

Student Feedback on Federated Search Use, Satisfaction, and Web Presence

Qualitative Findings of Focus Groups

Illinois State University's Milner Library conducted focus groups in the summer and fall of 2007 as part of its user-centered approach to implementing a federated search engine. The feedback supplemented the comments from usability testing conducted in the summer of 2006. The purpose of the focus groups was to learn about students' use of and satisfaction with the federated search engine and to gather their ideas on how to incorporate it into the library website. The focus groups provided qualitative information that Milner Library used to guide decisions regarding website design and federated searching instruction. A list of best practices from the user perspective is also drawn from the findings. The unique aspects of this article include the use of focus groups to gather feedback on federated searching and the discussion of incorporating a federated search engine into a library website. This article is based on preliminary findings presented at the Internet Librarian 2007 conference in Monterey, California.

For more than a decade, federated searching—the ability to simultaneously search multiple online library databases or Web resources—has been one component in the arsenal of information retrieval tools available to libraries. Since its inception, several thousand libraries across

the United States have started providing some form of federated searching on their websites.¹ In April 2005, after nearly two years of review of the leading federated search solutions, the statewide consortium to which Milner Library at Illinois State University (ISU) belongs announced its decision to select WebFeat as its federated search provider.² The consortial package available to member libraries presented an opportunity as well as a dilemma for our library. Illinois state budget shortfalls forced drastic cutbacks throughout all areas of the university. We canceled print subscriptions to periodicals and evaluated databases for redundancies. We were hesitant to invest limited funds and precious staff time implementing a federated search tool we were unsure patrons would use or find useful for their research, even if it was offered at a reduced rate.

By 2005, much had already been written about libraries grappling with federated searching. Case studies reported the challenges libraries faced as they implemented and customized federated search interfaces. Despite these challenges we decided to take advantage of federated searching benefits. We proceeded with the expectation that we could mitigate perceived shortfalls by customizing the product to meet our

Sarah C. Williams, Angela Bonnell, and Bruce Stoffel

Sarah C. Williams is Interim Systems Coordinator and Assistant Professor, Angela Bonnell is Government Documents Librarian and Associate Professor, and Bruce Stoffel is Reference Services Coordinator and Associate Professor, Milner Library, Illinois State University, Normal. Submitted for review August 26, 2008; revised and accepted for publication December 12, 2008.

Reference & User Services Quarterly, vol. 49, no. 2, pp. 131–139
© 2009 American Library Association. All rights reserved.
Permission granted to reproduce for nonprofit, educational use.

FEATURE

patrons' needs. User-centered assessment was one way to determine if the product's expense was justified.

We dedicated considerable time and energy in customizing the federated search engine, which we branded Search It. In June 2006, Search It moved off the development site onto the library homepage for a soft rollout of the tool, as seen in figure 1.

In our first attempt to assess use of Search It by students at ISU, we scheduled usability testing in August 2006. The purpose of the testing was to study ease of use for new users. Participants were first asked to perform five research scenarios and then asked six open-ended follow-up questions on their search experience.³ User comments were useful in identifying problems with descriptive language, search content and search options, and navigation from the federated searching interface to the native interfaces. Highlights from student feedback revealed that none of the participants realized the Quick Search option searched only twelve resources. To correct this confusion, we inserted the number twelve into the Quick Search subheading so it would read, "Search 12 Selected Library Resources Simultaneously." In the usability testing, none of the participants chose to search the library catalog using the Advanced Search option. In a concerted attempt to promote the use of books in the collection and to take advantage of

simultaneous searching in a variety of sources, we chose to automatically include the library catalog into most subject categories in the Advanced Search option. Some participants had difficulty finding and understanding the sort feature in the results display. We adjusted the alignment and the wording in the dropdown menu to better represent the sort options.

Revisions to the search interface and results page would be the first changes made to our customizations. Through the fall and spring semesters, use data revealed students were using the new tool, but we were interested in supplementing quantitative data with qualitative feedback from students. Following a year of use, we planned to assess the tool in focus groups.

In the summer and fall of 2007, Milner Library conducted focus groups consisting of students who identified themselves as users of Search It. Students were asked to provide feedback on their use of and satisfaction with Search It. We also gathered their ideas regarding Search It's placement on our website.

The user-centered feedback convinced us that federated searching was a beneficial tool for student research and that it deserved a more prominent location on our website. The qualitative feedback we gathered from our focus groups fills a gap in existing research on federated searching. It supplements ex-

isting literature from federated searching usability testing that typically focuses on navigation of federated search engines. Unlike other studies, our research offers in-depth user input from focus groups on the value of this tool.

