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Usability Testing of a Web-Scale Discovery System at an Academic Library

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Many academic libraries have either implemented or are considering a Web-scale discovery system, but few usability studies have been published in the library literature. This article describes the usability testing performed at Tulane University on the Primo discovery system. Several usability challenges were identified, particularly with the least experienced users; however, there is strong evidence that users adapt quickly to the new interface. Most usability challenges can be alleviated with simple terminology changes. Also, despite some struggles in the testing, users typically rated the system highly in both usability and quality of results.

KEYWORDS *Academic library, Primo, usability testing, user studies, user testing, Web-scale discovery*

INTRODUCTION

Howard-Tilton Memorial Library is Tulane University's main library, and it supports the university's undergraduate and graduate programs. Its unique collections in areas such as Latin American studies, jazz, and New Orleans history often draw researchers from around the globe. As a member of the Association of Research Libraries (ARL), Tulane's libraries are ranked among the top 120 research libraries in North America. Tulane libraries offer a large number of electronic resources, including access to approximately 700 databases and almost 71,000 e-journals from purchased sources.

In an effort to enhance patrons' access to these resources, the library implemented the Ex Libris Metalib federated search system in the fall semester

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of 2009. As interest in Web-scale discovery was a logical progression, the library formed a discovery tools task force in the spring of 2010. This group examined the Web-scale discovery systems market and decided to defer a serious purchase consideration until the products had matured. The group reconvened in spring of 2011. After a lengthy evaluation process, the group recommended the purchase of the Primo Web-scale discovery system, including Primo Central. Primo was judged to be the best fit for Tulane among the competing options because of its integration with the library's other Ex Libris services such as the online catalog (Voyager), the library's open URL link resolver (SFX), and the library's federated search tool (Metalib). Moreover, the library was able to acquire Primo in a package bundled along with moving all of its Ex Libris services to the company's new cloud-hosted server environment, through which these services would run more efficiently with relatively seamless updates. Another advantage was the relatively high degree of customizability.

Another task force was formed to implement Primo, which the library branded "SearchAll." This committee was divided into four subcommittees: data management, marketing, training, and user assessment. The user assessment subcommittee (UAS) developed an assessment plan, which included the usability test discussed in this article. The UAS also developed a survey that was administered through our Website. We also began an analysis of usage statistics that may be impacted by SearchAll 's implementation, such as circulation, journal usage, full-text article downloads, and digital collection usage.

RESEARCH VALUE

There has been significant discussion of the search behaviors of today's college students. Most of this research suggests that the simplified user interface and faceted results screens are well-suited to students' expectations and typical information-seeking behavior (Vaughn 2011a, 7). Nonetheless, the author has found few published articles that describe usability testing of a Web-scale discovery system. Usability testing is needed to confirm that the benefits of Web-scale discovery systems justify the substantial cost. Testing is also important to identify potential improvements that may maximize its usefulness for library users.

To the author's knowledge, this is the first study of the usability of the Primo Central Web-scale discovery system to be published in the library literature. This study includes samples of undergraduates (eleven), graduate students (four), and faculty (five). Additionally, this study is focused on the discovery system, not the library Website as a whole. Finally this study presents not only judgments based on qualitative observation, but also calculations based on a quantitative assessment of the time taken to perform certain tasks.

LITERATURE REVIEW

Scope

For the purposes of this review, the author distinguishes between “Web-scale discovery” systems and “next-generation” catalogs. A next-generation catalog aggregates library content, particularly catalog records, digital collections metadata, and other library-owned resources, and presents them in a more modern interface. This interface typically includes facets for limiting searches and some “Web 2.0” features such as user tagging. Web-scale discovery systems, like next-generation catalogs, aggregate records from the catalog and other sources, and present them in a modern interface with Web 2.0 features. The crucial distinction is that it also makes article citations, drawn from vendor-maintained indexes, available to patrons in the same set of results. For clarity, this literature review focuses on Web-scale discovery only.

While this appears to be the first study of the usability of Primo and Primo Central, studies of the Primo discovery layer were done at the University of Minnesota in 2006 and 2007 and discussed by Sadeh (2008). These studies were done on prerelease versions of Primo before the integration of Primo Central, and, therefore, they will not be reviewed in this article.

