Everyone's Invited: A Website Usability Study Involving Multiple Library Stakeholders

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ABSTRACT

This article describes a usability study of the University of Southern Mississippi Libraries website conducted in early 2016. The study involved six participants from each of four key user groups—undergraduate students, graduate students, faculty, and library employees—and consisted of six typical library search tasks, such as finding a book and an article on a topic, locating a journal by title, and looking up hours of operation. Library employees and graduate students completed the study's tasks most successfully, whereas undergraduate students performed relatively simple searches and relied on the Libraries' discovery tool, Primo. The study's results displayed several problematic features that affected each user group, including library employees. These results increased internal buy-in for usability-related changes to the library website in a later redesign.

INTRODUCTION

Within the last decade, usability testing has become a common way for libraries to assess their websites. Eager to gain a better understanding of how users experience our website, we assembled a two-person team and conducted the first usability study of the University of Southern Mississippi Libraries website in February 2016. The Web Advisory Committee—which is tasked with developing, maintaining, and enhancing the Libraries' online presence—wanted to determine if the content on the website was organized in a way that made sense to users and facilitated the efficient use of the Libraries' online resources.

Our usability study involved six participants from each of the following library user groups: undergraduate students, graduate students, faculty, and library employees. Student and faculty participants represented several academic disciplines and departments. All of the library employees involved in the study work in public-facing roles. The Web Advisory Committee and Libraries' administration wanted to know how each of these groups differ in their website use and whether they have difficulty with the same architecture or features. Usability testing helped illuminate which aspects of the website's design might be hindering users from accomplishing key tasks, thereby identifying where and how improvement needed to be made. We included library employees in this study to compare their approach to the website to that of other users in the

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hope of increasing internal stakeholders' buy-in for recommendations resulting from this study. This article will discuss the usability study's design, results, and recommendations as well as the implications of the study's findings for similarly situated academic libraries. We will give special consideration to how the behavior of library employees compared to that of other groups.

LITERATURE REVIEW

The literature on library-website user experience and usability is extensive. In 2007, Blummer conducted a literature review of research related to academic-library websites, including usability studies. Her article provides an overview of the goals and outcomes of early library-website usability studies.[1] More recent articles focus on a portion or aspect of a library's website such as the homepage, federated search or discovery tool, or subject guides. Fagan published an article in 2010 that reviews user studies of faceted browsing and outlines several best practices for designing studies that focus on next-generation catalogs or discovery tools.[2]

Other library-website studies have reported on the habits of user groups, with undergraduates being the most commonly studied constituent group. Emde, Morris, and Claassen-Wilson observed University of Kansas faculty and graduate students' use of the library website, which had been recently redesigned, including a new federated search tool.[3] Many of the study's participants gravitated toward the subject-specific resources they were familiar with and either missed or avoided using the website's new features. When asked for their opinions on the federated search tool, several participants said that while it was not a tool they saw themselves using, they did see how it might be a helpful for undergraduate students who were still new to research. The researchers also provided the participants with an article citation and asked them to locate it using the using the library's website or online resources. While half the participants did use the website's "E-Journals" link, others were less successful. Some who had the most difficulty "search[ed] for the journal title in a search box that was set up to search database titles."[4] This led Emde, Morris, and Claassen-Wilson to observe that "locating journal articles from known citations is a difficult concept even for some advanced researchers."

Turner's 2011 article describes the result of a usability study at Syracuse University Library that included both students and library staff. Participants were asked to start at the library's homepage and complete five tasks designed to emulate the types of searches a typical library user might perform, such as finding a specific book, a multimedia item, an article in the journal *Nature*, and primary sources pertaining to a historic event.[5] When asked to find Toni Morrison's *Beloved*, most staff members used the library's traditional online catalog whereas students almost always began their searches with the federated search tool located on the homepage. Participants of both types were less successful at locating a primary source, although this task highlighted key differences in each groups' approach to searching the library website. Since library staff were more familiar than students with the library's collections and online search tools, they relied more on facets and limiters to narrow their searches, and some even began their searches by navigating to the library's webpage for special collections.

