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Abstract

This article describes a usability study of the newly redeveloped website for Trinity University's Coates Library. Conducted in 2019, the study involved eleven participants in two groups – six laptop users and five mobile users. Each participant observation focused on six tasks: navigating to the site, finding a liaison librarian, determining if the library had a particular database, locating information on borrowing privileges, finding if a study room was available, and locating a particular special collection. The results revealed that laptop and mobile users browse the site differently though they were equally successful in completing the tasks. The study exposed opportunities to correct a few minor design concerns, address a programming flaw with the mobile menu, and to identify an issue when searching the special digital collections.

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Introduction

The Coates Library at Trinity University conducted its last usability study over a decade ago in 2007 (Harris, 2008). Though web development has changed over the past twelve years, many of the basic library needs have not. Finding librarians and staff members, locating online databases and journals, and understanding the fundamentals of the library such as hours of operation and loan periods are still relevant today. The 2007 study was used as a springboard for this study.

During the website redevelopment process in the spring of 2018, the plan was to conduct a usability study on the beta site *before* the unveiling, but because of time constraints and issues with the server setup, the study was postponed until after the launch of the site. The strategies used to create the new site included inventorying the existing content and site, reviewing user statistics via Google Analytics, and using web design best practices such as minimizing friction for the user, unifying the site with a common theme, and designing for any device (Cao, 2015). One-on-one meetings with librarians and staff were conducted over the course of several months, and other academic library sites that had been recently redeveloped, such as the Sheridan Libraries at Johns Hopkins and Stanford Libraries, were used as models.

The following goals were identified and used to structure the site:

- Facilitate easier access to online databases, guides, books, course reserves, etc.
- Minimize friction by making it easier to view and access some of the library's most used features (ILL, study rooms, liaison librarians, digital commons, etc.)

- Create visual identification of librarians with easier access to directory information

- Identify, remove, move and rework awkwardly placed or outdated materials

- Create a FAQs area that is easier to identify and access

- Design a consistent user experience among online sites and tools

- Communicate events, news and general information more effectively

- Highlight the library's special collections

- Create areas for students and faculty where links to the most important library items for each group are in one place

- Design a responsive site that is mobile friendly

In the spring of 2018, approximately 86 percent of the library's users were browsing the site via a desktop or laptop computer (Google, Inc., 2019). According to Google Analytics only about 12 percent of the site's users were accessing the site with a mobile device. Even though mobile access accounted for a small percentage of the library's overall usage, the trend toward mobile-only usage continues to rise. In 2018, 52.2 percent of website traffic worldwide was mobile with mobile usage increasing year over year for the past decade (We Are Social, n.d.). Building a sustainable, relevant library website requires a focus on mobile usability in addition to traditional desktop-style access.

Purpose

One of the many goals of the Coates Library is as follows (Coates Library, 2018):

> *The library will support the teaching and learning and research mission of the*
> *university by engaging students and faculty via point-of-need services, by building*
> *ongoing relationships that facilitate communication and understanding of patron*

needs, and by providing user-friendly online interfaces for unmediated interaction

with library resources.

The site serves many stakeholders including students, faculty, staff, administrators, community members, other academic libraries, and the librarians and library staff, and though it is important to meet the needs and expectations of all users, Trinity's students are the foundation of the library's mission and goals. Assessing how students interact with the new site, and how they access resources and services using different devices is an important step in making sure that the site is not only meeting the goals set during redevelopment, but also aligning with the library's overall goals.

The main purpose of the study was to determine if students were able to access a variety of basic library resources and services on the new library site without difficulty using either a mobile or laptop device.

Method

Sample Size

After reviewing Coates Library's previous usability study from 2007 and the usability research of Jakob Nielsen, it was determined that two small groups of students – one for mobile testing and one for laptop testing – would be appropriate. Jakob Nielsen concluded, "the best results come from testing no more than 5 users and running as many small tests as you can afford" (Nielsen, 2000). The goal was to recruit at least five students for each of the two usability studies. If more students volunteered, it was determined that they be included in the study as well.

Recruitment

Volunteers were recruited from seven of the Computer Science department's *Essential Information Technology* classes. Students were asked to reach out via email if they were interested in participating. Once identified, students were sent an email with available appointment slots via Google Calendar. Appointment slots were available at a variety of times in the morning and afternoon over a two-week period. Students were directed to sign up for a 30-minute slot that worked with their schedule. Eleven students completed the study, with six using laptops and five using a mobile device.