A handful of usability test reports have been published reviewing other discovery systems. As most of the key features are similar, the most recent studies, published in 2011, will be considered here. The author will review articles discussing the testing of the other three main Web-scale discovery systems: Summon, WorldCat Local, and EBSCO Discovery Services, or EDS. With the publication of this article, at least one usability study will be available for each major discovery system.

Pertinent Studies

Gross and Sheridan (2011) performed a usability evaluation of the Website of Edith Cowan University in Perth, Australia. This site was recently redesigned to feature the Summon discovery system, with a single search box placed prominently on the home page. The principal research question was to investigate the ease of use of their new Website, which featured a simple search box interface powered by Summon. The other research questions were as follows: (1) How easily would participants navigate through the Website? (2) How satisfied were students with their search results? The study included five first-year undergraduate students. They were novice information seekers but had been part of a library instruction session that covered the new discovery system in addition to other library tools. Each student was asked to perform four tasks that were typical of undergraduate research assignments.

The authors found that users gravitated to the prominent single-search box and were able to use it to find information quickly. However, they

also found that students were often confused by the multiplicity of material formats displayed in the results. For example, one question asked students to find an article on electronic reserve. The item was labeled "Web resource," and this labeling appeared to confuse the students enough that they overlooked the needed item. The authors also observed confusion regarding the differences between journal articles and newspaper articles. Perhaps most importantly, students had difficulty distinguishing the records for books from those for book reviews. In short, the students were "confident with the user interface, but somewhat perplexed by the search results" (Gross and Sheridan 2011, 242). Further, they make the point that, while discovery systems make it easier to conduct a search, "the simplicity of the new interface may be double-edged. On the one hand, it gives students confidence. Yet, on the other hand, this does not mean that they have any greater understanding of information seeking or evaluation of resources" (245).

Fahey, Gordon, and Rose (2011) describe two user studies of WorldCat Local (WCL) implemented at Memorial University in Newfoundland, Canada. One study focused on health sciences library users and the research questions addressed were as follows: (1) How well does WCL perform common health science research tasks? (2) What do participants think of WCL? This test included four undergraduates, three graduate students, and two faculty members; it consisted of five multistep scenarios.

The other study discussed by Fahey, Gordon, and Rose (2011) focuses on arts and sciences students with a test designed primarily to compare WCL to the traditional catalog. The research questions were as follows: (1) Is there a significant difference in success rates between students using WCL versus the traditional catalog? (2) Did particular types of searches have different success rates? (3) What do participants think of WCL? This study involved twenty-four undergraduate students.

Both tests indicated that users experienced some difficulty using WCL to locate books. In the health sciences usability test, patrons were able to retrieve the correct record, but they had difficulty with identifying the location and call number in WCL. In one question, a large majority of participants (78 percent) misunderstood the library location information. In another, participants were successful in identifying correct editions; however, they still expressed confusion interpreting holdings information. Both queries were known item book searches.

The arts and sciences students were asked to search for a specific title, to search for books on a specific topic, and to identify books by a particular author. Participants were successful finding books by title and by subject whether using WCL or the catalog, with only slight differences in success rate. However, when searching for books by a specific author, students using WCL had considerably more difficulty identifying a book from the results than the students using the traditional catalog. The authors found that "when the incorrect responses were analyzed, it was clear that students

were having difficulty distinguishing between the book and other types of items (articles, periodicals) in WCL” (9). They also noted that students had difficulty determining call numbers in WCL but not in the traditional catalog. Overall, Fahey, Gordon, and Rose (2011) find “remarkably similar” results comparing WCL to the existing catalog, and users did not express a marked preference for WCL. They conclude that “existing difficulties in the library’s catalogue may not necessarily be solved by WCL,” and that “WCL introduced additional challenges that participants did not encounter in the [catalog]” (13).

Williams and Foster (2011) describe a usability assessment of EBSCO’s EDS that was implemented at Illinois State University. The study included six undergraduate students who were asked to perform five common tasks. The authors discuss several observations about the student’s interactions with the system, which they branded “Search It.” First, they found that participants frequently used limiters and refinements, not only after searching, but before initiating a search as well. Participants were actually more likely to use a presearch limiter. The authors felt that the participants used these limiters effectively. Some limiters, such as “peer-reviewed,” were self-explanatory and were consistently used effectively, while others, such as location, caused some confusion. While the participants used the basic search features easily, few used the special features such as bookmarking. Additionally, patrons had difficulty managing the “Additional Results” feature. In EDS, a checkbox labeled “Additional Results” searches records that are not part of EDS but are part of EBSCO’s Integrated Search. The authors found that participants often overlooked this feature. When it was found, they seemed unsure of what to do with the additional content.

