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Taking Action on Usability Testing Findings: Simmons College Library Case Study

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ABSTRACT

Simmons College Library conducted in-person and remote usability testing to observe how students retrieve full text when using Library Search, its discovery service system powered by EBSCO Discovery Service (EDS). Testing was conducted as a collaborative study with a consultant associated with EBSCO Information Services User Research Group. This testing found that students expect direct access to full text, have an unfavorable impression of Interlibrary Loan (ILL), and are unsure, based on terminology, which links provide direct access to full text. Steps taken by the library in response to the findings include local customization of EDS, improvements to ILL messaging, updates to user education regarding full text formats and terminology, and requests to EBSCO to update terminology to support users' direct access to full text. Study findings also validated decisions the library made during the initial set up of its discovery service system.

KEYWORDS

Usability testing; library discovery systems; EBSCO Discovery Service

Background

Simmons College, located in Boston, Massachusetts, consists of a four-year, private undergraduate women's college, with a comprehensive liberal arts and professional curriculum, along with four graduate professional schools offering programs for men and women in health studies, library and information science, management, and social work, plus nine leading graduate programs in education and the liberal arts. Approximately 1,700 undergraduate students, and more than 4,000 graduate students, in both traditional and online programs, make up the student body.

In January 2014, the Simmons College Library (<http://simmons.edu/library>) launched Library Search, the branded name of its EBSCO Discovery Service (EDS) instance, which serves as the primary access point to all general Simmons College Library resources including the library catalog. The Library Search box (see Figure 1) is prominently located in the center of the front page of the library's website and is the main search tool taught in first-year library instruction. It is also taught to graduate students as a tool to discover library-owned resources and to identify subject-specific databases in which to continue their research. Because of its location on the library's website and its inclusion in library instruction, Library Search has become the first place many users go to begin their research. Simmons College Library is committed to user research in order to ensure a positive user experience with its services. In addition, EBSCO Information Services' User Research Group concentrates on conducting user research for all EBSCO products, and on occasion, the group has engaged in collaborative customer research to gain better insight into users' behaviors and expectations. For the purposes of gaining insight, Simmons College Library worked with a consultant associated with the EBSCO Information Services User Research Group to conduct in-person and remote usability testing with undergraduate and graduate students. The collaboration's objectives were to: (a) observe users' motivations and expectations when

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Figure 1. Simmons College Library Search.

selecting a full text link or a link resolver; (b) learn about students' thoughts about and use of Interlibrary Loan (ILL); (c) validate Simmons College Library's decisions regarding the configuration of Library Search; and (d) evaluate students' comprehension of full text link labels.

Literature review

There is an increasing amount of usability studies on how students use discovery service systems. In many of these studies a familiar finding is students are unsure how to access full text. The literature review outlines several studies that observed users' challenges to getting to the full text and how an institution elected to work with a vendor to gain insight into their users.

Library terminology has been a commonly reported usability issue in library website and discovery service usability studies especially when it comes to students' getting direct access to full text. John Kupersmith, retired University of California at Berkeley librarian, published a work titled "Library Terms That Users Understand." He reviewed 51 usability studies on library terminology on library websites and found the "average user success rate for finding journal articles or article databases" was 52%. He suggests that library terminology is a factor in that low percentage.¹

In 2015, EBSCO User Research published the findings from "How College Students Conduct Research," its survey on the undergraduate approach to research. One of its survey findings indicated that "library-ese" was a barrier to retrieving full text. The terms "HTML Full Text," "eBook Full Text," and "EPUB" were not understood by most of the 208 survey respondents as an access point to full text.²

Several studies have also reported that link resolvers present a usability challenge and are not well understood by users. Studies have shown that a branded link resolver does not clearly indicate to users direct access to full text. In the study called, "Discovering Usability: Comparing Two Discovery Systems at One Academic Library," researchers conducted user testing on two discovery systems and found that with both systems, participants did not understand the branded link resolver button "Find It @ UIC."³ Students were also unsure of the purpose of the link resolver menu. In "A Tale of Two Discoveries: Comparing the Usability of Summon and EBSCO Discovery Service," researchers at Illinois State University's Milner Library report the results of user testing on two discovery systems, which found that many participants did not know that the link resolver took them to the full text.⁴