Equipment and Data Collection

Students were assigned to either a mobile device (Android Moto E4 Phone) or a laptop computer (Dell Precision 5530) and used Google Chrome to navigate the site. Devices were provided for students during the study to maintain consistency and to minimize setup time. Students were assigned to the mobile or laptop study when they arrived for their scheduled appointments.

The study was conducted in a small conference room in the library which houses a big screen TV with an HDMI cable. An HDMI converter was purchased to connect the phone to the TV. The laptop was already equipped with an HDMI plug. Depending on the study, the mobile or laptop device was connected to the TV so that the observer could easily view what the volunteer was doing. Students were timed during each task and notes were taken while students completed the tasks. Because of the small sample size, a database was not used, but notes were later transferred to Excel for time averaging and a Word document for analysis.

Questions

  Students were asked to perform a series of tasks navigating the library's website. The study began by asking each student to navigate to the library's main page starting from the Google home page in an open Chrome browser. Students were asked to perform a task and then return to the library's home page. Questions were read twice before students attempted the task. Students were allowed to ask for clarification or to have the task repeated. Students were instructed to keep trying until successful or until time was called. Time was called for all tasks at three minutes.

  After reviewing the Coates Library's 2007 Usability Study, several tasks and questions were considered relevant and used for this study. These questions are denoted with asterisks in the list below (Harris, 2008).

Tasks

- Navigate to the library's website
- Find the librarian whose liaison area is biology *
- Find if the library has access to the database Films on Demand
- Find information on the library's loan periods and overdue policies for students *
- Check to see if study room 211 is available at 3pm today
- Find the online digital special collection: Ziperman Postcard collection

Follow-Up Questions

- What do you think are the strongest or best characteristics of the library website? *
- How helpful is the design of the library website? *

- Can you briefly describe any problems that you've had in the past when using the library website? *

- Do you have any thoughts or observations related to this usability exercise? *

Results

Population Overview

The majority of the students who participated in the study identified as freshman, with a graduation year of 2022 (n=9). Two students identified as sophomores with a graduation year of 2021. The students were comprised of 8 females and 3 males and most had not declared a major (n=8). Students indicated they used the library's website either *Once or twice a semester* (n=4) or *One to three times a month* (n=7). Students indicated they used a laptop (n=5), laptop and phone (n=4) or a phone (n=1) to utilize the library's website. One student used a tablet. Most (n=8) indicated that they had received some form of library instruction prior to the study. Detailed results from the questionnaire are available in the Appendix.

Tasks

1. Navigate to the library's website

Google Search – Laptop	100% (n=6)
Direct Access – Laptop	0% (n=0)
Google Search – Mobile	60% (n=3)
Direct Access - Mobile	40% (n=2)
Avg time – Laptop	11.31 seconds
Avg time - Mobile	15.41 seconds

Students on laptop and mobile devices began the study at the default Google screen in a Chrome browser. Most students typed in "Trinity University Library", "Trinity University Library Coates", or "Coates Library" to access the site. All of the students on the laptop used

Google to access the site, while only three of the mobile users relied on this method. Two

students on mobile accessed the site directly by typing in the address of the site – lib.trinity.edu.

It is likely that starting students on the Google home page skewed the results for this task.

All students successfully accessed the library's home page (n=11).

2. Find the librarian whose liaison area is biology

Success – Laptop	100% (n=6)
Success – Mobile	100% (n=5)
Avg time – Laptop	13.88 seconds
Avg time - Mobile	32.01 seconds

All students successfully completed this task (n=11). Students on the laptop completed

the task more quickly as all but one used the "big icon button" at the top of the page to access the