Library staff tended to be more persistent; draw upon their greater knowledge of the library's collections, website, and search tools; and use special syntax in their searchers, like inverting an author's first and last names. "Library staff took more time, on average, to locate materials," writes Turner, because of their "interest in trying alternative strategies."[6] Students, on the other hand, usually included more detail than necessary in their search queries (such as adding a word related to the format they were searching for after their keywords) and could not always differentiate various types of catalog records, for example, the record for a book review and the record for the book itself. Turner concludes that the students' mental models for searching online and their experiences with other web-search environments influence their expectations of how library search tools work and that library-website design should take these mental models into consideration.

Research on the search behaviors of students versus more experienced researchers or subject experts also has implications for library website design. Two recent articles explore the different mental models or mindsets students bring to a search. The students in Asher and Duke's 2012 study "generally treated all search boxes as the equivalent of a Google search box" and used very simple keyword searches.[7] This tracked with Holman's 2010 study, which likewise found that the students she observed relied on simple search strategies and did not understand how search interfaces and systems are structured.[8]

METHODS

Our research team consisted of the Libraries' health and nursing librarian and the web services coordinator. We worked closely with the head of finance and information technology in designing and running the usability study. A two-week period in mid-February 2016 was chosen for usability testing to avoid losing potential participants to midterms or spring break.

We posted a call for participants to two university discussion lists, on the Libraries website, and on social media (Facebook and Twitter). We also reached out directly to faculty in academic departments we regularly work with and emailed library employees directly. We directed nonlibrary participants to a web form on the Libraries website to provide their name, contact information, university affiliation/class standing, and availability. The health and nursing librarian followed up with and scheduled participants on the basis of their availability. Each student participant received a ten-dollar print card and each faculty participant received a ten-dollar Starbucks gift card.

To record the testing sessions, we needed a free or low-cost software option. Since the Libraries already had a subscription to Screencast-O-Matic to develop video tutorials, and the tool allows for simultaneous screen, audio, and video capture, so we decided to use it to record all testing sessions. We also used a spare laptop with an embedded camera and microphone.

The health and nursing librarian served as both facilitator and note-taker for most usability testing sessions. Participants were given six tasks to complete. We encouraged participants to

narrate as they completed each task. The sessions began with simple, secondary navigational questions like the following:

- How late is our main library open on a typical Monday night?
- How could you contact a librarian for help?
- Where would you find more information about services offered by the library?

Next, we asked the participants to complete tasks designed to assess their ability to search for specific library resources and to illuminate any difficulty users might have navigating the website in the process. Each of the three tasks focused on a particular library-resource type, including books, articles, and journals:

- Find a book about rabbits.
- Find an article about rabbits.
- Check to see if we have a subscription/access to a journal called *Nature*.

After the usability testing was complete, we reviewed the recordings and notes and coded them. For each task, we calculated time to completion and documented the various paths participants took to answer each question, noting any issues they encountered. We also compared the four user groups in our analysis.

Limitations

Although we controlled for user type (undergraduate, graduate, faculty, or library employee) in the recruitment of study participants, we did not screen by academic discipline. Doing so would have hindered our team's ability to include enough graduate students and faculty members in the study, as nearly all the volunteers from these two groups were from humanities or social science fields. The results might have differed slightly had the study successfully managed to include more faculty from the so-called hard sciences and allied health fields.

Additionally, the order in which we asked participants to attempt the tasks might have affected how they approached some of the later tasks. If a participant chose to search for a book using the Primo discovery tool, for example, they might be more inclined to use it to complete the next task (find an article) rather than navigate to a different online resource or tool. Despite these limitations, usability testing has helped improve the website in key ways. We plan to correct for these limitations in future studies.