Williams and Foster (2011) also asked the participants posttest questions to gauge their satisfaction with the system. Most participants agreed or strongly agreed that it was easy to find relevant results, most liked the interface, and all were likely or very likely to use Search It again and recommend it to friends.

Methodology

Participants in the Tulane study included eleven undergraduates, four graduate students, and five faculty members. The students represented a diversity of undergraduate and graduate majors. The undergraduates ranged from freshmen to seniors. Participants were recruited through an advertisement on the library’s Website, printed flyers placed at library service points, and by word of mouth. Participants were given a \$5 gift card at a local coffee shop. The participants were asked to perform a series of five tasks. These tasks were designed carefully to test various key aspects of the discovery system. These include several of the “facets” (the search results refinement options displayed on the screen), the ability to access full text, and the ability

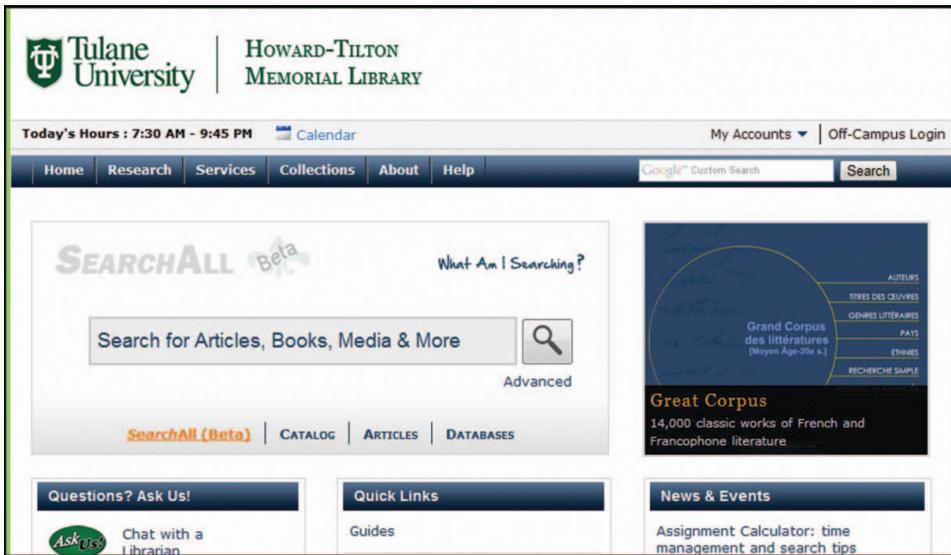


FIGURE 1 Howard-Tilton Memorial Library's home page (Color figure available online).

to make a request on an item, among others. The scenarios are available in the Appendix.

The sessions were conducted in the Web Services Librarian's office. The participants began the test from the home page (see Figure 1) of the Howard-Tilton Memorial Library Website. The home page was redesigned to feature the *SearchAll* search box. Three other search options are also available from the home page: (1) the Library Catalog; (2) Articles, which searches our federated search tool, Metalib; and (3) Databases, which searches for a specific database by title. Because this study was designed specifically to test *SearchAll*, participants were instructed to use *SearchAll* only. Participant's mouse movements, screen navigation, facial expressions, and comments were recorded using Silverback software.

Participants were given a brief pretest questionnaire in which they were asked how often they had used *SearchAll* and whether they had attended a training workshop. This information was gathered to enable us to compare the performance of students with and without training, and with differing degrees of experience using it. After the test, they were given a posttest questionnaire that asked participants to rate the usability and effectiveness of the system and offer suggestions for improvement.

Research Questions

The main research questions consisted of the following:

Research Question 1: Are patrons confused by the array of formats displayed in the results? Or do patrons intuitively use the facets to select specified material types in a single set of results?

Research Question 2: How quickly do patrons adjust to the facet-based search, i.e., how learnable is the system?

Research Question 3: What are the major stumbling blocks that patrons encounter and what can we do to improve them?

Research Question 4: How would users rate the usability of *SearchAll* and the quality of search results?