LITERATURE REVIEW

Most articles about federated searching in academic libraries have one of three focuses: why an academic library should offer federated searching, how federated searching has been introduced by academic libraries, and what users and librarians think of the tool. Much of the user satisfaction data is based on conversations with research participants in controlled settings rather than with actual users. Feedback from users has been based on surveys rather than in-depth dialogue. While numerous studies have focused on interface design and navigation, none has addressed broader questions of where and how users expect to find federated searching on university websites.

Roy Tennant's 2001 *Library Journal* article was one of the first to describe the possibilities of federated searching for simplifying academic research by eliminating the need for researchers to familiarize themselves with multiple databases. While acknowledging technical challenges posed by federated searching, Tennant identifies promising early implementations, including Searchlight and WebFeat.⁴ In a 2003 *Library Journal* column, Tennant declared that federated search tools are "the correct solution for unifying access to a variety of information resources," while recognizing challenges in designing such a tool. Chief among them were providing results in a manner that would not overwhelm or underwhelm, finding a way to display results in relevance order, and providing users ready access to full-text publications.⁵

The majority of articles published on federated searching in academic libraries are case studies. Many describe usability tests of federated searching in controlled settings. The tests typically involve asking participants to talk while conducting sample searches. Ponsford

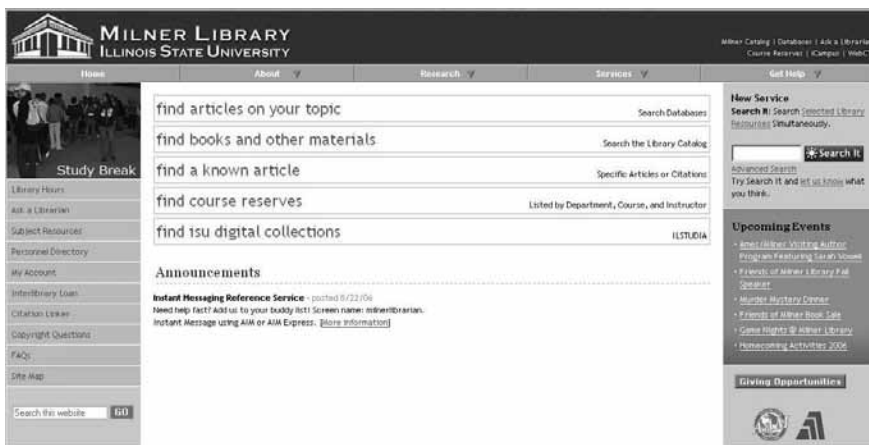


Figure 1. Search It as New Service on Homepage

and vanDuinkerken describe results of “think out loud” sessions at Texas A&M University. Ponsford and vanDuinkerken conducted two rounds of testing, the first with forty-seven volunteers and the second with fifteen. Participants reported having found citations they would not have otherwise located with the native interfaces they regularly used. We would hear this same comment many times in our research. Ponsford and vanDuinkerken found that some participants expected federated searching to function like Google, particularly in ranking results by relevance. Experienced searchers participating in the study expressed a desire for more complex searching options, including the ability to limit by format.⁶ The balance between simple and complex searches—between serving users wanting a few pertinent results and others seeking everything on their topic—is a theme throughout much of the federated search literature and one with which we have struggled at ISU.

Wrubel and Smith describe a similar “think aloud” study involving eighteen students from four campuses in the University System of Maryland. Some participants expressed frustration with the response time of the federated search engine compared with the response time of Internet search engines. As in the Texas A&M study, some participants expected results to be displayed in order of relevance with the resource type identified (e.g., article versus book).⁷

Several case studies have gone beyond recommendations for configuring federated search interfaces to include general feedback from research participants. In soliciting feedback at Carnegie Mellon University, George asked her six participants to complete a brief questionnaire after completing think-aloud sessions. Some participants had trouble understanding link names, icons, and system error messages.⁸ Belliston, Howland, and Roberts conducted an extensive usability study at three Brigham Young University campuses involving ninety-five undergraduate students. After completing sample searches using both the federated search engine

and native interfaces, participants completed a four-question survey of their satisfaction with federated search. Participants were, on average, 17 percent more satisfied with results from their federated search than with their search of native interfaces, and 70 percent preferred using federated search. Findings of this quantitative study compare closely to findings of our qualitative research.⁹