Scott Hanrath and Miloche Kottman conducted user testing on their library's discovery system, which included 27 participants at the University of Kansas. In "Use and Usability of a Discovery Tool in an Academic Library," the two researchers reported "in our tests, the usability of the link resolver and the platforms accessed from there greatly impacted the success of the participants." In response to the findings, University of Kansas updated its link configuration to give prominence to direct links to full text.⁵

In "Commercial Database Design vs. Library Terminology Comprehension: Why Do Students Print Abstracts Instead of Full-Text Articles?" Bonnie Imler and Michelle Eichelberger examine why students

print abstracts more often than full text. In their study, 40 students were asked to locate the full text of five articles across multiple vendors via the school's link resolver. Despite the fact that students knew the meaning of the terms abstract and full text, only 25% of students found the full text for all five articles. Researchers suggest that participants are challenged by the lack of standardization across vendors in regard to full text link terminology, link prominence, and link placement on the website. Imler and Eichelberger recommend vendor collaboration to address these challenges.⁶

Few studies have been published on collaborative user testing with vendors. "One Size Doesn't Fit All: Tailoring Discovery Through User Testing," a chapter in the book *Exploring Discovery: The Front Door to Your Library's Licensed and Digitized Content*, describes collaborative user testing between Rutgers University Libraries and a consultant associated with the EBSCO Information Services User Research Group, of Rutgers' discovery service, Articles+. The research team conducted moderated remote usability testing with twelve participants that included students and faculty. A key finding was user testing with a small number of users is important to monitor changing user needs and to customize discovery service systems at the local and vendor levels so that they align. To ensure discovery service systems are responsive to changes in users' research workflow and expectations, "a close collaboration between libraries and vendors" is important.⁷

Methodology

In Spring 2015, Simmons College Library and the consultant conducted a moderated in-person usability test and an unmoderated remote usability test to observe how users access full text. The team's goal was to recruit seven undergraduates for the in-person usability test and seven graduates for the remote usability test. In determining the number of participants, the research team followed the recommendations of web usability expert, Jakob Nielsen, Ph.D. Based on his review of 83 usability tests, he found that a sample size of five users shows as "many usability problems as you'd find using many more test participants."⁸ In addition, he states that a sample size of as few as two can also bring value in identifying usability issues. This approach to usability testing is fairly common and has been used in numerous published articles on testing discovery service systems. The research team also wanted a diverse group of participants that represented the student population, including various class years and majors/areas of study.

Once the library received Institutional Review Board approval for the study, an e-mail was sent to the Simmons College student body requesting students' participation in Library Search usability testing. The e-mail included a link to a screener form and a statement that participants would be compensated with a \$10 Amazon gift card. The screener form included demographic information that was used to ensure that participant requirements were met. These requirements included the recruitment of a mix of both undergraduates and graduate students. Undergraduates could have any major and be at any point in their education, from first years to seniors. Graduate students were screened to exclude students in the School of Library and Information Science in order to eliminate bias and ensure that the results reflected the experience of more typical users. Within three days of sending the e-mail, the research team received over 100 responses. All responses were reviewed against participant requirements and availability. Although the response to the usability study was more than expected, the research team decided to maintain its approach of testing with a small number of participants to keep to the usability study plan and timeline. More importantly, past usability studies have followed Nielsen's approach and have been able to learn a great deal about their users and their challenges with library websites and resources.

The moderated in-person usability test was given to seven undergraduates (see Table 1) at the Simmons College Usability Lab. The consultant served as moderator and Simmons College Librarians watched the tests from the observer room. Prior to each test, students were asked to complete a short questionnaire (see Appendix) and given an overview of the session. The moderator also confirmed that each participant gave permission to record the session using Morae, a tool employed in usability testing to record sessions, document observations, and to track task success. Each student was asked to speak aloud their thoughts on four scenarios with follow-up questions. Once all scenarios were completed, each

Table 1. Moderated in-person user testing participant list.

#	Major	Status
1	English/Marketing	Freshman
2	Nursing	Freshman
3	Social Work	Freshman
4	Nursing	Sophomore
5	Finance	Sophomore
6	Finance & International Relations	Junior
7	Chemistry	Senior

Table 2. Unmoderated remote user testing participant list.