RESULTS

Research Question 1

The first question we addressed was how intuitive users would find the facet-based refinement features of *SearchAll*. One potential drawback of discovery systems is the difficulty some users report when trying to find a known item (usually a book or video) amidst a page full of articles and/or reviews about the item. For example, Gross and Sheridan (2011, 4) observe this during their usability testing:

“However, it was obvious from observing them that they did have trouble interpreting the screen results and understanding the differences between different formats. For example, in the Library One Search results list display, students were confused between the record of a book, and the record of a book review.”

The first test question gave participants a specific title and asked them to search for a particular book. We wanted data on the following specific questions:

1. How readily would patrons recognize and use the narrowing facets?
2. How many would visually scan the results instead?
3. How many would unknowingly select reviews, and how long would it take for them to realize that they were not seeing the record of the book they were seeking?
4. Would there be a significant difference in behavior between undergraduates and other patrons?

We selected this particular book because it returns a significant, but not overwhelming, number of related articles or book reviews. To minimize the frustration of patrons who visually scan the results rather than select a facet, we chose a book whose record appears in the first or second page of results. While it would be possible for a participant to browse the result list, we expected that most would select a facet (either “Books” or “Available in the Library”) to refine the search results.

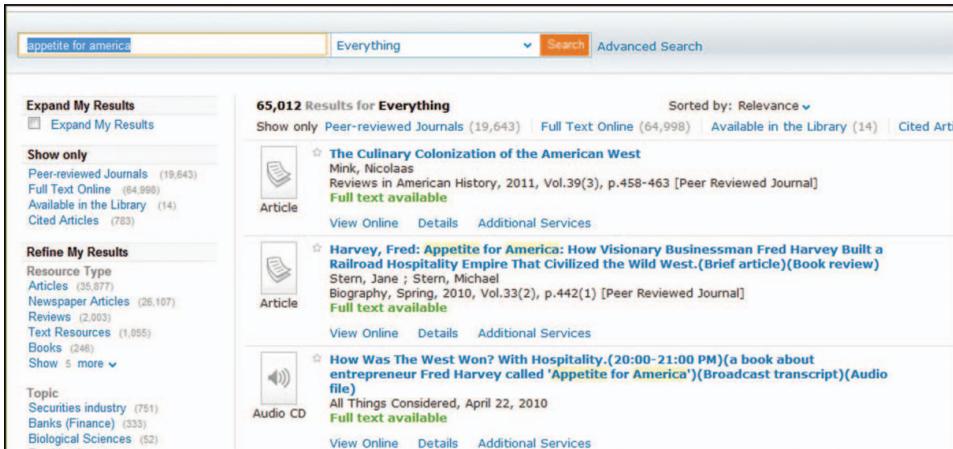


FIGURE 2 *SearchAll* results screen (Color figure available online).

In addition to retrieving a specific record, we asked the question “Where exactly is it (the book) located?” We also asked the patron to identify how to email the book’s citation. The complete question was as follows:

1. a) Does the library have the book *Appetite for America*? Where exactly is it located?
- b) Can you e-mail the citation to yourself?

Use of Facets to Identify a Specific Resource Type

The *SearchAll* results screen has the search facets in a side bar on the left side of the screen. The results are displayed on the main pane, which includes the remaining two-thirds of the screen. A sizable image to the left of the brief record identifies the resource type (book, article, etc.) (see Figure 2).

For most undergraduates using *SearchAll* for the first time, there was a substantial delay before selecting a facet that limits to books. The time taken to select a facet ranged between three and forty-eight seconds, with an average of twenty-two seconds. Time was measured from when the search results displayed on screen until the user clicked on a facet or on the specified item.

There was obvious confusion as they scanned the first page of search results, which usually included only book reviews (most labeled as Article) and some audio transcripts (labeled as Audio CD). Three of the eleven students first clicked on an article. Several more students looked intently at one or more articles, but did not click on them. In two cases, where the record appeared on the first screen, the student selected the record from the initial search results list. Graduate students were much quicker, with one selecting the Books facet in two seconds, another taking three seconds,

and a third needing twenty seconds. The fourth put quotation marks around the search term, which returned only one result, making no refinement necessary. Faculty appeared even more confused than the undergraduate students by the aggregation of search results. The shortest time taken was eight seconds. One struggled for a full minute, reading through the list before finding the book in the list. The average time was twenty-eight seconds before identifying the Books limiter or the book.

These observations suggest that the amalgamation of resource types into a single results screen is indeed problematic, particularly for new users. Undergraduates, who are typically the primary intended audience of discovery tools, were surprisingly slow to use the facets. Undergraduates and faculty seemed to be nearly equally confused by the results screens.