Only a few studies have reported feedback from actual federated search users (as opposed to participants in controlled studies). All of these studies have used surveys to solicit feedback. Feedback has ranged from mixed to positive with qualifications. Tang, Hsieh-Yee, and Zhang surveyed twenty-two library science students who were users of the federated search engine at the Catholic University of America. Approximately seven in ten participants expressed a favorable yet qualified view of the tool. Many described the tool as “useful but complex and hard to figure out.” Students viewed the federated search tool as a way to locate full-text documents and expressed a desire to learn how federated search works. The authors conclude that federated search interface designers need to make system operations more transparent, a desire echoed by some of our research participants.¹⁰ Lampert and Dabbour surveyed a broader population of federated searchers at California State University at Northridge. The authors posted a link on the library website to an online survey consisting of sixteen close-ended and two open-ended questions. The majority of respondents were graduate students who had received formal library instruction and rated their research skills as good or very good. Of the eighty-eight respondents, 70 percent felt that native interfaces were very important to their research needs compared to 61 percent who felt that federated searching was very important to their work. Perhaps this difference reflects respondents’ greater familiarity with native interfaces at the time. Thirty-eight of the eighty-eight participants offered open-ended comments; 53 percent were positive, 21 percent

were mixed, 8 percent were neutral, and 18 percent were negative. Also, 57 percent of respondents felt that training from a librarian was necessary to use the system effectively.¹¹

Few articles on federated searching in academic libraries have addressed the broader questions of where and how federated search engines should appear on library websites. Boock, Nichols, and Kristick mention a decision at Oregon State University to “push the envelope” by placing a customized search box on the library homepage with a link to information about the tool, perhaps wondering if users (or librarians?) would find that location appropriate.¹² Boock, Nichols, and Kristick did not probe users’ reaction to the issue in their survey. The most extensive discussion of how federated search engines appear on academic library websites is a 2007 Robbins and McCain article. The authors evaluated websites of fifty Association of Research Libraries (ARL) members offering federated searching. They looked specifically at how federated searching is explained to users and how users are guided in their searching. The resulting article is a snapshot of academic library practices. The article ends with recommendations for naming federated search engines, providing instruction and help, and publicizing the tool.¹³ While a valuable contribution to federated search research, it reflects the perspective of the librarian rather than the user. It is the user perspective that we sought in our research.

METHOD

The purpose of this study was to learn about patrons’ use of and satisfaction with Search It and especially to gather their ideas on how to incorporate Search It into the library website. To probe more deeply into users’ reactions to these issues, Milner Library’s federated search committee decided to conduct focus groups. Focus groups are ideal for gathering a range of viewpoints and generating ideas. While they provide valuable qualitative information, they do not provide quantitative data. *Focus Groups* by Krueger and Casey was

FEATURE

the main guide for the planning, execution, and analysis of this study.¹⁴ Another useful resource was Von Seggern and Young's 2003 article "The Focus Group Method in Libraries: Issues Relating to Process and Data Analysis."¹⁵

The committee developed a series of questions (see appendix) that addressed the three main issues (use, satisfaction, and website integration) as well as a few wrap-up questions.

To encourage homogeneous groups and increase participants' comfort, participation was limited to students. Participation was further limited to students who had used Search It previously, even just once, so participants would be able to provide informed feedback regarding their use and satisfaction.

Volunteers were recruited via four different methods. Flyers were posted throughout the library, and an announcement was posted on the library homepage. Because the study targeted students who had previously used Search It, brief announcements were also posted by the Quick Search boxes and on the Advanced Search page. At ISU, subject librarians can display messages in the university portal for students and faculty in their departments. Several librarians representing a variety of disciplines posted a brief announcement for the students in their departments. Focus group volunteers e-mailed one of the committee members, who selected the participants on a first-come, first-served basis depending on volunteer availability.

All focus group sessions were conducted in a library conference room. As participants arrived, they were invited to help themselves to refreshments and asked to complete a consent form in accordance with IUS's Institutional Review Board requirements. One committee member served as the moderator for all of the sessions. The moderator started each session with a standard introduction and then used the prepared questions to guide the discussion. The discussion was audio recorded, and one or two committee members also took notes. The moderator concluded each session by thanking the participants,

and the participants were compensated for their time with a giftcard to their choice of one of three restaurants.

