

Satellite Meeting - Reference and Information Services &
Information Technology Sections:

[Innovation and the User Experience: Evaluating and Implementing Discovery Systems](#)

Discovering our Users: A Multi-Campus Usability Study of Primo

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Abstract:

The 23 California State University libraries recently migrated to Ex Libris' discovery system, Primo. A system-wide Discovery Working Group created a Usability Task Force, composed of librarians from four California State University libraries, and charged them with conducting usability testing and reporting their findings back to the consortium. The findings from the user testing were used to create a set of recommendations and best practices that system administrators could employ to customize their Primo interface. Additionally, the Chancellor's Office used the data from the user testing to inform the creation of a central package of CSS, JavaScript and image files, which was made available to the 23 campuses. A second round of testing was conducted after the application of the central package and configuration changes. The application of these changes facilitated the discovery of resources across the library's collection.

Keywords: discovery system, Primo, usability testing, user experience.

Introduction

In 2014, the 23 California State University (CSU) libraries made the decision to move to a unified library management system and a single discovery system. The intent of this decision was to create a common library catalog and to increase access to resources for users (Billings, 2014). Representatives from various libraries in the CSU system were tasked with drafting a request for proposals (RFP) for both an integrated library system and a discovery system. The RFP for the discovery system stipulated that the system should provide users with intuitive, clear and easy access to all of the content that is available to them. This includes content from both the local catalog and beyond the library's collection. The user experience was seen as a critical component of the system. The RFP also stated a clear desire for robust customization options which could be used to enhance the user experience at the local level.

Several vendors responded to the RFP, but ultimately the Council of Library Deans (COLD) made the decision to contract with Ex Libris and their discovery system, Primo. The enhanced customization capabilities and the emphasis on the user experience factored into their decision.

At the behest of COLD and library personnel at the CSU Chancellor's Office (CO), a Discovery Working Group (DWG) was formed to deal with issues related to the implementation and ongoing maintenance of Primo. This group, with representatives from campuses across the consortium, formed several task forces addressing everything from third party integration and data normalization rules to issues related to Functional Requirements for Bibliographic Records (FRBR) and results boosting. Additionally, they formed a task force focused on matters related to the end user experience. They charged the User Experience (UX) task force with conducting usability testing of the new Primo interface at their home campuses. Their objective was to provide the CSU libraries with a clear blueprint of configuration instructions to help increase discoverability and enhance the user experience.

Background

Academic libraries are implementing discovery systems as a primary research tool in ever increasing numbers. Discovery systems can be defined as “web software that searches journal-article and library-catalog metadata in a unified index and presents search results in a single interface” (Condit, 2012). Modern discovery systems can provide “a Google-like experience in terms of fast, single-search access to a library's collection” (Kelly, 2012). There are a number of discovery systems on the market currently, and numerous user studies have been conducted to see if they are indeed providing a familiar experience and meeting the research needs of library patrons.

There have been several usability studies of Ex Libris' Primo. It is worth noting that, while in general Primo performs well in many usability studies, most of them were testing the original version of Primo which is significantly different from the new UI, which is more modern and less click heavy. In testing the original UI, researchers at the University of Vermont found that while most users were able to discover what they were looking for, others complained that there were “too many options in Primo and that the interface was confusing” (Nichols, 2012). They noted that many of the issues users were struggling with could be addressed by educating users, however, they conceded that “many users will not get that instruction” (Nichols, 2012). A study at the University of Houston found that, while Primo performed well overall, “Customizations are necessary to make the Primo interface more intuitive, results lists easier to interpret, and Primo functions easier to locate and use” (Nichols, 2014). Customizing the interface to meet the needs of users will likely be more effective than attempting to educate all of them in the intricacies of the interface.

Primo's extensive customization options offer system administrators a multitude of ways to act upon the data collected in usability studies. The flexibility and adaptability of Primo provides administrators the opportunity to create a user interface (UI) that most effectively meets the research needs of their user base. Providing users with a positive experience is the reason librarians at the CSU system realized the value of conducting a multi-campus usability study.