liaison librarian area (Figure 1).
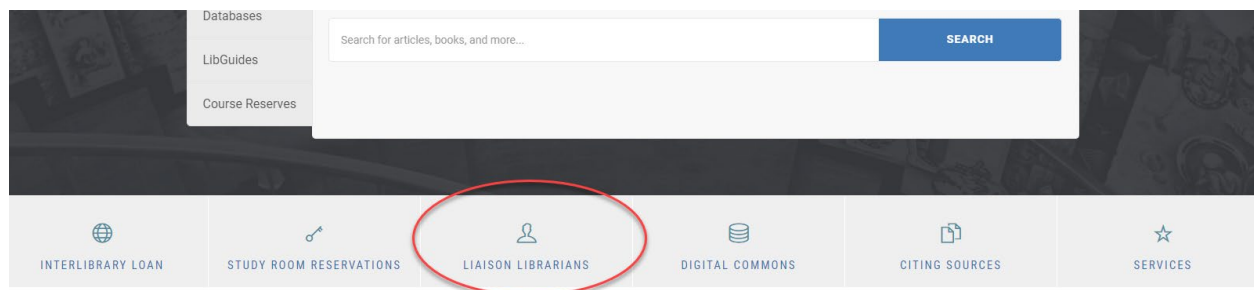
Figure 1: Liaison Librarian Top Level "Big Icon Button"

Only one laptop student used the top-level menus to navigate to the librarians' page. Only

one mobile user used the on-page button to access the liaison area. All other mobile users used

the top-level menus to navigate to either the main librarians' page or the liaison librarians'

directory list.

3. Find if the library has access to the database Films on Demand

| Success – Laptop | 83% (n=5) |
Success – Mobile	75% (n=4)
Avg time – Laptop	45.74 seconds
Avg time – Mobile	55.29 seconds

Not all students were able to complete this task. Most students using the laptop clicked on the "Databases" tab and utilized the "Find a specific database by title" search dropdown, and either typed in the entire database "Films on Demand" or started to type it and then clicked on the resulting option from the dropdown menu (Figure 2).
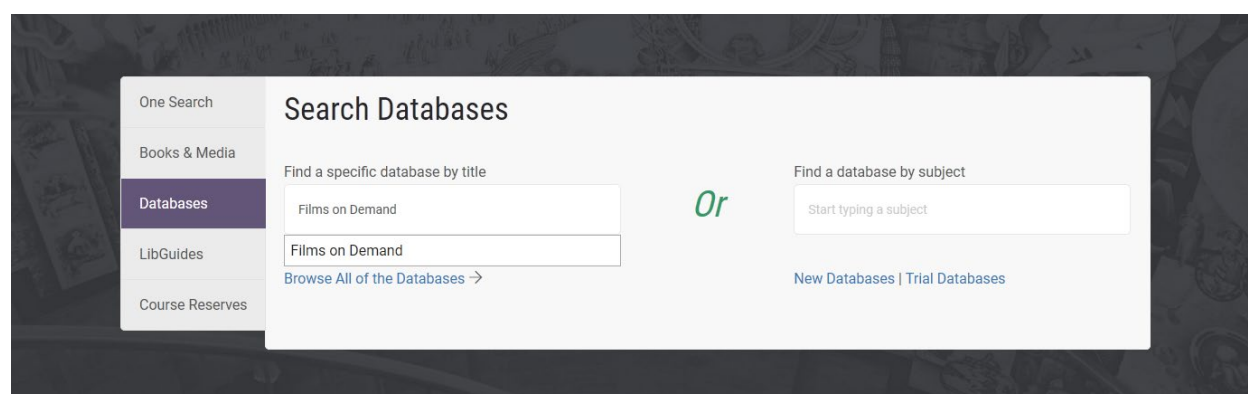

Figure 2: Databases Tab

The laptop student who failed the task clicked on the Databases tab, but searched using the "Find a database by subject" option, found the Film Studies subject category, but did not see the database within this area. The student continued to look around the site, but was unable to complete the task. Another laptop user started the search by using the search option in the top right (Figure 3). Unable to locate the database using this option, the student navigated back to the home page, clicked on the databases tab, typed in "Films on Demand", but failed to see it appear in the dropdown menu. The student clicked on the "Browse All of the Databases" link

below the search (Figure 4), continued to search on the subsequent page, selected the "Images