This study used a note-based analysis. The note takers captured as much of the discussion as possible during the sessions and, as necessary, referred to the audio recordings to fill in gaps and verify quotations. After each session, the note takers submitted electronic copies of their notes to the moderator, who transferred the notes to a spreadsheet. The spreadsheet had a separate worksheet for each question. Each worksheet entry represented one participant response, and each response was coded to help reveal which responses were most common and were mentioned in multiple sessions.

Two rounds of focus groups were conducted. Three sessions were held in June 2007, and two sessions were held in September 2007. Eighteen students participated in these five sessions, with two to six participants per session. The participants were almost evenly divided between genders and disciplines, although the humanities were not well represented. Participants also were almost evenly divided between undergraduate and graduate students. While the committee would have liked more participants, the participants in the last sessions shared no new viewpoints or ideas. According to Krueger and Casey, a sufficient number of focus groups have been conducted when researchers no longer receive new comments from participants.¹⁶

RESULTS

In the following results, specific numbers are not given because focus groups provide qualitative, rather than quantitative, information.

Use

Most of the participants had used Search It often, including a majority of the graduate students. The remaining participants had each used Search It a few times. When asked how they learned about Search It, most responded that they had discovered it on their

own. This response was given in all five sessions. Only a few responded that they had learned about Search It from a librarian; one mentioned learning about it from a professor and another from a speech coach.

Many participants said they used Search It because it is faster, easier, and less confusing to use. All participants who said this were graduate students. After two years on campus, one graduate student still does not understand "the different database thing." Search It also serves as a good beginning point for a few participants. One uses it as "a tool to get started."

The participants had a variety of responses to how they use Search It for their research. Some of the responses included using it to research unfamiliar topics, to find specific items, for thesis research, as a starting point, after other searches have been unsuccessful, and at the last minute.

A majority of the participants use only the Advanced Search or use both the Quick Search and the Advanced Search. Figure 2 shows the Advanced Search page, and the Quick Search box can be seen in figure 1. Those who use only the Advanced Search said they tend to start there because in the past they have not found what they are looking for with the Quick Search. Some use the Quick Search for less familiar topics and the Advanced Search for familiar topics. One participant said, "I've used both. It just depends on how much you know about a topic you're researching." Others use the Quick Search first, and if that is not successful they switch to the Advanced Search. For example, one participant said, "I start with that [Quick Search] and then if it doesn't pull up what I'm looking for then I'll go to the Advanced." Only a couple of participants rely solely on the Quick Search, although they are frequent Search It users. They simply like the Quick Search.

The availability of Search It has had mixed effects on the participants' research process. Several participants stated that it had not significantly changed their research process; they continued to use native interfaces as their primary

research tools. Search It was not a first-choice research tool. The most common reason was that they preferred the tools with which they were already familiar. This reason was mentioned in four sessions. One participant said, "I still like to go with what I was taught as a freshman." Other participants noted that they still use traditional library resources (i.e., catalog, databases) before Search It because those resources are simply more obvious on the library homepage.

Participants who had changed their research process after trying Search It cited a variety of reasons, but two were most common. A few participants said that Search It broadened their horizons; they found information in resources that they never would have searched on their own. Others said that Search It provided them with an easier way to find reliable information. Notably, a couple of graduate students mentioned that they do not give up on library research as quickly now because Search It serves as a springboard for them.

I really like that [Google Scholar] because it gave you a lot of academic articles, but that was kind of a pain because you had to kind of dig through all of the resources or databases that were available in the library just to find that one article you couldn't access from Google Scholar.

I think that for incoming college freshmen, their high schools focus on Google and Internet searches. This whole concept of Search It is like their equivalent Academic Google.

Before I was just using individual databases, and as a matter of fact it sort of increased my searching for articles and books. Before I think I'd just give up on them because sometimes you don't really go to the right database. As I said before, I really don't understand what all the databases are. . . . Now there's just one place where you can search it.

I think I used social sciences databases. I gave up a lot, too. I couldn't find things in the databases that were listed. A lot of the articles I find now are actually from the ERIC database, so it's broadened my perspective on what articles I can find in what databases.

Several participants indicated that they use Search It in conjunction with other research tools. Some use Search It first to determine which databases would be best to search individually or just to see what is available, while others use Search It in parallel with other tools.

I use it [Search It] as my very first go-to . . . where's the best [database] to search it, where's the best [database] to get that information.

Just an additional thing I can use. Before I would use a social work or psychology database; now I might start with Search It to see what's out there.

I use it along with something

else [American Chemical Society resources].

[Search It] is my first choice library tool. But I still Google.