#	Major	Status
1*	Social Work	Graduate
2	Physical Therapy	Graduate
3*	FNPP	Graduate
4	CAS/MPP	Graduate

*Distance learning students.

participant was asked to complete a post-test questionnaire (see Appendix) regarding their thoughts on the test and on Library Search.

The unmoderated remote usability test was completed by four graduate students although seven students had agreed to take the remote usability test (see Table 2). The Simmons College Library wanted to learn more about their distance learning students and believed that remote user testing was a good research method for that purpose. The research team used UserTesting, a remote user testing product that allows one to set up a usability test and then send a link to participants who can take the test online anytime, anywhere. UserTesting only records a user's screen and voice. Throughout the test, participants are prompted either to type in a response or to speak aloud their thoughts. Once a participant completes the test and the recording is compiled, the person who set up the test is notified. Although the team would have preferred to test more students, it was felt that four students (two were distance learning students) provided sufficient insight into graduate students' experiences.

In general, remote and in-person usability testing with a small number of users showed minimal differences in the results. The research team was able to identify common issues and validate decisions made in customizing its EDS instance. The benefits of limiting the number of participants in usability testing: (a) allowed the team to get valuable user responses quickly; (b) required less resources to organize the study; (c) and due to responses, Simmons College Library was able to make and/or request updates to better support their users. Overall this efficient and low-cost approach to understanding users' research workflow is a powerful tool for anyone managing discovery service systems.

Scenarios

The research team agreed on four scenarios (see Table 3) that focused on understanding how students access full text. For each in-person session, the moderator set up a sample search for each scenario prior to testing. Remote participants were given detailed instructions to ensure minimal time was spent searching and maximum time was spent providing their thoughts on accessing full text. Follow-up questions were asked with each scenario.

In general, remote and in-person usability testing showed minimal differences in the results. Therefore, conducting remote user testing is an option that Simmons College Library will consider for future user observations.

Table 3. Scenarios.

#	Scenario	Follow-up questions
1	You are a student who is completing a class assignment on [virtual reality education and autism]. Tell us how you would get to the full text for the sixth result.	Tell us your thoughts about the new tab that opened? When you see it, what do you typically do? Why did you pick the link? What circumstance would you click on both links presented? What other features have you used on this tab? (c) Did seeing this tab meet your expectation? If not, what did you expect to see when you clicked the button?
2	You are a student who needs to complete an assignment on the topic [topological galois theory]. Review the first result. Tell us how you would get the full text.	What does Request Via ILL mean to you? Have you ever requested an item? Why/Why not? Did seeing this new tab meet your expectation? If not, what did you expect to see when you clicked the button? (d) Is there any other features/links on this tab you would use to get the Full Text?
3	You want to read an eBook about [XML]. Review the first two results. Tell us which link(s) will take you directly to the eBook.	(a) Do you know why the link text is different? (b) Does it matter that the link text is different? How does it impact selecting a result? (c) Of the following options below, choose the one that you feel best indicates direct access to the eBook? A. Read eBook, B. View eBook Online, C. Read Now
4	Now we want you to review a result list. Tell us which link(s) will take you directly to the full text. Tell us also why you made your selection(s).	Result 1 & Results 2 a.) Of the link(s) you selected, tell us which <u>one</u> you prefer to click on to access the full text. Why? b.) Do you click on one link or multiple links for a result? c.) Under what circumstance, would you click on multiple links? Result 3 a.) What do you think Linked Full Text means? b.) If you clicked on it, what would you expect to happen next? c.) What if I told you it takes you to the full text but on another website. Given that explanation, do you have suggestions for different link text? Result 4 a.) What does ePub Full Text mean to you? b.) What if I told you that ePub is a format like PDF. It allows you to read an eBook on a smartphone or tablet because it resizes the book's text for easy reading. Given that, of the following options below, choose the one that you feel best indicates that the book has been formatted for reading on a device? A. Read eBook, B. View eBook Online, C. Read on Smartphone, D. View on mobile, E. Tablet friendly version, F. Other

Results

Finding #1: Students expect direct access to the full text

Students in the study preferred direct access to articles over linking to an article through the link resolver, which was represented by an orange Find Full-Text button. More than half of the participants did not expect the full text link resolver menu to display when they clicked the Find Full-Text button (See Figure 2). The participants expected to be taken to a full text article and instead they saw a menu that included links to other databases, an option to borrow an item through ILL, and export tools connected to citation management systems.