and Videos" link under the "Databases by Types" category and successfully located the database.
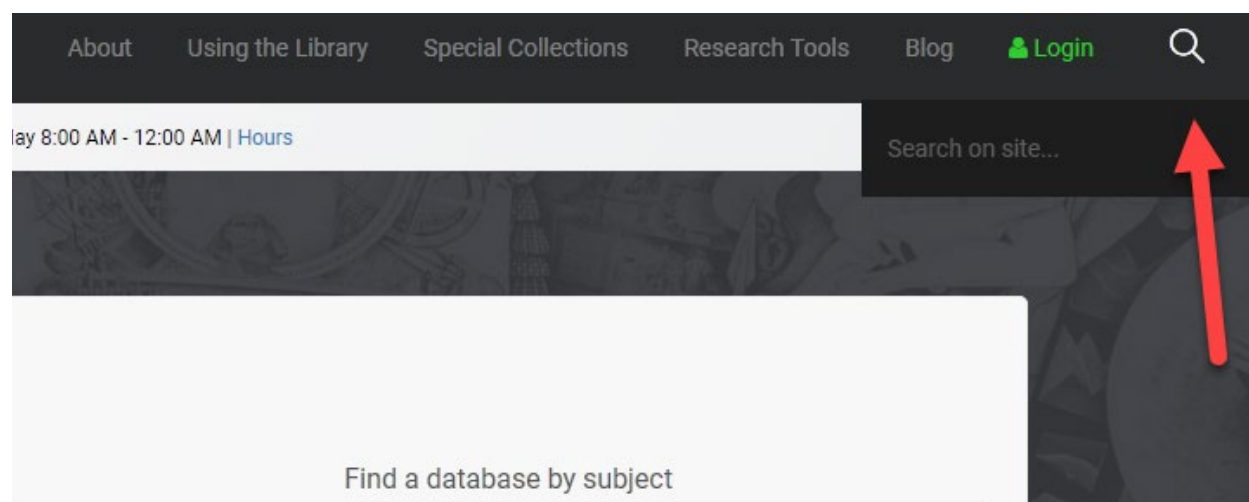
Figure 3: Top Search
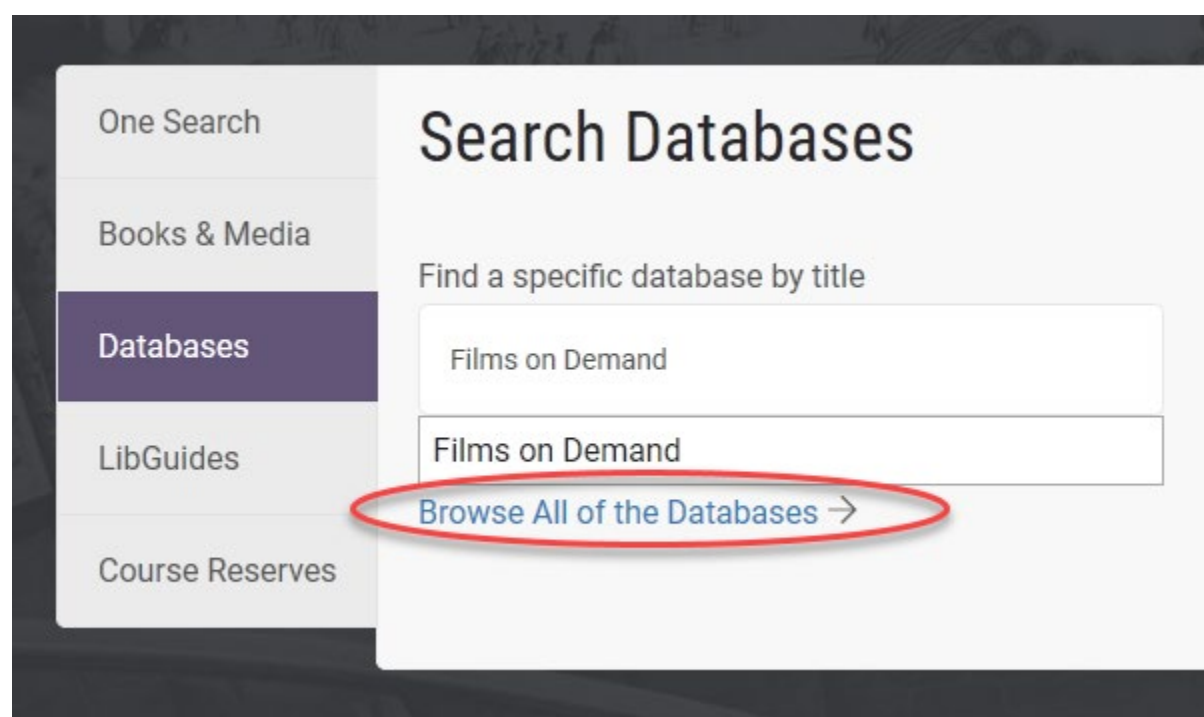
Figure 4: Browse All of the Databases Link