Satisfaction

When the participants were asked what they like about Search It, the most common response was that Search It broadened their horizons. This was mentioned in three sessions. One participant said, "I really like it because it pulls up a lot of little search engines I wouldn't think of using database-wise. . . . It opens new doors that I didn't realize were there."

When the participants were asked what they dislike about Search It, the most common response was related to the reliability and logic of the results. This was mentioned in four sessions. One participant noted, "A lot of time the word I put in, it brings up off the wall topics." A participant in a different session said, "Sometimes I feel that the results that come up are not necessarily relevant."

The lack of instruction or documentation was another cause of dissatisfaction for participants in four sessions.

Figure 2. Search It Advanced Search Page

FEATURE

One participant asked if the library helped people use Search It because “I found out the hard way.” A participant in another session suggested that the library teach Search It in freshman-level general education courses, which is when she learned about the library.

Without prompting, several participants stated that they disliked the placement of the Quick Search box on the library homepage. This issue is discussed in greater detail in the next section.

When asked broadly whether Search It helped with an assignment or research project, a majority of the respondents answered affirmatively. Search It helped several participants generate new ideas, helped a couple of participants complete a comprehensive literature review, and helped other participants find reliable sources and research unfamiliar topics.

Website Integration

When the focus groups were conducted, the Quick Search box on the library homepage was located at the top of the right-hand column, as shown in figure 1. In all five sessions, participants commented that the placement on the right side was not ideal. In fact, some participants compared the placement to a calendar event or an advertisement. The colors used also received negative comments.

As far as the placement on the website goes, I find it could be better. . . . It's almost like it's a calendar event which is something not here to stay. . . . That green background kind of puts it in the background instead of focusing on it.

When you have a right column like that [with icons], most people automatically assume it is some sort or type of advertisement and most people . . . eliminate or forget that.

It just seems like it doesn't stand

out where it is on the side of the page. Same colors as with the bottom icons.

The participants did have suggestions on how to integrate Search It into the library website. The most common suggestion, which was mentioned in all five sessions, was to move the Quick Search box above or below the five main options in the middle of the homepage. Many participants felt this placement would make Search It more obvious and would make research easier, especially for inexperienced researchers who just need a place to start. One participant who had worked at the library reference desk commented that students who ask for help at the desk often do not know what type of material they want (e.g., books or articles) or how to search, so to help these students Search It should be as prominent as the catalog or database options on the homepage. Similarly, a participant in another session noted that the catalog and database options on the homepage are rather specific, and sometimes a user just needs somewhere to start. Therefore Search It should be “either above or below the five [main options].” On a related note, a few participants suggested using color to make Search It stand out in the middle of the page. One participant said that if Search It was placed in the middle of the page, a different color should be used, and a participant in another session suggested highlighting it in yellow to make it stand out.

When asked for ideas about what wording or graphics should be used, many participants suggested simple wording. Some of the suggestions were phrased as questions, while others were brief phrases.

Don't know where to find it?
Try this.

Need a place to start?

One click gets it all.

Quick search your topic or idea.

The participants were also interested in having Quick Search boxes integrated into other university-related websites. Several participants agreed that Search It would be useful in the university portal and in learning management systems, such as Blackboard. A few participants also mentioned including a Quick Search box on department websites.

DISCUSSION

Feedback from our focus group discussions is consistent with several key findings of previously published federated search research. Unique about our findings is that they come from actual federated search users, whereas most previous studies have relied on feedback from controlled tests. The few studies involving federated search users have used surveys. Our findings are based on lengthy in-person conversations.

As has been the case with previous research, the majority of our participants expressed satisfaction with our federated search tool. Unlike many of those previous studies in which respondents gave positive but qualified support to federated searching, our focus group participants offered strong support. When asked whether the library should continue to offer federated searching, all participants who commented urged the library to do so. A comment from one participant was typical, “Students would be better off with Search It than without it.” Whether that level of support would be found in our larger population of federated search users cannot be deduced from our qualitative study.

Unique to our study was the finding that our participants typically use our federated search tool frequently and they use it in tandem with more traditional finding tools like Google and individual databases. Most of our participants were not choosing between federated search and other tools but were adding federated search to their research options. This seemed to be the case regardless whether the participant was an undergraduate or graduate student. Some participants do not give

up on library research as quickly now. The idea that the federated search tool could be used to start research and to identify appropriate database tools that might not have otherwise been considered was common throughout our discussions. Students in our focus groups also reported that Search It helped them learn which databases covered specific subject areas. In this situation, federated search serves as an educational tool in learning about library resources. It extends beyond the benefit that Baer observed in serendipitously discovering one article among many from a multitude of databases.¹⁷ Using federated search to “broaden horizons” is how several participants described this use. This sentiment should be particularly gratifying to librarians who have promoted federated search as a first step in academic research.