RECOMMENDATION

The UAS recommends that the implementation committee investigate this matter further. Adjusting the weighting of results so that books are displayed above reviews should be considered. More usability testing should be done to identify additional problem areas and suggest solutions.

Research Question 2

The next major question was how quickly patrons could learn the system. The second question was designed to determine how much more quickly patrons would use the facets to limit their searches, compared to question 1. We expected that the time it took each patron to select the “Books” limiter to decrease substantially from the time it took in the first question. If this would be true, we could infer that *SearchAll* was highly learnable.

Question 2 was worded as follows:

2. You are looking for books about Senate hearings on mortgages. How many books does the library have?

Participants had several options. They could enter search terms and then click on the “Books” or the “Available in the Library” facets. Also, since the number of results is displayed in the facet pane, users can also simply look at either facet and determine the number of books.

Participants did in fact recognize the facets much more quickly for question 2 (see Table 1). Undergraduates averaged three and one-half seconds; graduate students, two seconds; and faculty, three seconds. Faculty members in particular were significantly faster, showing almost a 90 percent improvement compared to the first question.

TABLE 1 Average Time Taken to Recognize Search Facets Comparing Q1 with Q2

	Q1(s)	Q2(s)	% Reduction
Undergraduates	22.4	3.5	84.4
Graduate students	8.3	2.0	76
Faculty	28.2	3.0	89.4

Another way of measuring learnability was to examine the time taken to complete the first task by those who had used the tool more frequently compared to those who had never used it before. If the system is easily learnable, one would expect the time taken to be much less for the patrons who had used it more frequently than those who had never used it before. To compute this measure, we looked at the results of the first part of question 1 as well as the answers to pretest question 1. Of the eleven undergraduates, three reported never using *SearchAll* before the test (see Table 2). Four had used it a few times, and four had used it more than a few times. Those students who had never used the system before took considerably longer to select a facet. Those who had used it more than a few times were nearly twice as quick to select an appropriate filter.

Due to the smaller sample size of graduate students and faculty, it may be questionable to draw conclusions from this data for these user groups. However, the student who took twenty seconds to select a facet was the only student who had used *SearchAll* only a few times. The two who selected a facet very quickly reported using it more than a few times. The difference among faculty was negligible.

Research Question 3

What are the major stumbling blocks that patrons encounter, and what can we do to improve them?

LABELING OF LOCATIONS

The Tulane Libraries include a rather complex aggregation of separate libraries, separate collections within libraries, and different physical locations. Materials belonging to different collections and residing in numerous locations are all available for discovery in our catalog and in *SearchAll*. This

TABLE 2 Average Time Taken for Undergraduates to Recognize Search Facets by Experience with *Search All*

Times Used	Number of Students	Average Seconds Taken
Never	3	32.33
A few times	4	18
More than few times	4	16.5

has long presented a problem for users, as patrons may come to the main library seeking a book that is actually located in the Business or Architecture library.

While this has been a problem for some time, a quirk in the display of results in *SearchAll* has made this issue more visible. At Tulane, we use the Ex Libris Voyager catalog system. This system has fields for the “Owning Library” and “Location.” In Voyager, these two fields are displayed on separate lines, with the item’s call number displayed between them. In *SearchAll*, the fields are imported exactly as they are labeled from Voyager, but they are displayed in a single line with no separator. Therefore, the location of a book held in the Business Library will display as “Business Business.” This led to some amusement as well as confusion on the part of patrons.

RECOMMENDATION

To reduce confusion, we have relabeled the Locations in Voyager so that the separate libraries now include the term “Library” (e.g., what was previously labeled just “Business” is now labeled “Business Library.”) To avoid the duplication of terms, we edited *SearchAll*’s Cascading Style Sheets (CSS) file so that Owning Library does not display. We are exploring additional options such as including an address or hall name to further clarify the confusing locations.

EXPAND MY RESULTS

Like other discovery tools, Primo Central includes a central index of citations with millions of records (Vaughan 2011b). These citations can be retrieved by *SearchAll*. However, the library can only provide full-text access to articles for which we have an active subscription. **The *SearchAll* implementation team decided to suppress the display of the items that were in Primo Central, but to which Tulane did not provide full-text access. To see these additional records, users can simply check a box labeled “Expand my Results.”** Summon has a similar feature, which is labeled “Add results beyond your library’s collections.” After patrons click this box, the records are displayed. Then, the user can access the SFX (link resolver) menu and submit an Interlibrary Loan (ILL) request to obtain the item.