Goals of the Task Force

At the first meeting of the Primo UX Best Practices Task Force, the group decided that it should focus its efforts on the new Primo UI. The CSU was provided with access to the beta version of the new UI in June of 2016, but the general UI release was not set to take place until August. The CSU did not intend to launch using the older, more stable UI, reasoning that many of the bugs would be worked out prior to the June 2017 launch. The Task Force established that it would concentrate efforts on navigation, usability testing, customization, and establishing best practices. The best practices were to be collected in a document which would be posted on the CSU DWG project wiki. The group also determined that all of the recommendations in the document would be required to be backed up by solid usability data. The Task Force established that the ultimate goal of the group should be to improve the experience of the bulk of our users, namely students and faculty, and should not focus on the perceptions of librarians. Additionally, the decision was made to standardize the UX across campuses as much as possible and develop consistent branding across the CSU libraries thereby providing a more familiar and equitable research system for students (Dulaney, 2015).

Testing the User Interface

Librarians from many CSUs volunteered to conduct usability studies on their home campuses. The UX taskforce chose CSU Fresno, CSU Fullerton, CSU Northridge and CSU Los Angeles to conduct the tests. These campuses had configured their UIs in a similar fashion, save for the naming conventions for certain search scopes. The group established a rubric that would be used at each campus to keep the tasks fairly consistent. Users were given five standard tasks to complete: 1) find a specific book, 2) find a specific film, 3) find a peer-reviewed journal article, 4) find an item in the CSU network not owned locally, and 5) find a newspaper article. The determination of which items were to be found was left to the discretion of the individual campus. This flexibility would account for variations across collections.

The four campuses were encouraged to come up with additional tasks that might reflect the typical research needs of their users. Los Angeles stuck to the original five questions, but the other three campuses came up with additional, often overlapping tasks. Fresno and Fullerton chose to ask users to sign into their library account, both to find the status of their account and to save items to the favorites folder. Fullerton and Northridge both asked users to find an article using an American Psychological Association (APA) citation. Fullerton asked users to find a specific journal, while Northridge asked users to find an item from special collections. Additionally, some of the campuses asked a question intended to test the FRBR feature. The questions were posted on the project wiki.

The number of individuals tested per campus varied, totaling 24. Fullerton tested seven, Fresno and Los Angeles six, and Northridge selected five. The group consisted of both graduate and undergraduate students as well as faculty. The students were from a variety of grade levels and majors, and their experience with library research varied as well. The intent was to capture our user base as closely as possible. Figure one illustrates the breakdown of participants at Fullerton.

Which of the following best describes you?

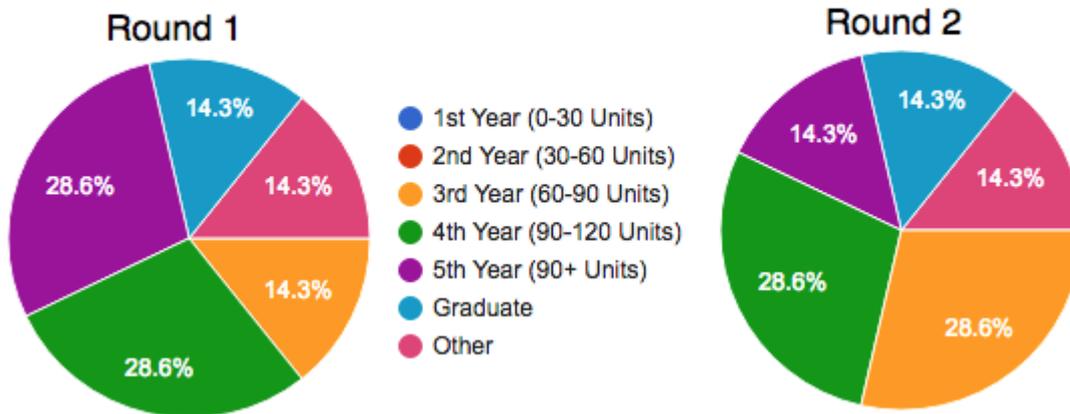


Figure 1: Breakdown of UI test participants at Fullerton

The time it took for users to complete the test ranged from 10-30 minutes depending on the campus. Fresno students took around 15 minutes to complete the test. The times at Fullerton were similar, despite the fact that there were more questions. This variation might be due to the fact that Fullerton provided few free-text questions and utilized an online form where Fresno used a paper form. Northridge had a more robust set of questions and provided testers with ample opportunity for feedback, so their tests ran in the 30 minute range.