RESULTS

Every group included a participant who failed to complete at least one of the six tasks. An adequate answer to each of the study's six tasks can be found within one or two pages/clicks from the Libraries homepage (Figure 1). The average distance to a solution remained at about two page loads across all of the study's participants, despite a few individual "website safaris."
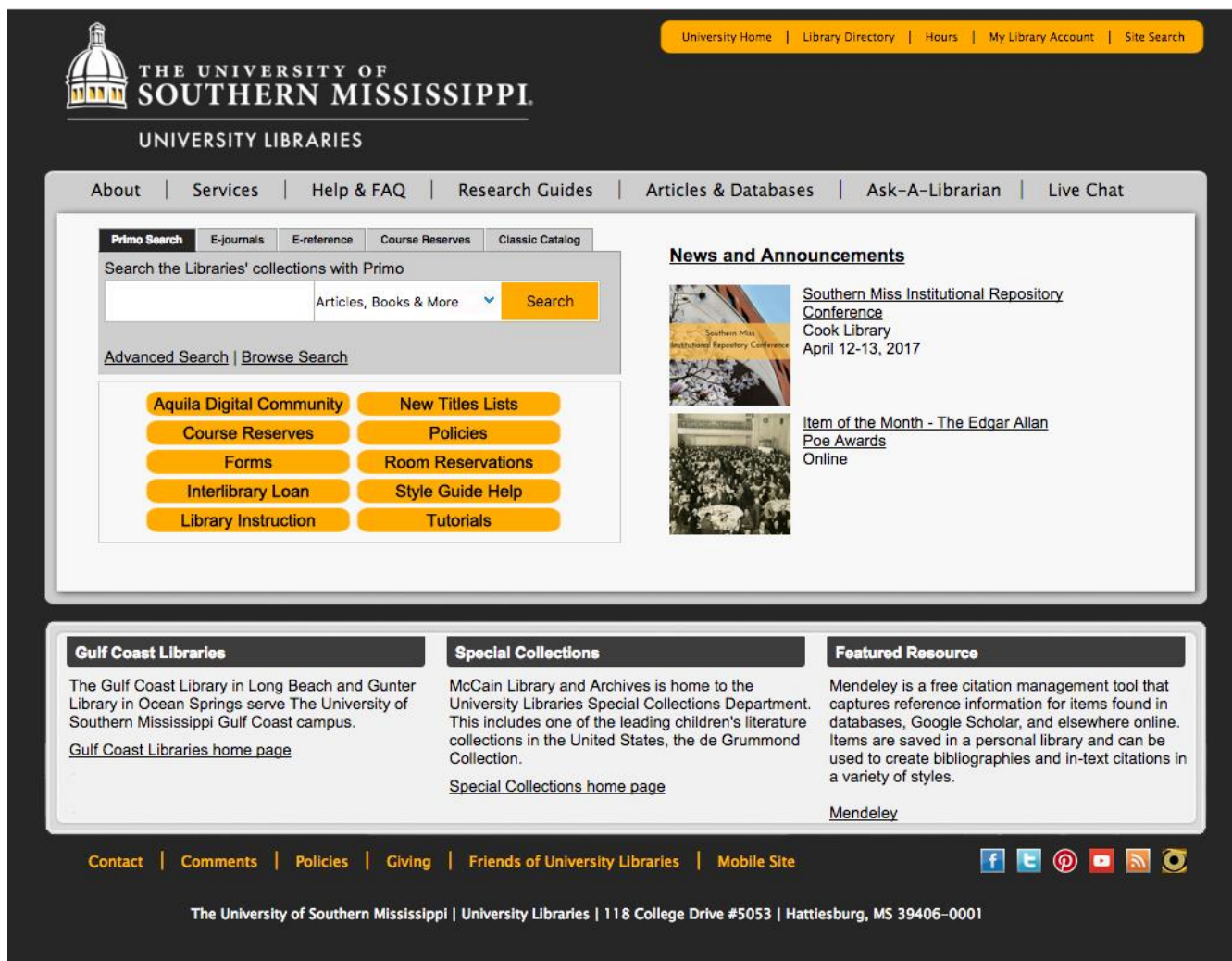
Figure 1. University of Southern Mississippi Libraries' homepage.

