about completing the project on this site.
C. What is one of your favorite databases? How would you access the database?
D. With the redesign, we've inserted a search box on the front page. Please explain to us what you think each tab in the search box is for. Would you use any of these 3 tabs? (Ask the participant to run a search on a favorite topic under Quick Search.) Would you recommend to your students to use the Quick Search box?
E. If you need detailed information about a subject, e.g. the specifics on searching a research database, where would you go for information?
F. Research by Subject page questions.
    a. How does this page help you to identify databases in a subject area?
    b. Would any of the other links on this page be useful to you? (Web sites, contacts/guides)
    c. (Pull up a subject page with a 360 search option and run a search on a favorite topic or ask the participant to select databases to conduct a federated search.) Review the results. What do you think of capability of searching across pre-selected databases? Useful to their research? Useful to their students?
G. What link do you access to ask for materials not available in the Libraries?
H. How would you identify if the following journal article is available in the Libraries:
    a. Rocca, M. Personal attributes and Latino voting behavior in Congress. *Social Science Quarterly*, 89(2):392+. 2008.
I. What is your overall reaction to the Libraries' Web site? Suggestions?