The methods provided for participants to give their feedback varied slightly from campus to campus. For example, Fresno used a paper form to collect the data, while Fullerton used Google Forms. Additionally, some of the campuses elected to use a Likert scale to determine the ease or difficulty in completing a task. Other campuses, like Fullerton, simply asked if a user was able to complete a task or not. Fullerton also used the screen capture program Camtasia to record the actions of the participants in order to have a record of where students were having difficulty or taking longer than anticipated to complete a specific task.

Summary of Findings

The opinions about the interface of the new Primo UI were overwhelmingly positive. Users enjoyed the modern look and feel in comparison with legacy Innovative Interfaces Inc. products such as the Millennium Online Public Access Catalog (OPAC), which all four campuses had been using. Many also commented positively on Primo's ease of use, saying that it was more intuitive than the native interface of many of our subscription databases. Others praised the speed of the system while also appreciating its forgiveness of common errors like spelling mistakes.

The success rate for each task varied across the four campuses. Greater success was seen for the more simple tasks, and mixed results were recorded with the more difficult tasks. The use of a rubric on the first five questions facilitated cross-campus comparisons, showing several common threads across each location. In general, users performed very well when asked to find a specific item in the local collection. For example, nearly all of those asked were able to locate a newspaper article and a peer-reviewed article. When asked to find an article using the provided APA citation, 10 of the 12 users were able to locate the item, despite whether they entered the article title in the search box or pasted the entire citation.

While users were often able to find known items, when asked follow up questions they revealed some confusion about the results they were seeing. For example, each campus asked a user to find a book in the local collection, a task which 23 of the 24 that were tested were able to complete. Some of the campuses appended additional questions to this task. Two of the campuses asked users to find the status of the book (checked out or available for loan) and all of the users were able to determine this. However, some indicated that they were confused by the language. One of Fullerton's follow up questions was meant to test the user's understanding of FRBR records. Primo offers an option to utilize FRBR and group different iterations of the same work in a common record. This functionality can be enabled in the Primo Back Office (PBO), but must be enabled for the entire consortium. At Fullerton, users were asked to find the book *On the Road* because the library has multiple copies of this work. Users were asked to identify how many copies of the title the library owns, and only three of the seven tested could answer this correctly.

While FRBR records provide users with a cleaner and less redundant results set, testing showed that the user's understanding of FRBR records was mixed. Fullerton, for example, asked students to find the film the *Unbearable Lightness of Being*. In the search results that title comes up first with the text "5 versions of this record exist" below an icon which displays multiple overlapping rectangles which fans out when the user mouses over it, as seen in figure two. The only way to find the film version of the title is to open the record, which then presents the user with book and film versions of the work (one could also use the facet to limit by video, but none of them adopted that strategy). Of the seven testers, only five were able to complete this task. The other campuses also reported mixed success with FRBR records. Northridge, for example, noted that users complained about the number of clicks it took to get to the record they were looking for. Both Fresno and Fullerton noted that users complained about the FRBR icon. Users said that the meaning was unclear and did not convey the intended information.

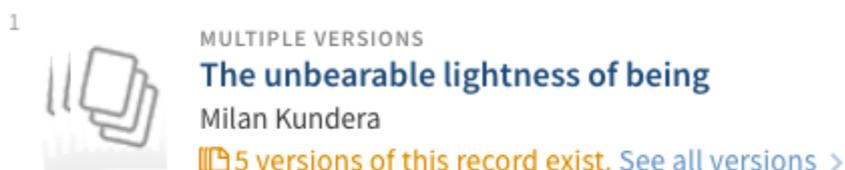


Figure 2: Display of a FRBR record in Primo

The new Primo UI incorporates search scopes into the default search box as seen in figure three. This approach differs from the old UI which incorporated a tabbed search box. In the new UI a dropdown menu is activated when a user begins entering text into the search box. This provides users with access to any scopes that were set up in the PBO, including the Primo Central Index (PCI), a large collection of scholarly e-resources provided by Ex Libris. For most of the campuses in the CSU system, these included a scope that the CSU labeled OneSearch (sometimes labeled "local collection") which searches the PCI, as well as the local book collection, an article's scope that searches items in the PCI to which the library subscribes, a local collections scope that searches the catalog, and a network zone scope labeled All CSUs which searches the combined catalogs of the CSU system. Each campus designed a question to test users' understanding of the search scopes.