Graduate students tended to complete tasks the quickest and were generally as successful as library employees. They preferred to use Primo for finding books but tended to favor the list of scholarly databases on the "Articles & Databases" page to find articles and journals. Undergraduates were the second fastest group, but many struggled to complete one or more of the six tasks. They had the most trouble finding books and locating the journal by title. Undergraduates generally performed simple searches and had trouble recovering from missteps. They were heavy users of Primo, relying on the discovery tool more than any other group.

The other two user groups, faculty and library employees, were slower at completing tasks. Of the two, faculty took the longest to complete any task and failed to complete tasks at a similar rate as undergraduates. Likewise, this group favored Primo nearly as often. In contrast, library employees took almost as long as faculty to complete tasks but were much more successful. As a group, library employees demonstrated the different paths users could take to complete each task but favored those paths they identified as the "preferred" method for finding an item or resource over the fastest route.

The majority of study participants across all user groups had little trouble with the first three tasks. Although most participants favored the less direct path to the Libraries' hours—missing the direct link at the top of the homepage (Figure 2)—they spent relatively little time on this task. Likewise, virtually all participants took note of the links to our "Ask-A-Librarian" and "Services" pages located in our homepage's main navigation menu. This portion of the usability study alerted us to the need for a more prominent display of our opening hours on the homepage.
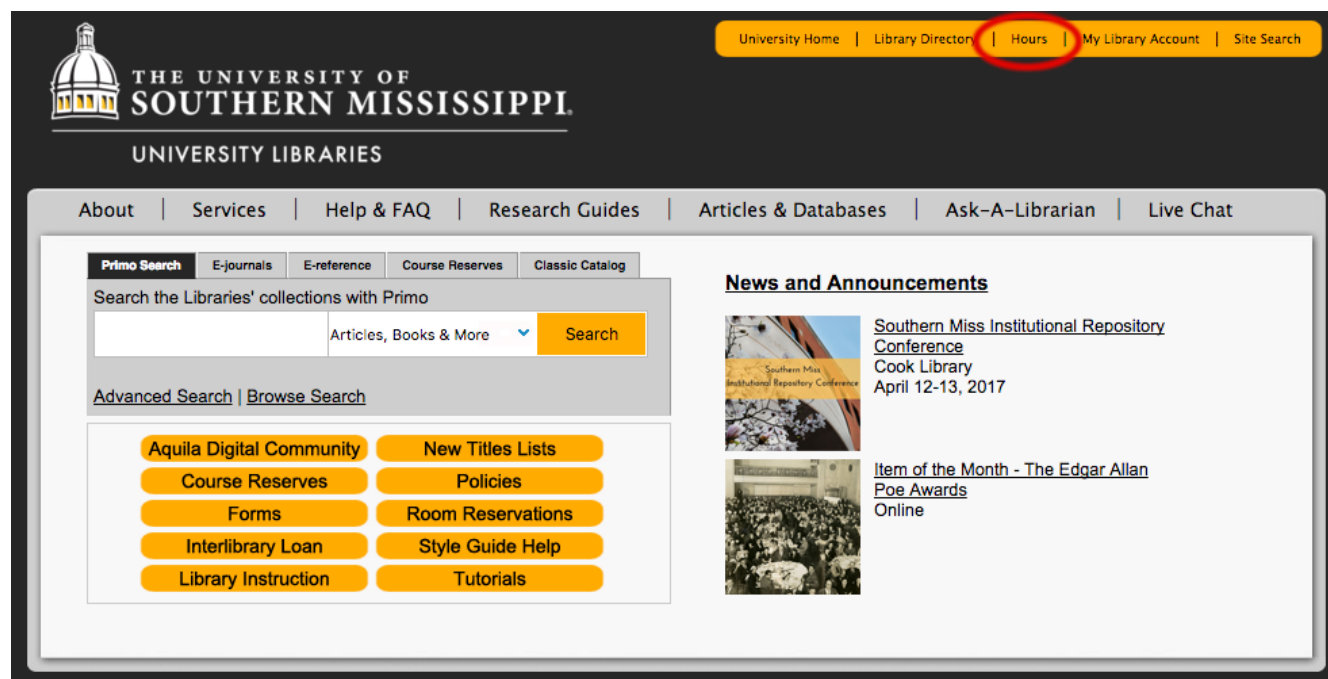

Figure 2. Link to "Hours" from the homepage.