Based on this finding, the library updated a setting within the Holdings and Link Management section in EBSCOadmin to skip the link resolver menu when possible. This change allows for a more seamless experience for the patron, while a small linked bar across the top of the article allows librarians to view the link resolver menu if they need to do so. The library also removed the export to citation managers function from the link resolver menu in order to make the menu clearer and to reduce clutter.

Students expect direct access to full text articles from their results list, therefore direct linking to publishers within the discovery system configuration plays a major role in improving the user

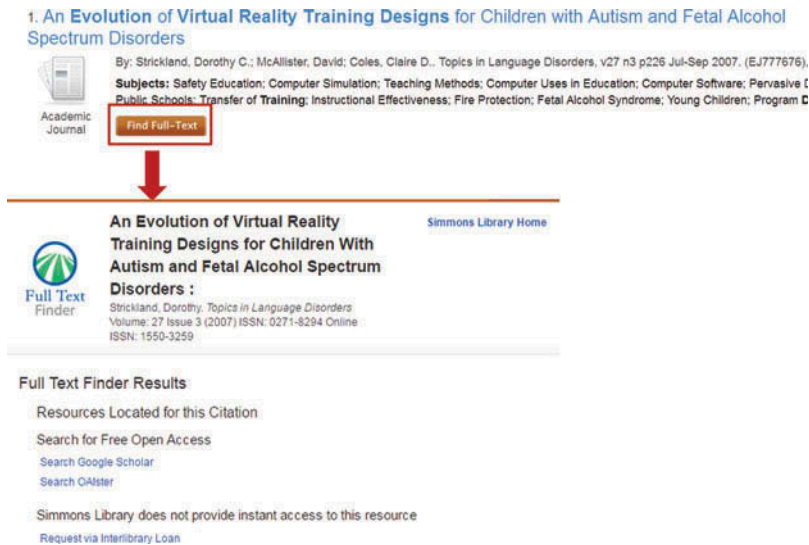


Figure 2. Accessing full text via Link Resolver.

experience. Using EBSCOadmin, the library was able to provide more direct access by creating and updating CustomLinks to major publishers in the library's collection. CustomLinks are an EBSCO feature that allows an institution to create direct links to a publisher's website, library catalog, ILL form, or other services from an EDS instance. These links are set up to display based on rules defined in EBSCOadmin. When users click on a CustomLink, citation metadata is transferred via the Uniform Resource Locator (URL) to ensure users get direct access to full text or targeted access to a website. The library also enabled EBSCO SmartLinks+, a feature that detects that an institution has access to the full text of a resource and displays a link to that resource in the EDS results, based on the institution's EBSCO full text database and journal subscription purchases.

To further provide direct access to full text, the library adjusted the link order to prefer certain CustomLinks over others and lowered the link resolver rank to the bottom. Because it is understood that adjusting the link order rank means preferring some vendors over others, the library will continue to monitor the results of these adjustments in the annual Counting Online Usage of Networked Electronic Resources (COUNTER) reports evaluation.

Finding #2: Students click one full text link

In making some of the initial decisions on the Library Search user interface, the library's implementation team assumed that students would find it easier to get to the full text of a journal article if they were

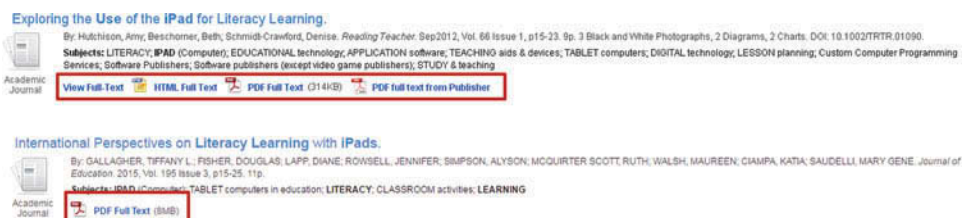


Figure 3. Students preferred one link over multiple links per result.