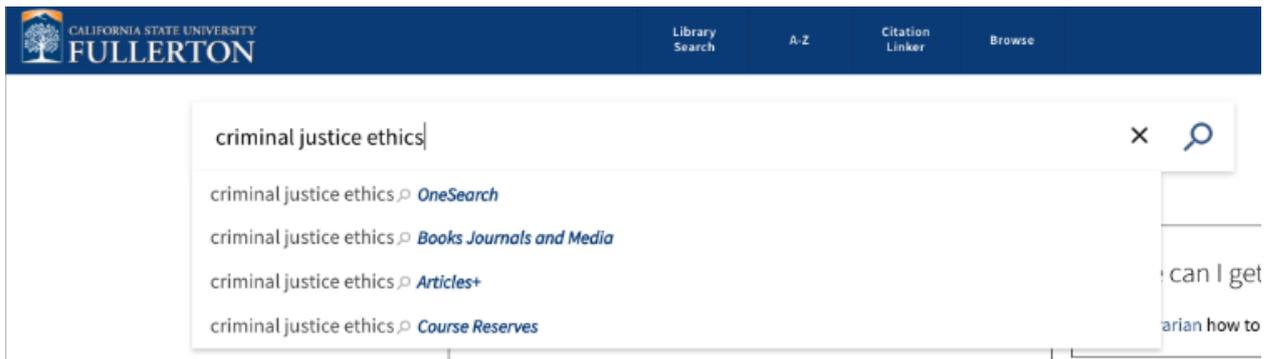


Figure 3: Dropdown scopes in the search box in the new Primo UI

The use of the dropdown search scopes differed across the four campuses. For example, students and faculty routinely made use of the scopes at Fullerton, Northridge, and Los Angeles, but they did not make use of them at all in Fresno. In general, testers who made use of the scopes were able to complete the tasks faster and with a greater degree of accuracy. In the case of Fullerton, users who employed the scopes finished the test an average of four minutes faster than those who did not. Additionally, testers at Fullerton were the only users to complete what revealed itself as the most difficult task: Finding a book in another CSU collection. If a user noticed the scopes he or she would see one that referred to books in other CSU libraries, which would enable them to complete this task. Many failed to notice this, likely because it was listed as a secondary scope that needed to be activated by a second dropdown as seen in figure four. Only three users at Fullerton and Northridge and only one in Fresno, or just over 40% of those asked, were able to complete this task. Some users indicated that they were confused about what the scopes were searching, which was likely due to a lack of clear, informative labeling.

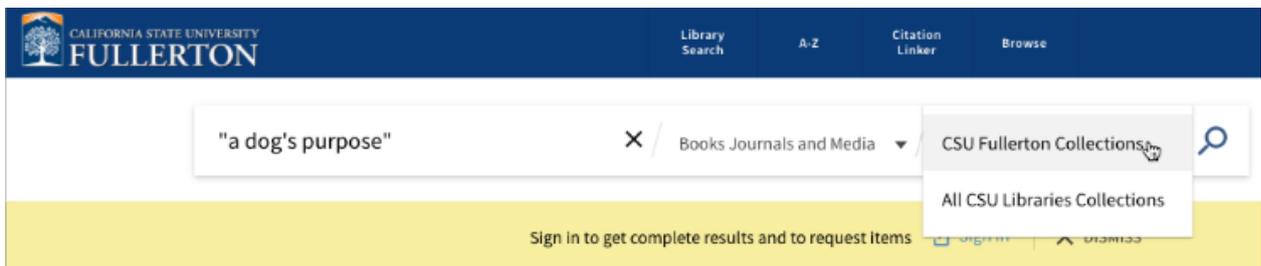


Figure 4: Secondary search scope in Primo

The use of facets to refine search results also provided mixed results. The DWG made the decision to move the facets to the left side of the screen. Ex Libris sets the facets on the right side by default. The group made this decision so that the interface would more closely match the majority of our subscription databases. The facets, which are listed in a grey box under the heading “tweak my results,” are fairly standard, with author, publication date, and language included. During testing, some users indicated that the muted color of the box made it blend into the background so that they didn’t notice the facets. Most users who did employ the facets found them useful, and often had greater success finding items. Others, however, remarked that the facets were a bit confusing. Ex Libris allows system administrators to determine the amount of entries that display under each facet. In the test, they were set to the

default of five entries per facet. Some users spent a good deal of time scrolling through them before making a selection. Afterward, some of these users indicated that the list was overwhelming.