Of the second set of tasks—find a book, find an article, and determine if we have access to *Nature*—the first and last proved the most challenging for participants. One undergraduate was unable to complete the book task, and one faculty member took nearly eight minutes to do so—the longest time to completion of any task by any user in the study. Primo was the most preferred method for finding a book. Although an option for searching our Classic Catalog (which uses Innovative Interfaces' Millennium integrated library system) is contained within a search widget on the homepage, Primo is the default search option and therefore users' default choice. Interestingly, even after statements from some faculty such as "I don't love Primo," "Primo isn't the best," and "the [Classic Catalog] is better," these participants proceeded to use Primo to find a book. Library employees were evenly split between Primo and Classic Catalog.

One undergraduate student, graduate student, and library employee were unable to determine whether we have access to *Nature*. This task was the most time consuming for library employees because there are multiple ways to approach this question and library employees tended to favor the most consistently successful yet most time-consuming options (e.g., searching within the Classic Catalog). Lacking a clear option in the main navigation bar, the most popular path started

with our "Articles & Databases" page, but the answer was most often successfully found using Primo. Several participants tried using the "Search for Databases" search box on the "Articles & Databases" page, which yielded no results because it searches only our database list. The search widget on the homepage that includes Primo has an option for searching e-journals by title, as shown in Figure 3. However, nearly all nonlibrary employees missed this feature. Participants from both the undergraduate and graduate student user groups had trouble with this task, including those who were ultimately successful. Unfortunately, many of the undergraduates could not differentiate a journal from an article, and while graduate students were aware of the distinction, a few indicated that they were not used to the idea of finding articles from a specific journal.
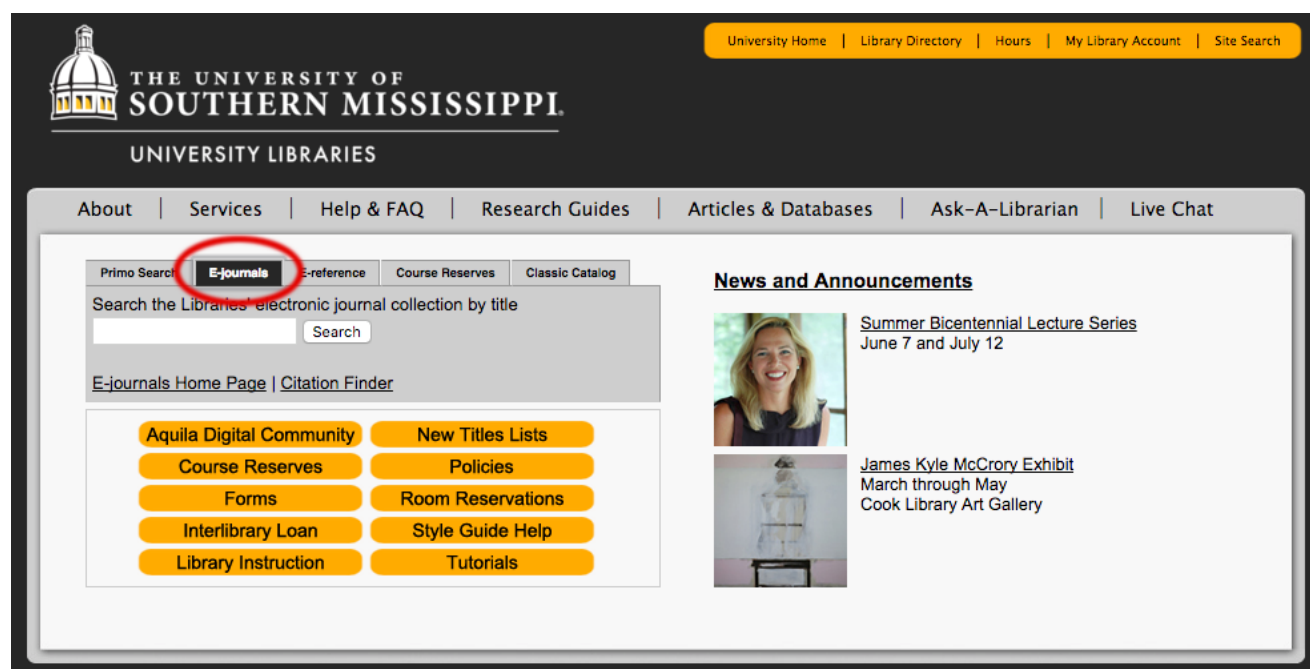

Figure 3. E-journals search tab.