provided with only one link leading to it. During user testing the research team wanted to discover whether or not this assumption was correct—perhaps students actually prefer a variety of access options rather than only one (as shown in Figure 3). But user testing confirmed that **students really do prefer to be offered only one option for obtaining the full text of an article. Along with only one option, students also preferred the Portable Document Format (PDF) full text option, which they found much more recognizable and understandable, particularly the ubiquitous PDF icon.** Since many of the undergraduates who participated in user testing had already had library instruction, their prior experience became readily apparent in the comment that PDF was “the form of the article as originally published.”

In this case, more is not better, and the implementation team’s initial decision to display only one full text option in the results list and detailed record was validated by user testing, **confirming that multiple access points are more confusing than they are helpful. And for that reason, Library Search continues to limit to providing one link to full text from one provider only.** In thinking about usability, it is important to remember that too many choices can actually be stressful for users.

Finding #3: Terminology: Students unsure how to get to full text

For the third scenario, students were asked to review a library catalog ebook record and an EDS ebook record and identify which links would take them directly to an ebook. **Most students better understood the language of the catalog ebook record’s “Access E-Book” link and picked that link (see Figure 4) compared to the EDS record that displayed PDF Full Text, EPUB Full Text, and Download (Offline) full text links.** Students thought of ebook more as a format similar to PDF rather than as a specific type of resource. In addition, as in Finding #2, students showed a preference for results with one link to the resource, rather than multiple links. These responses validated the implementation team’s decision to use the ebook records from the library’s catalog, with their “Access E-Book” links, rather than the EDS records and links, given that students were better able to obtain the text of an ebook using the language from the library’s catalog. Simmons did not change the wording of the catalog ebook record’s “Access E-Book” link because almost all students knew to click on that link to get the ebook. **As the EDS ebook full text links were not well understood, students were asked to choose one of the following options that best indicates direct access to the eBook: (a) Read eBook, (b) View eBook Online, and (c) Read Now.** Five students selected View eBook Online, three students selected Read eBook, and two students selected Read Now. One student did not choose any of the options and recommended, Read eBook Online.

Students’ responses to the fourth scenario, further confirmed the decision to use ebook records from the library’s catalog. Students were asked to provide their observations on several full text links (see Figure 5). **When asked what they expected to happen when they clicked on “EPUB Full-Text,” no students knew what EPUB meant.** Several participants thought that clicking it would take them to another website that lists all of the journals from a particular publisher. Most participants replied “I do not know” to the question about EPUB. Because they did not know what EPUB meant, some students stated that they would skip that result if it was the only option and move on to another result that might provide a more familiar link to the full

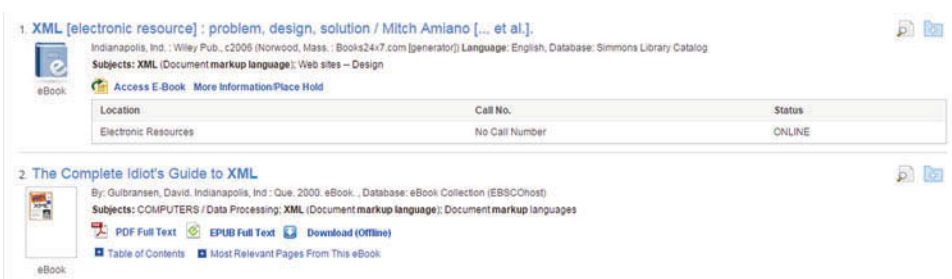


Figure 4. Student feedback on Access E-Book.