There are other facets that users may be unfamiliar with, such as resource type and a feature called Expand My Results which opens the search beyond what is available in the local collection. When the user selects this option, results from items in the PCI that libraries don't subscribe to are added to the search results. This proved to be the most confusing element, as some who clicked on the check box were unsure what they had just done.

Two of the campuses asked users to login to their library account. Primo has a feature called My Library Card which allows users to see what items they have on loan, manage their item requests, and view any fines and fees. Additionally, once logged in, users can save their searches and links to individual items. Users can login by either clicking the Guest link located on the top navigation bar or by clicking on the text "Sign in to get complete results and to request items" located on a yellow banner on the search results screen. Users had success logging into their accounts, with 12 of 13 able to complete this task, but they had difficulty staying logged in. By default, the My Library Card feature is activated by a mouse over. However, if users weren't careful they would click on the logout button when trying to view their account. This was noted at both the Fullerton and Fresno campuses.

Results

The UX Task Force shared both the raw data and a summary of results with the DWG, and made them publically available on the CSU ULMS wiki. The findings from the testing also included recommendations for improvement, which focused primarily on layout, styling and naming conventions. The recommendations were added to a document called the User Experience Best Practices Task Force Report.

Changes involving the search scopes were deemed of high importance because, as stated, those who made use of the scopes were able to complete their tasks more quickly and with a higher degree of accuracy. The main complaints about the scopes centered around the fact that users were unsure of what they were searching and how to best make use of them. Additionally, secondary scopes were largely ignored by users. The UX working group recommended that steps should be taken to highlight the scopes so that users will notice them as they are conducting their search, and also recommended that the scopes be renamed so that they would be more meaningful to users. For example, testing showed that the scope label OneSearch did not imply to users that they were searching both PCI and the local collection simultaneously. The group also recommended that secondary scopes be eliminated in favor of a more streamlined single scope format that segments out different collections. This action might increase the likelihood that users could find items outside of the local collection.

Much like scopes, users who employed the facets found them very useful. However, many of these same users stated that there was room for improvement in this area. The first recommendation was to place the most useful facets at the top of the list. This is configurable in the PBO. The group recommended that the sort, availability, format type and date be listed first. PBO administrators were also advised to collapse less frequently used facets and to change the default display from five entries per facet to three on those used most frequently. Some campuses elected to rename the facet box from "tweak my results," which is the

default, to something they thought more meaningful, like “refine my results.” Additionally, some elected to move the “expand my results” feature to the bottom of the facet panel, and some decided to rewrite the text into something more instructive like “Results Beyond the Library,” or “Include results outside of library’s database.” Others made the decision to remove the “expand my results” feature altogether.

The recommendations document also addressed issues related to FRBR. The main issue with FRBR was letting people know what a FRBR record is and what it is doing. This, it was determined, could be addressed by creating an icon that more clearly indicates what the user is clicking on. Testers from all four locations were confused by what the icon was trying to tell them. Some indicated that the movement displayed when the icon is hovered over exacerbated their confusion. The Best Practices document recommended exploring alternative icons that could be swapped with the stock icons.

The UX group also recommended that the issues related to the user sign in feature be addressed. As stated, several users inadvertently logged themselves out after logging in, due to a button location swap that occurs during mouseover. The report recommended that the location of the buttons be swapped out so that users would not encounter this error. Additionally, the group recommended that the buttons be made static by removing the mouseover script.

There are documents available online that would instruct PBO administrators on how to make many of these changes. Administrators could consult the online Ex Libris Knowledge Center, or they could refer to the New Primo UI Cookbook (2017), a collaborative Google Doc that is available online. However, some of the campuses lack the personnel to help implement and maintain many of the recommended changes. Modifications to the UI could be implemented by anyone designated as a PBO administrator, but this would need to be done on a campus by campus basis and would need to be applied to both the sandbox and production instances of Primo. In an effort to reduce redundancy and to help those campuses with a limited number of employees versed in CSS, JavaScript, and PBO administration, the CO began investigating if these changes could be pushed out centrally to campuses wishing to inherit these changes.