An important question we wanted to answer was how likely users would be to recognize the “Expand My Results” checkbox. Then, if they saw a result labeled “No full-text,” would they consider Interlibrary Loan? And if they did, could they successfully initiate an Interlibrary request (see Figure 3)?

Question 5 of our test was designed to answer this question. It reads as follows:

5. You’re looking for an article called “Transorbital Penetrating Head Injury by a Toilet Brush Handle.” Does the library have access to it? If not, is there are way to get it?



FIGURE 3 Expand My Results unchecked (Color figure available online).

To minimize the likelihood of a typo affecting the search results, participants were encouraged to select the exact phrase as it autofilled into the search box, and most did so. Searching for the exact title without quotes brings up the results shown in Figure 2. Two records display, but neither is the article they have searched for. Putting quotes around the exact title will return no results.

Whether the participant saw two errant results or no results, the reaction was the same: bewilderment. Some participants clicked every clickable item, except for the “Expand My Results” check box. Many returned to the home page, looking for help, or a form to request the item. One said, “I probably would go to Google right now.”

A direct prompt, “There is something on this screen that will show this result,” was given to each participant. After the prompt, most participants clicked the checkbox; however, several did not and had to be directly instructed to click the box. The author politely asked each participant to explain the difficulty. Most responded that, because the page indicated that they had searched “Everything,” they did not think that “Expand My Results” would display more results. Those who had zero results returned commented to the effect that “You cannot expand zero, so I didn’t think it (Expand My Results) would do anything.” This is consistent with the observations reported by Williams and Foster (2011) regarding the widget labeled “Additional Results” in EDS. As noted in the literature review, researchers found that patrons often overlooked this feature, and usually needed prompting to use it.

RECOMMENDATION

To improve this functionality, the user assessment team recommended that search results include all hits, whether or not Tulane provides full-text access.

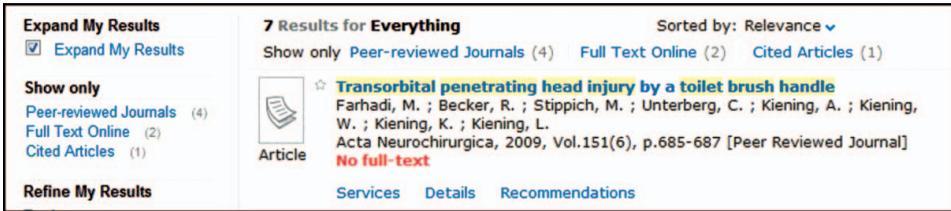


FIGURE 4 Expand my Results checked (Color figure available online).

DIFFICULTY ACCESSING INTERLIBRARY LOAN FROM THE SFX MENU

The second part of this question was designed to explore whether patrons would use the interlibrary loan links to request the item. Tulane uses the ILLiad Interlibrary Loan system, which is integrated with *SearchAll* and our link resolver, SFX. If a patron finds an item in *SearchAll* that is not available in full-text, clicking on the appropriate interlibrary loan link will take them to their Interlibrary Loan login screen. After logging in, they will be directed to the request form with the citation information carried over from *SearchAll*.

After clicking on “Expand My Results,” the citation for the article is displayed as shown in Figure 4. From this screen, there are two ways for users to proceed. One is to click on the article title. When patrons do this, they are presented with the screen displayed in Figure 5.

The other is to click on the Services tab. This presents a slightly different obstacle, discussed below.



FIGURE 5 Details tab (Color figure available online).

Services | Details | Recommendations

Open source in a new window

 | TU Link

Title: Transorbital penetrating head injury by a toilet brush handle
Source: Acta neurochirurgica [0001-6268] Farhadi, M yr:2009 vol:151 iss:6 pg:685 -687

Print full text

- ▶ **NO ONLINE ACCESS.** For print availability, search the [Library Catalog](#)

Request InterLibrary Loan (Please check Library Catalog before requesting InterLibrary Loan.)