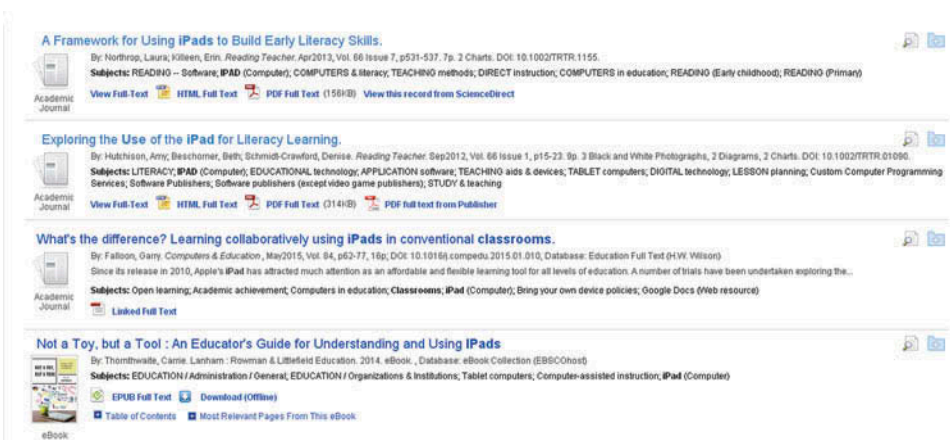


Figure 5. Student feedback on full text links.

text. Once it was explained to students that EPUB is a format similar to PDF, but optimized for reading on mobile devices, they understood where the link would take them but **still indicated a preference for more intuitive link text**. Students were then asked to choose one of the following options that best describes a book that has been formatted for reading on a device: (a) Read eBook, (b) View eBook Online, (c) Read on Smartphone, (d) View on Mobile, Tablet-Friendly Version, (e) Other. **Responses were evenly divided between “Read on Smartphone” and “Other.”** These responses provided EBSCO with suggestions on how they may improve the wording of the EDS links to help students understand their choices in viewing full text and better match their expectations.

Throughout testing, the research team observed that the term “full text” was regularly misunderstood, and students were unsure that “Linked Full Text,” “HTML Full-Text,” and “EPUB Full-Text” would take them directly to the full text. One student thought that “HTML Full-Text” would point to computer coding language instead of the article they were looking for. **Others interpreted the link resolver’s orange “Find Full-Text” button to mean that they would need to search again for articles when they had just completed that task.**

The research team found that **students naturally gravitated to the “PDF Full-Text” link with the Adobe PDF symbol due to familiarity.** “View Full-Text,” the custom link that links directly to publishers’ websites, was usually understood by students as an option for accessing a full text article, though adding an icon or making it look like a button would help it to stand out more in the results list. Students’ understanding of “View Full-Text” validated the decision to have one link text to describe accessing publisher websites. Based on these observations, the research team recommended using only one link for full text access, preferably the “PDF Full-Text” link when available but also for EBSCO to revise terminology to ensure students know what links to take them directly to the full text.

Most understood to least understood full text links

- (1) PDF Full Text
- (2) Access E-Book
- (3) View Full Text
- (4) Find Full Text
- (5) HTML Full Text
- (6) Linked Full Text
- (7) EPUB Full Text

User education is also of utmost importance here. Teaching students the language and/or icons to look for, no matter the location on the page or database vendor, will greatly reduce the issues the research team found in this study. Databases and landing pages vary wildly by vendor, so stressing what types of language to focus on in instruction sessions can be very useful. **Vendors can contribute greatly to user education and improved user experience by revising full text terminology to clearly and consistently indicate how to retrieve full text.**

Finding #4: Students avoid interlibrary loan

When asked about ILL, most students had unfavorable views. Many would attempt workarounds such as searching Google Scholar, asking friends from other colleges, or paying for the item themselves to avoid ILL. Others would simply skip the record completely. Based on this experience, the research team recommends focusing on student expectations from ILL services moving forward. This plan includes creating an inventory of how and where students first learn about ILL services and correcting user expectations about the service by updating and maintaining accurate descriptions to create consistent messaging across the college.

For example, there appears to be several ways in which students hear about ILL when they start at Simmons. These often include tours, orientations, peers, and instruction librarians. Given ILL's complexity, the necessity of consistent messaging with accurate information became readily apparent. To improve customer service, the library plans to update the e-mail templates within its ILL management system, which are sent to users after a request is submitted, by removing "library-ese" to communicate more clearly and adjusting the wording to be more encouraging and positive.