The CO settled on the idea of a central package, a “shared set of CSS, JavaScript, and images – and a recommended set of scope and label configurations for Primo” (Walker, 2017) that would be managed by the CO. This set of modifications could then be pushed out to any of the campuses that decided to inherit the package. Local changes would overwrite anything pushed out by the CO, meaning that campuses could make changes locally and yet still benefit from many of the changes the central package would put in place. The CO recommended to campuses that they make use of the central package, as all of the changes in place are backed up by data collected by the UX Task Force. Additionally, the CO planned to maintain the central package and would push out future changes in response to the needs of the consortium. Any changes caused by future updates from Ex Libris could also be addressed through fixes in the central package. The vast majority of the campuses chose to inherit the central package based on the advantages it provided.

The first wave of the central package, addressing issues related to layout and display, was pushed out and applied to both sandbox and production on April 23, 2017. The central package resolved issues related to contrast in an effort to bring the interface into compliance with the CSU Americans with Disabilities Act (ADA) policy, a policy which mandates that websites be accessible to patrons with disabled vision. The central package also implemented

a number of configuration changes, with a good deal of attention being paid to the labeling and functionality of the search scopes. Changes to the layout and display of the facet panel were also put in place. All changes are listed on the Central Package & Recommended Configurations page on the CSU Unified Library Management System Wiki.

In addition to the unified look that the central package offers, the CO determined that the consortium should develop a unified name for the discovery system. Based on recommendations from the DWG, the name OneSearch was adopted and a common logo was implemented across the system.

Fullerton chose to inherit the central package and accepted the configuration changes implemented by the CO. The local PBO administrator also applied a number of other changes. For example, the facet section was renamed from “tweak my results” to “refine my results.” Also, “expand my results” was renamed and was pushed to the bottom of the facet panel. The PBO administrator also applied changes to the full display record in an effort to make the information more readable and less cluttered. This included the removal of much of the links section and trimming the options in the tools section.

Second Round of Testing

After the local and consortial changes were applied, Fullerton conducted a second round of testing. A similar sample of users were chosen to test the new interface, and they were given the same tasks to complete as the original group. The changes lead to an improvement in results across the board. Users were still able to complete the more simple tasks, such as finding a book in the local collection, but they were now able to complete the more difficult tasks as well.

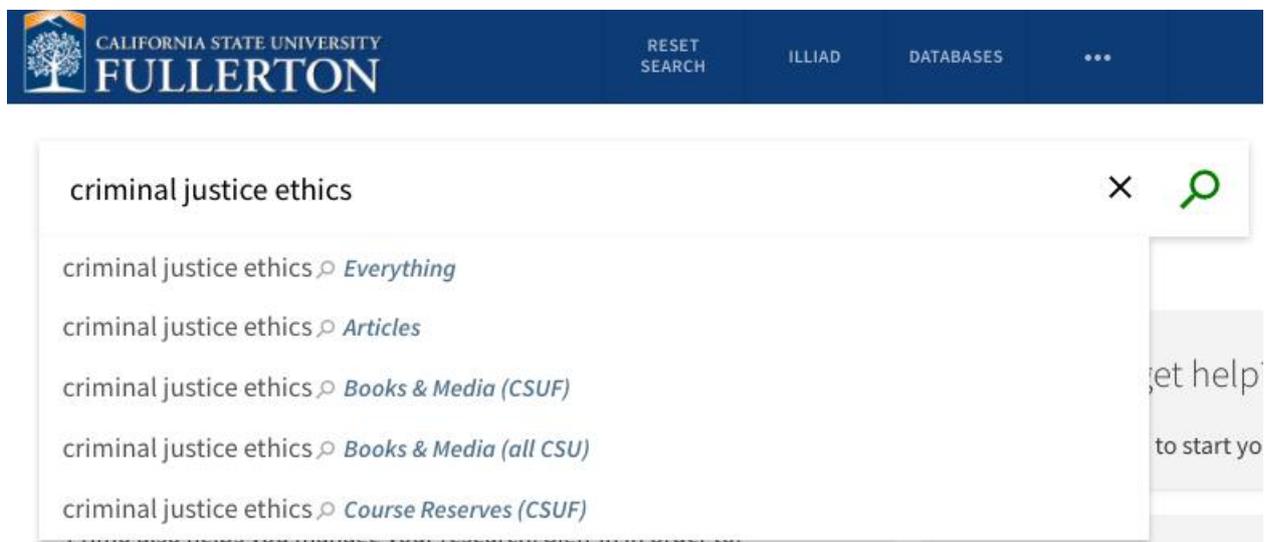


Figure 5: Revamped search scopes highlighting other CSU collections

The largest improvement in test results had to do with finding an item in another CSU’s collection. In the first round of testing, only 42% of the testers at Fullerton were able to find a known item in another CSU library. After applying the changes to the naming conventions and style of the search scopes, 100% of users were able to locate the item, as illustrated in

figure six. The first iteration required that users first select the scope labeled books and media, and then select California State University Collections from a second dropdown located in the same search box, as seen in figure four. Most failed to notice the second search scope. The changes applied by the CO, as seen in figure five, made a separate scope in the main dropdown menu labeled Books & Media (all CSU). This was noticed and used by everyone in the second group of testers.