Several of our participants expressed a desire to use native interfaces as a first-choice research tool rather than federated search because they are more familiar with them—they were taught in library instruction to use native interfaces, not federated search. This sentiment is consistent with several previous studies, including Lampert and Dabbour. Whether the choice of native interfaces over federated search might change if federated search techniques were more actively taught to new library users is an issue for future research but one certainly deserving of our attention. Indeed, despite having learned to use our federated search tool on their own, many of our research participants urged us to incorporate federated search in our library instruction. Again, this is consistent with findings in other studies, including Lampert and Dabbour.

Whether and how often federated search tools are used by our academic library users may be related to their placement and identification on our websites. The majority of our research participants strongly urged us to place our federated search tool in a more prominent position on our homepage and in a position equal in visibility and accessibility to our traditional catalog and databases links. As with partici-

pants in other studies (e.g., George), our research participants expressed uncertainty about the meaning of some link names and icons but were not shy about urging changes to render the federated search tool more useful. Many of our participants suggested labeling our federated search tool in a way that would garner more attention from website visitors and emphasize the usefulness of federated search as a starting tool and time-saving convenience, the same uses envisioned by early promoters of federated search, including Roy Tennant. Some of our participants expressed a desire for more information on our website about how the federated search tool works. One example would be to either identify or link to a page that identifies resources searched by our Quick Search option. This also is consistent with requests in previous studies (e.g., Tang, Hsieh-Yee, and Zhang) for more transparency in federated search interface design.

Perhaps at the heart of the issue of location and identification is whether librarians feel that federated search is a tool worthy of prominent exposure. Several authors have either expressed or hinted at this sentiment. Tang, Hsieh-Yee, and Zhang, for example, found in their research less favorable opinions of federated search among librarians than among students.¹⁸ Boock, Nichols, and Kristick write about placing a federated search tool on the library homepage as “pushing the envelope.”¹⁹ Gail Herrera, in her discussion of federated search implementation at the University of Mississippi Libraries, notes that the federated search tool on the library homepage was removed because it was creating confusion among users.²⁰ Findings from our focus groups of students support prominent placement of federated search tools. Perhaps our users would be better served if we moved the discussion away from whether federated search should be prominent to how best to identify and describe the tool front and center.

As a result of our study, Milner Library will be keeping Search It but will be maintaining direct access to its traditional resources as well (i.e., the catalog

and databases). In February 2008, our Quick Search federated search tool was relocated from the side of our homepage to the center, adjacent to the five main options, as shown in figure 3. The tool has been sized larger than the other main options and has been scripted to change background color upon roll-over. Of course, this change will need to be formally assessed. Nevertheless, relocation of the Quick Search box on the homepage seems to have significantly increased its use. Federated search use in spring 2008, after the relocation, was 92 percent greater than in fall 2007. Figure 4 shows the number of searches by semester.

In response to a call for training in use of Search It, the tool is now the focus of one module of an online library instruction tutorial used in our general education classes. Using Search It is a learning outcome for general education library instruction. A rather extensive Search It FAQ page is now linked from the Advanced Search page.

As a result of their examination of federated search tools on ARL member websites, Robbins and McCain identified best practices for informing users about federated searching from the librarian perspective. Our results confirm and expand on those best practices from the user perspective.

- Federated search tools should be clearly named and labeled in ways that describe their function and capture attention.
- Federated search tools should be placed front and center on the library website, where they can best be located by users and used in tandem with library catalogs and subscription databases. Federated search tools should be incorporated with these other tools rather than separated from them on the library website.
- Federated search tools should be incorporated into other Web spaces frequently used by students, such as university Web portals, department websites, and learning management systems.
- Librarians should not assume that

FEATURE

users will find federated search tools intuitive. Training in the use of federated search tools should be incorporated into library instruction. Federated search interfaces should be designed with transparency by providing explanatory information and FAQ pages.

- Feedback should be solicited from federated search tool users through surveys and focus groups to identify ways to make the tools more helpful to library users. Every university population is different and may have different views on how best to design federated search interfaces and incorporate federated search into the suite of library research tools.