- ▶ Law School Library [Law School Faculty, Students, Staff](#)
- ▶ Matas Library - Health Sciences (Downtown) [Health Sciences Faculty, Students, Staff](#)
- ▶ Howard-Tilton Memorial Library [Uptown Campus Faculty, Students, Staff](#)

Note: Students, faculty and staff not affiliated with the Medical, Law, or Business schools, use Howard-Tilton InterLibrary Loan.

FIGURE 6 TULink screen (Color figure available online).

To view the Interlibrary Loan link, the patron must click on the “Services” tab and then identify the correct Interlibrary Loan link in the SFX window (which we’ve branded “TULink”). It took an average of fifteen seconds for the undergraduates to select “Services.” Part of the difficulty was the students’ tendency to view “No full-text” as a dead end. When participants reached this screen, the author restated the final part of the question (Is there a way to get it?). A typical response was “No, it says ‘No full-text’.”

The next step is to recognize the Interlibrary Loan link. Due to the complexity of our current TULink screen, this step presented a palpable barrier to most students. At Tulane, there are three separate Interlibrary Loan systems, one each for the main library, the Law Library, and the Health Sciences Library. However, all three share the same catalog, link resolver, and SearchAll instance. The consequence of this is that patrons are forced to choose one of three Interlibrary Loan links, which is difficult as none of them is labeled Interlibrary Loan, as shown in Figure 6. Not surprisingly, patrons, particularly undergraduates, had considerable difficulty with this process. First of all, many were not familiar with Interlibrary Loan at all. Others had heard of Interlibrary Loan, but thought it was only for books. Many patrons encountered another obstacle. As noted above, another option for patrons is to click the Services tab from the results screen. In this case, the TULink screen is displayed in a small inline frame, as shown in Figure 7.

In this case, the Interlibrary Loan options are “below the fold,” and users must scroll down to see them. Worse, the words “NO ONLINE ACCESS,”

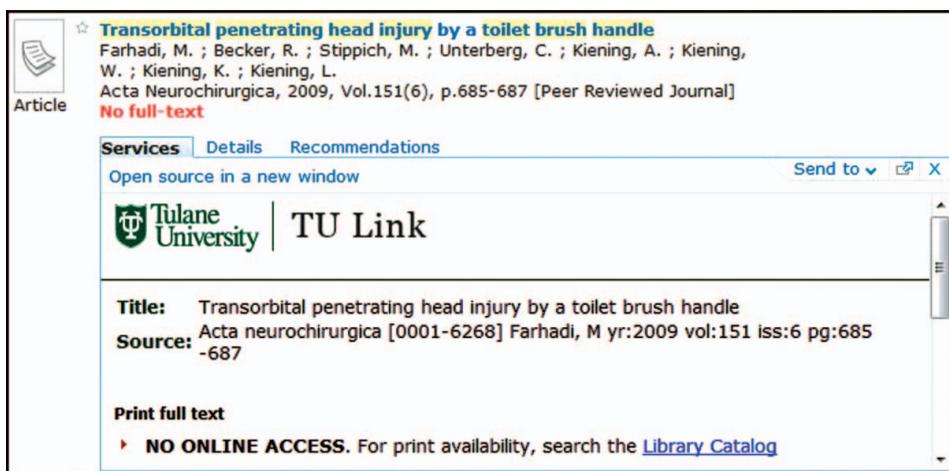


FIGURE 7 Tulink screen displayed in small frame (Color figure available online).

displayed in bold, uppercase letters, are especially prominent. Some students noted that this display led them to conclude that their search had failed.

Many students clicked the Library Catalog link, which in this case returns no results. After prompting for them to continue the search, all students scrolled and saw the Interlibrary Loan options; however, many clicked the first link in the list to the Law Library Interlibrary Loan. It took an average of forty-eight seconds for students to identify the correct Interlibrary Loan link. Both undergraduate and graduate students had difficulty initiating an Interlibrary Loan request; however, faculty members were substantially more cognizant of the Interlibrary service, and, consequently, they were more successful in initiating an interlibrary loan request to obtain the item.

RECOMMENDATION

UAS recommended that the Interlibrary Loan service needs greater visibility in *SearchAll*. We recommend that the display text be changed from simply “No full-text” to “No full-text: click Services for more options.” Additionally, UAS recommended a redesign of the SFX screen to make Interlibrary Loan options easier to use. The *SearchAll* committee agreed and appointed a subcommittee to handle this task.