When it came to finding articles, undergraduates, as well as several faculty and a few library employees, gravitated toward Primo. Others, particularly graduate students and library employees, opted to search a specific database—most often Academic Search Premier or JSTOR. However, those who used Primo to answer this question arrived at an answer two to three times faster because of the discovery tool's accessibility from a search widget on the homepage. Regardless of the tool or resource they used, most participants found a sufficient result or two.

Common Breakdowns

Despite the clear label "Search for Databases," at least one participant from each user group, including library employees, attempted to enter a book title, journal name, or keyword into the LibGuides' database search tool on our "Articles & Databases" page (Figure 4). Some participants attempted this repeatedly despite getting no results. Others did not try a search but stated, with

confidence, that entering a journal, book, or article title into the "Search for Databases" field would yield a relevant result. A few participants also attempted this with the search box on our Research Guides (LibGuides) page, which searches only within the content of the LibGuides themselves.

Across all groups, when not starting at the homepage, many participants had difficulty finding books because no clear menu option exists for finding books like it does for articles (our "Articles & Databases" page). This was difficulty was compounded by many participants struggling to return to the Libraries homepage from within the website's subpages. Those participants who were able to navigate back to the homepage were reminded of the Primo search box located there and used it to search for books.
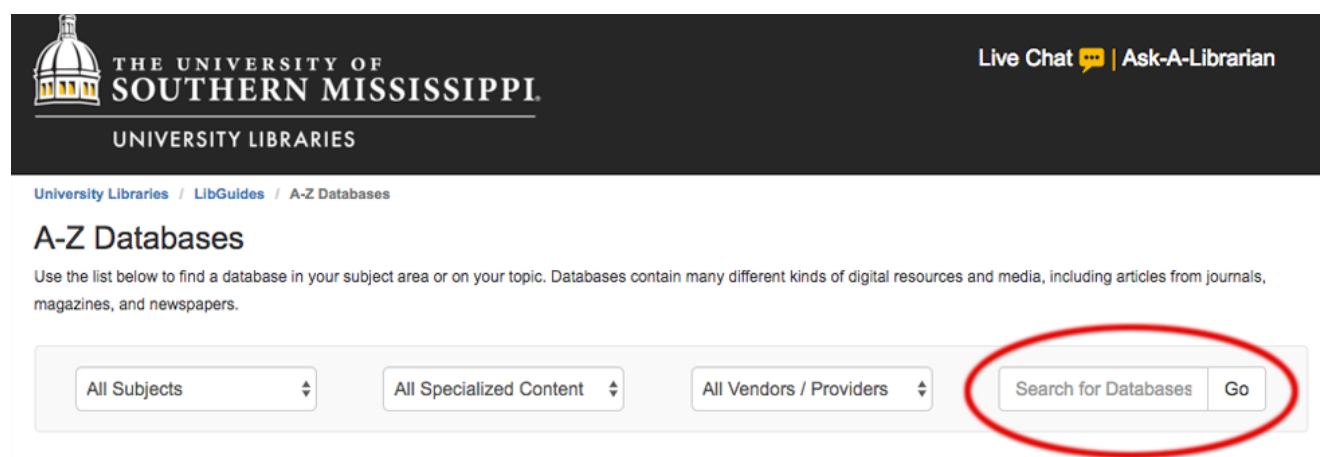

Figure 4. "Search for Databases" box on the "Articles & Databases" page.