Along with these communication problems, the library's ILL services were integrated into the discovery system's link resolver custom link, the Find Full-Text button, which as noted above did not match user expectations, creating additional confusion. It led users to associate their negative feelings about ILL with the link resolver, which actually works well. To remedy this situation, the library plans to make changes within the discovery system's configuration by creating an additional custom link that is specifically branded for ILL and remove the integration within the link resolver custom link. This separate custom link will be designed as a button, similar to the Find Full-Text button, with a different color and wording "Borrow from another Library." The research team hopes that this simple adjustment will remove the confusion created by the original integration of the two services and improve attitudes toward the link resolver.

Values to conducting user research—improved connections with distance learners

This study brought the needs of distance and online learners to the library's attention, as this demographic seemed much less familiar with Library Search and the library's website overall. To remedy this problem, librarians began reaching out to online and distance faculty to provide more instruction to these students through their courses. The library is also adding instruction materials focused on general processes to its research guides in order to make them easily retrievable no matter where the student is located.

Values to conducting user research—validated library ux decisions

Prior to the launch of Library Search, the library's implementation team made a number of decisions regarding the customization of the discovery service and how results would be displayed to users. These decisions were based on the team's own assumptions and observations of user behavior. The usability study validated many of these initial choices, especially those that involved how users navigate from the results page to the full text of an article or ebook.

As stated in the study's findings, users tended to prefer a single link to full text rather than being faced with multiple links that used different terminology. This finding substantiated the pre-implementation decision to provide only one link to the full text of articles and to use the library's catalog records, with their unambiguous language, for linking to the full text of ebooks. The study also confirmed that users

did not expect to encounter the link resolver page when clicking on a link, and often did not know how to proceed from there. This finding justified the team's initial decision to automatically limit searches to library-held resources, therefore limiting the users' encounters with the link resolver, and also suggested the additional customizations that were made after the study was completed.

Decisions regarding the setup of discovery services and other tools and platforms are often based on the point of view of librarians and library staff, or their assumptions about the user's point of view. Conducting usability research with the users themselves provides a valuable perspective on users' expectations and how those expectations are being met. In the Simmons College Library's case, the usability study not only provided insight into what changes could be made to improve user experiences, it also verified what was already working well.

Conclusion

Full text linking best practices

Based on user testing, the research team was able to validate the following best practices for full text linking:

- (1) Display one link.
- (2) Review your link order. Ensure direct link to full text displays before the link resolver.
- (3) Bypass link resolver menu when possible.
- (4) Use plain language for link text to clearly indicate to users how to get to full text.
- (5) Have consistency with your full text link text so users know exactly what to expect.
- (6) Educate your users on how to access full text across various vendors.

Library and vendor collaboration: Provides better insight into users

Simmons College Library valued the opportunity to gain insight about its users through this usability testing collaboration. The collaboration afforded Simmons College Library the opportunity to conduct formal user testing with a consultant associated with EBSCO Information Services User Research Group that had access to tools (e.g., UserTesting) and expertise in managing the effort. As a result of the study, the library gained significant insight into its users' expectations as well as the confidence that changes made to Library Search were based on the experience of its actual users. That insight furthermore suggested possibilities for future enhancements and improvements to the discovery service, and for continued research on how best to provide discovery of, and access to, the library's resources. For EBSCO Information Services-specific enhancements requests, Simmons College Library was able to submit them to Customer Satisfaction for consideration by product teams.

From a vendor perspective, usability testing—particularly that which is conducted collaboratively with customers—offers the opportunity to learn firsthand from libraries about their users' needs. It provides an opportunity to improve and develop products that support outreach and information literacy efforts. It also inspires ideas for enhancements and contributes to informed product development decisions. These collaborations allow for libraries and vendors to hear what is important to users, observe their successes and challenges, and in turn build tools that improve their research experience.

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Appendix

Pre-Test Questionnaire

Date/Time:

Name/Simmons Email Address:

Have you had Library Instruction before? (Yes/No)

Have you been assigned a research assignment while at Simmons? (Yes/No)

Do you conduct most of your research on or off campus?

What website(s) do you use to start your research?

Post-Test Questionnaire

Prior to this test, had you used Library Search before?

What did you like most about Library Search?

What did you like least about Library Search?

Based on the websites that you currently use for research, was it easier or more difficult to find full text using Library Search?

On a scale, 1 to 5 (1 easy/5 difficult) how would you rate this test?

Comments