Future research could expand use and satisfaction information by including faculty members in studies. It would be interesting to study how librarian attitudes toward federated search tools affect their placement on library websites and how instruction in use of federated search tools affect use and satisfaction with them. Furthermore, it would be helpful to learn how users who report using federated search in tandem with other research tools do so. That information could provide additional insights into how best to design federated search interfaces and incorporate federated search tools into library websites.

Acknowledgments

We would like to recognize all current and former members of Milner's federated search committee: Morag Boyd, Erik Estep, Jennifer Hootman, Chad Kahl, and Andy Taylor, with special thanks to Andy for initially developing Milner's customized federated search interface.

References and Notes

1. In searching predominant federated search vendor websites (i.e., AGent Search, Explorit Research Accelerator, MetaLib, MuseGlobal, PowerSearch Plus, Research Pro, Searcher Analyzer, WebFeat, 360 Search) only WebFeat provides an approximate number of libraries using their product. According to WebFeat's

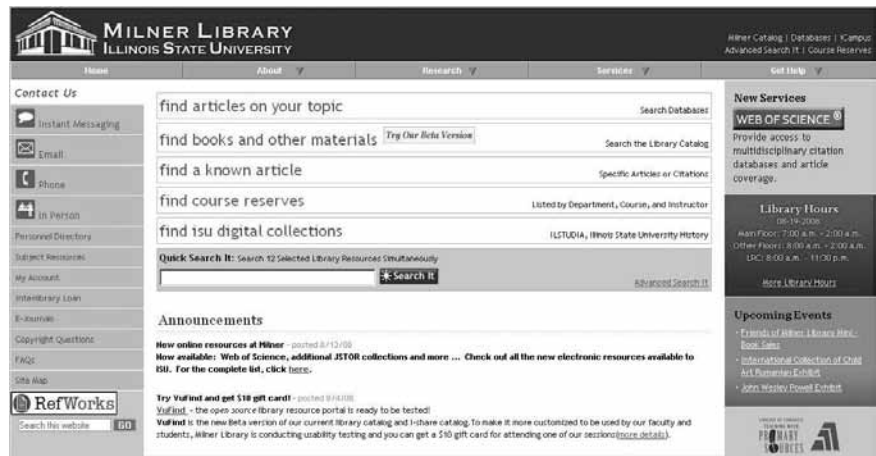


Figure 3. Search It in Center of Homepage

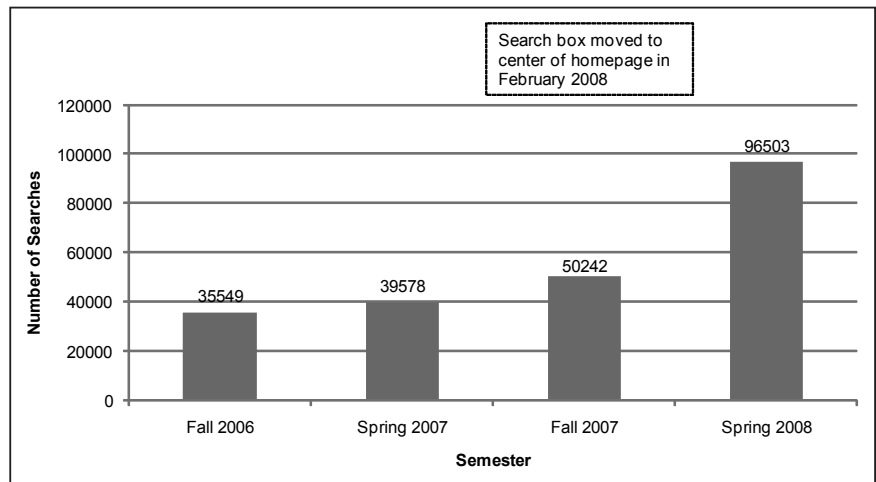


Figure 4. Number of Searches by Semester

2. Milner Library belongs to a consortium of Illinois libraries sharing an online union catalog and offering collaborative partnerships for information products. Membership includes the libraries of each state-supported university, private colleges and universities, community colleges, the Illinois Mathematics and Science Academy, the Newberry Library, and the Illinois State Library. At the time of the decision the consortium was known