DIFFICULTY REQUESTING ITEMS

Another area we wanted to explore was the use of the item request features. Through the Voyager Catalog, patrons can request items through three mechanisms: (1) Hold, (2) Recall, and (3) Call Slip. These features are also

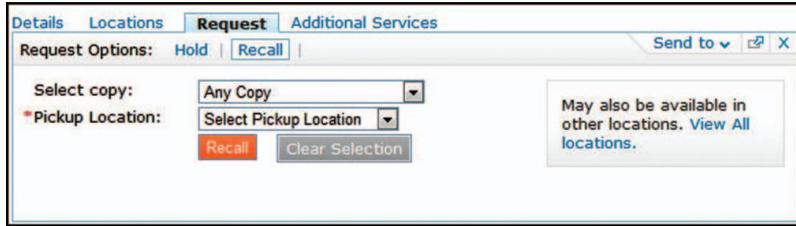


FIGURE 8 Request screen (Color figure available online).

accessible through *SearchAll*. We designed question 3 to test the usability of the Hold and Recall functions. To do this, we instructed the participants to search for an item that had been checked out. The exact text is as follows:

3. You need the book *Night the War Was Lost*. If the book is checked out, how do you get it?

The first step is to click on the Request tab. The user is then prompted to sign in. By default, a static line of text informs them that a login is required to make a request. One enhancement we made prior to the testing was to make this statement an active link to the login page using jquery. After logging in, all that is required is to click the Recall button. The Request window for a result that is checked out, after logging in, is shown in Figure 8.

Users were generally very quick to click on the Request tab; however, most expressed confusion about the terms “Hold” and “Recall” and asked for an explanation of the difference.

RECOMMENDATION

The UAS recommended that explanatory text be added to help patrons decide which option to select. The *SearchAll* implementation committee agreed, and this improvement will be implemented.

Research Question 4

How Would Users Rate the Usability of *SearchAll* and the Quality of Search Results?

After the test was completed, the author asked each participant several posttest questions. First, they were asked to rate *SearchAll*'s usability on a scale of 1 to 10, with 10 being highest (see Table 3). We will call this measure the “perceived usability.” The average perceived usability among all participants was 7.7. Undergraduates, who are typically a discovery tool's main target user, gave the lowest average rating of 7.5. Graduate students

TABLE 3 Perceived Usability and Perceived Quality of Results

	Usability	Results
Undergraduates	7.5	8.2
Graduate students	8.0	8.8
Faculty	7.8	7.8
Total	7.7	8.2

rated usability an 8.0, while faculty rated usability as 7.8. The second posttest question asked participants to rate the quality of the results the *SearchAll* returned. The average rating from all participants was 8.2. Graduate students gave it the highest rating of the three groups, at 8.8. Undergraduates gave the second highest rating (8.3), while faculty were less impressed with the results, rating them 7.8.

CONCLUSION

This study was carefully designed and conducted to assess how usable the Primo discovery service is to our users. For the study, twenty participants were observed performing five typical information-seeking scenarios. We learned that implementing a Web-scale discovery system can lead to unexpected challenges for patrons. Some of the challenges we discovered were confusing location labels, difficulty requesting items through interlibrary loan, and confusion regarding hold and recall features. Not all of these are the fault of the discovery system. In fact, many of these challenges have been present in our traditional catalog and database search options; however, the greater number of searches and results retrieved has brought issues with terminology and with cataloging practices to our attention and to the attention of our users. Despite having difficulties performing routine tasks, participants rated the discovery system favorably. This holds true both for *SearchAll*'s ease of use and for the quality of results.

This research and the other studies discussed here suggest that patrons will have some growing pains with a discovery system. These systems, while a step forward, are not a quick fix. Do not be surprised if the initial reaction from patrons is more negative than positive. Training should be made available to help acclimate patrons to the new interface while also explaining the new discovery system's value and benefits to users.

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APPENDIX

Usability Scenarios

1. a) Does the library have the book *Appetite for America*? Where exactly is it located?
b) Can you e-mail the citation to yourself?
2. You are looking for books about Senate hearings on mortgages. How many books does the library have?
3. You need the book *Night the War Was Lost*. If the book is checked out, how do you get it?
4. a) You need to find articles from a peer-reviewed journal about fluid dynamics and plasma. It needs to be published in 2009 or later.
b) Add 3 articles to your e-shelf.
5. You're looking for an article called "Transorbital Penetrating Head Injury by a Toilet Brush Handle."
Does the library have access to it? If not, is there are way to get it?