The Pollak Library does not own the book "A Dog's Purpose"? However, another CSU does. Using OneSearch you find which campus owns a copy of "A Dog's Purpose"?

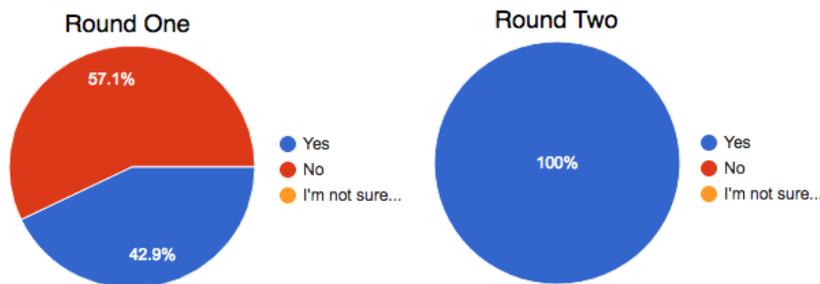


Figure 6: Results from the usability test before and after changes were applied to the scopes

Similar improvements were noted when users were tasked with finding a peer-reviewed article. In the first round, only 85% of users could find a peer-reviewed article. In the second round 100% of those tested successfully located a peer-reviewed article. As stated, the facet panel was decluttered prior to the second test, making it easier for users to see the peer-reviewed limit. Additionally, only 85% of users could connect to the full text in the first test, but 100% of users in the second group were able to connect to the article. This could be a result of the changes made to declutter the full record display.

Can you find a copy of the film The Unbearable Lightness of Being?

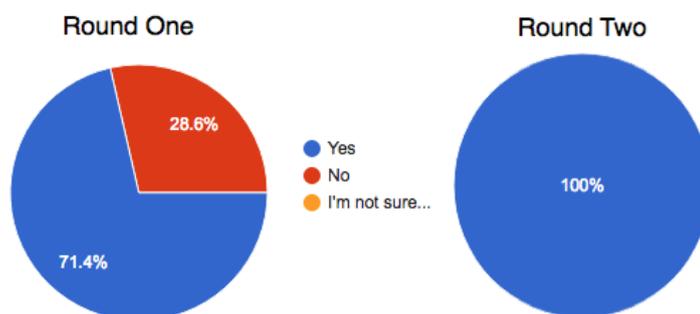


Figure 7: Results from the usability test before and after changes were applied to FRBR icons

There is still room for improvement, as some of the results did not change from the first to the second test. For example, only six of the seven testers in each study were able to login to their account. In both cases, those who were not able to stated that they couldn't find the login button. Certain elements of FRBR records also need further investigation. There were

improvements in users' abilities to find the film version of the *Unbearable Lightness of Being*, as seen in figure seven, a task which requires users to open the full version of a FRBR record. In the first round, only 71% could complete this task, a number that improved to 100% in the second round. Yet, users were still not able to determine how many copies of the book *On the Road* the library owned. In fact, the percentage of users able to successfully complete this task went down from 43% to 25%. Further investigation into users' understanding of FRBR records is warranted.

Conclusion

Modern discovery systems provide students and faculty with access to scholarly information from the libraries collection and beyond. Discovery system providers strive to provide users with a familiar search interface to simplify the research process. However, the stock interface may not always be as intuitive as intended. The thoughtful application of interface changes, based on data gathered from real world users, can make a dramatic improvement in the user experience. The flexibility that Primo offers makes it a powerful and agile system that is able to respond to the research needs of users in an efficient manner. Through usability testing, Primo administrators can gather the information they need to make informed configuration decisions. The ability to apply global changes while preserving local preferences makes Primo an ideal solution to apply to a consortium as large as the CSU. While this article focuses on Ex Libris' Primo, the lessons learned from usability testing can be applied to any of the major discovery systems that allow for customizability.

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