- as Illinois Library Consortium State Organization (ILCSO). In 2005, it was renamed Consortium of Academic and Research Libraries in Illinois (CARLI). WebFeat, ILCSO Selects WebFeat to Provide Federated Search Solution, www.webfeat.org/releases/1Apr05_ILCSO.htm (accessed Nov. 24, 2008).
3. For a list of the Usability Testing Scenario Questions and Usability Testing Debriefing Questions, please see Federated Searching Feedback, www.library.ilstu.edu/page/1199.
4. Roy Tennant, "Cross-Database Search: One Stop Shopping," *Library Journal* 126, no. 17 (Oct. 15, 2001): 29–30.
5. Roy Tennant, "The Right Solution: Federated Search Tools," *Library Journal* 128, no. 11 (June 15, 2003): 28, 30.
6. Bennett Claire Ponsford and Wyoma vanDuinkerken, "User Expectations in the Time of Google: Usability Testing of

- Federated Searching," *Internet Reference Services Quarterly* 12, no. 1/2 (2007): 159–78.
7. Laura Wrubel and Kari Schmidt, "Usability Testing of a Metasearch Interface: A Case Study," *College & Research Libraries* 68, no. 4 (July 2007): 292–311.
 8. Carole A. George, "Lessons Learned: Usability Testing a Federated Search Product," *The Electronic Library* 26, no. 1 (2008): 5–20.
 9. C. Jeffrey Belliston, Jared L. Howland, and Brian C. Roberts, "Undergraduate Use of Federated Searching: A Survey of Preferences and Perceptions of Value-Added Functionality," *College & Research Libraries* 68, no. 6 (Nov. 2007): 472–86.
 10. Rong Tang, Ingrid 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, no. 1/2 (2007): 211–36.
 11. Lynn D. Lampert and Katherine S. Dabour, "Librarian Perspectives on Teaching Metasearch and Federated Search Technologies," *Internet Reference Services Quarterly* 12, no. 3/4 (2007): 253–78.
 12. Michael Boock, Jane Nichols, and Laurel Kristick, "Continuing the Quest for the Quick Search Holy Grail: Oregon State University Libraries' Federated Search Implementation," *Internet Reference Services Quarterly* 11, no. 4 (2006): 145.
 13. Sarah Robbins and Cheryl McCain, "Federated Searching: Instruction and Promotion on ARL Libraries' Web Sites," *Internet Reference Services Quarterly* 12, no. 3/4 (2007): 279–96.
 14. Richard A. Krueger and Mary Anne Casey, *Focus Groups: A Practical Guide for Applied Research*, 3rd ed. (Thousand Oaks, Calif.: Sage, 2000).
 15. Marilyn Von Seggern and Nancy J. Young, "The Focus Group Method in Libraries: Issues Relating to Process and Data Analysis," *Reference Services Review* 31, no. 3 (2003): 272–84.
 16. Krueger and Casey, *Focus Groups*, 26.
 17. William Baer, "Federated Searching: Friend or Foe," *College & Research Libraries News* 65, no. 9 (Oct. 2004): 518–19.
 18. Tang, Hsieh-Yee, and Zhang, "User Perceptions of MetaLib Combined Search," 221.
 19. Book, Nichols, and Kristick, "Continuing the Quest for the Quick Search Holy Grail," 145.
 20. Gail Herrera, "MetaSearching and Beyond: Implementation Experiences and Advice from an Academic Library," *Information Technology & Libraries* 26, no. 2 (June 2007): 47.

APPENDIX. FOCUS GROUP DISCUSSION QUESTIONS

The purpose of this focus group is for us to learn about your use of and satisfaction with Search It and for us to gather your thoughts on how best to incorporate Search It into the library website. Based on what we learn, we hope to further enhance the Search It interface and to effectively integrate Search It into Milner Library's website.

Use

1. We'd like to start out by getting to know a little more about each of you. Let's go around the table and have each of you say your first name, your year in school, and how often you have used Search It in the past.
2. How did you learn about Search It, and once you learned about Search It, why did you decide to use it rather than something else?
3. How do you use Search It for your research?
4. Do you use the Quick Search box, the Advanced Search page, or both? Why?
5. Before Search It was available, how did you do research? Once it was available, how did it change your research process? Is it your first-choice research tool?

Satisfaction

6. What do you and don't you like about Search It?
7. Did Search It help you with your assignment or research? Why or why not?

Integration into Milner's Website

8. Where do you want Search It on Milner's website, especially the homepage? Why?
9. Where else do you want Search It on university-related webpages (e.g., iCampus Portal, Web-CT)? Why?
10. Whether on Milner's site or a university-related page, what kind of wording or graphics would you like?

Wrap-Up

11. What other features or capabilities would you like Search It to have?
12. Should Milner Library keep Search It? Why?
13. Is there anything else that you want to say to us that you didn't get a chance to say?