Another breakdown was the "Help & FAQ" page (Figure 5). Participants who turned there for help at any point in the study spent a relatively long time trying to find a usable answer and often ended up more confused than before. In fact, only one in three participants managed to use "Help & FAQ" successfully because the FAQ consists of many questions with answers on many different pages and subpages. This portion of the website had not been updated in several years and therefore the questions were not listed in order of frequency.
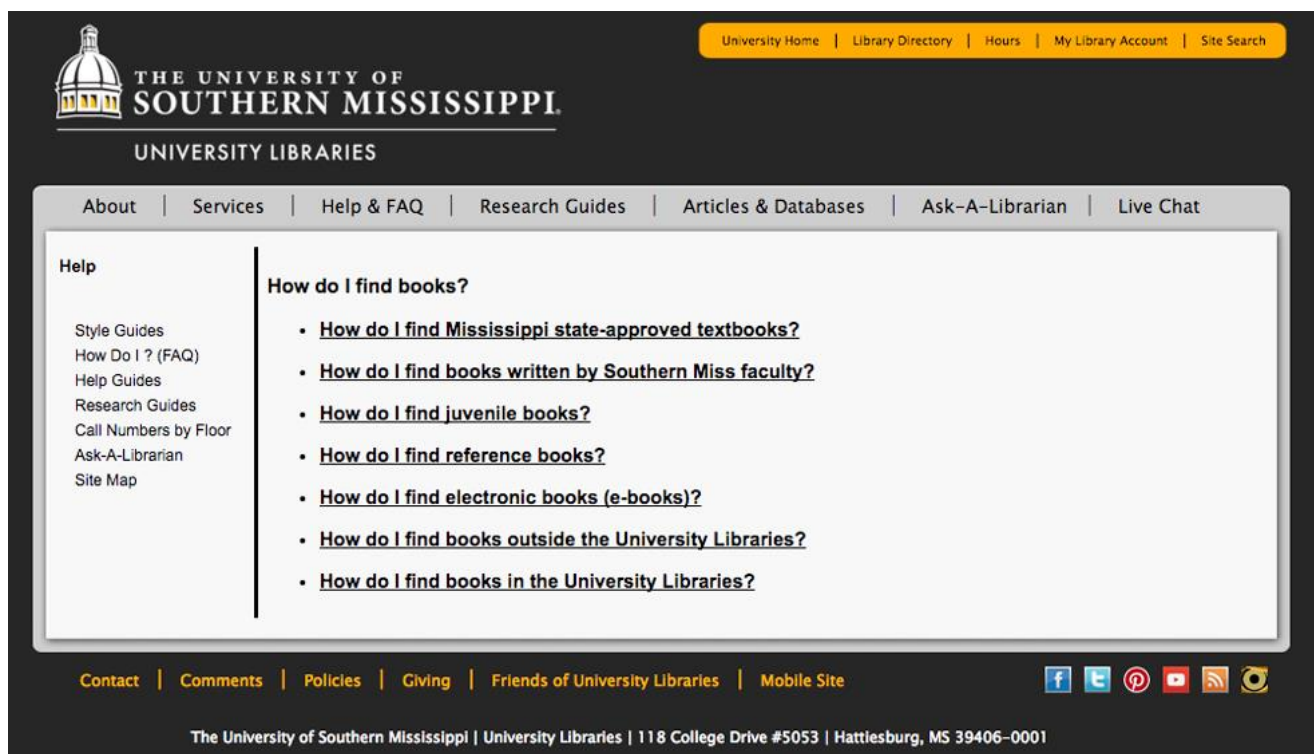
Figure 5. The answer to the "How do I find books?" FAQ item leads to several subpages.

DISCUSSION

Using the results of the study, we made several recommendations to the Libraries' Web Advisory Committee and administration: (1) display our hours of operation on the homepage; (2) remove the search boxes from the "Articles & Databases" and "Research Guides" pages; (3) condense the "Help & FAQ" pages; and (4) create a "Find Books" option on the homepage. All of these recommendations were taken into account during a recent redesign of the website. We also considered each user group's performance and its implications for website design as well as instruction and outreach efforts.

First, our team suggested that the current day's hours of operation be featured prominently on the website's front page. Despite "How late is our main library open on a typical Monday night?" being one of two tasks that had a 100 percent completion rate, this change is easy to make, adds convenience, and addresses a long-voiced complaint. Several participants expressed a desire to see this change implemented. Moreover, this is something many of our peer libraries provide on their websites.

The team's next recommendation was to remove the "Find Databases by Title" search box from the "Article & Databases" page. During the study, participants who had a particular database in mind opted to navigate directly to that database rather than search for it. Another such search box exists on the "Research Guides" page. Although most of the participants did not encounter this search box during the study, those that did also mistook it for a general search tool. Participants

from all groups, especially undergraduate students, assumed that any search box on the Libraries' website was designed to search for and within resources like article databases and the online catalog, regardless of how the search box was labeled. Given our findings, libraries with similar search boxes might also consider removing these from their websites.

Another recommended change was to condense the "Help & FAQ" section of the website considerably. The "Help & FAQ" section was too large and unwieldy for participants to use successfully without becoming visibly frustrated, defeating its purpose. Moreover, Google Analytics showed that only nine of the more than one hundred "Help & FAQ" pages were used with any regularity. Going forward, we will work to identify the roughly ten most important questions to feature in this section.

The final major recommendation was to consider adding a top-level menu item called "Find Books" that would provide users with a means to escape the depths of the site and direct them to Primo or the Classic Catalog. When participants would get stuck on the book-finding task, they looked for a parallel to the "Articles & Databases" menu option. A "Getting Started" page or LibGuide could take this idea a step further by also including brief, straightforward instructions on finding articles and journals by title. In effect, this option would be another way to condense and reinvent some of the topics originally addressed in the "Help & FAQ" pages.

Comparing each user group's average performance helped illuminate the strengths and weaknesses of the website's design. We suspect that graduate students were the fastest and nearly most successful group because they are early in their academic careers and doing a great deal of their own research (as compared to faculty). Many of them are also responsible for teaching introductory courses and are working closely with first-year students who are just learning how to do research. Faculty, because their research tends to be on narrower topics, were familiar with the specific resources and tools they use in their work but were less able to efficiently navigate the parts of the website with which they have less experience. Moreover, individual faculty varied widely in their comfort level with technology, and this affected their ability to complete certain tasks.

CONCLUSION

The results of our website usability study echo those found elsewhere in the literature. Students approach library search interfaces as if they were Google and generally conduct very simple searches. Without knowledge of the Libraries' digital environment and without the research skills library employees possess, undergraduates in our study tended to favor the most direct route to the answer—if they could identify it. This group had the most trouble with library and academic terminology or concepts like the difference between an article and a journal. Though not as quick as the graduate students, undergraduates completed tasks swiftly, mainly because of their reliance on the Primo discovery tool. However, undergraduate students were less able to recover from missteps; more of them confused the "Find Databases by Title" search tool for an article search tool than participants from any other group. Since undergraduates compose the bulk of our user

base and are the least experienced researchers, we decided to focus our redesign on solutions that will help them use the website more easily.

Although all of the library employees in our study work in public-facing roles, not all of them provide regular research help or teach information literacy. Since most of them are very familiar with our website and online resources, they approached the tasks more methodically and thoroughly than other participants. Library employees tended to choose the search strategy or path to discovery that would yield the highest-quality result or they would demonstrate multiple ways of completing a given task, including any necessary workarounds.

The inclusion of library employees yielded the most powerful tool in our research team's arsenal. Holding this group's "correct" methods side-by-side to equally valid methods of discovery helped shake loose rigid thinking, and the fact that some library employees were unable to complete certain tasks shocked all parties in attendance when we presented our findings to stakeholders. Any potential argument that student, faculty, and staff missteps were the result of improper instruction and not of a usability issue was countered by evidence that the same missteps were sometimes made by library staff. Not only was this an eye-opening revelation to our entire staff, it served as the evidence our team needed to break through entrenched resistance to making any changes. We were met with almost instant, even enthusiastic, buy-in to our redesign recommendations from the Libraries' administration. Therefore, we highly recommend that other academic libraries consider including library staff as participants in their website usability studies.

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