Only two of the mobile students scrolled down to the database search tab. Two other

students used the menus to find the databases page, clicked on F (Figure 5) and found the

database. One mobile student did not seem to understand the question and searched through both

special digital collections and the digital commons areas before time was called.
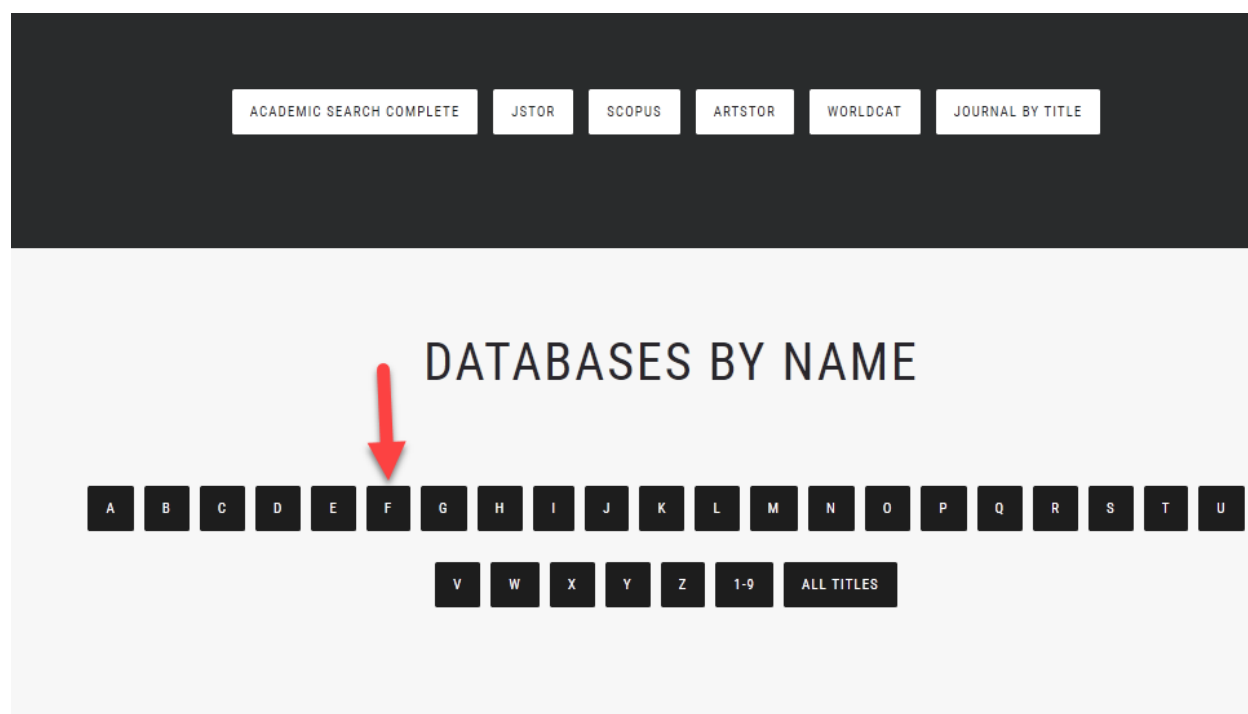

Figure 5: Databases by Name – Choosing "F"

4. Find information on the library's loan periods and overdue policies for students

Success – Laptop	100% (n=6)
Success – Mobile	100% (n=5)
Avg time – Laptop	78.83 seconds
Avg time – Mobile	56.52 seconds

Though all students successfully completed the task, clarification was given that the task

concerned "borrowing privileges" for the library as a whole versus Interlibrary Loan specifically.

The first five laptop users were given clarification during the task, and all other students were

initially told that the question referred to "borrowing privileges" before they began the task.

Since the goal was not to confuse students with the word "loan", clarifying the question was

important. Most students using laptop and mobile devices eventually accessed the information

from the menu item "Borrower Guidelines" available under the main "Using the Library" menu

item (Figure 6). Two mobile students navigated to the "For Students" area and selected the

FAQs option and located the answer using the frequently asked questions section of the site

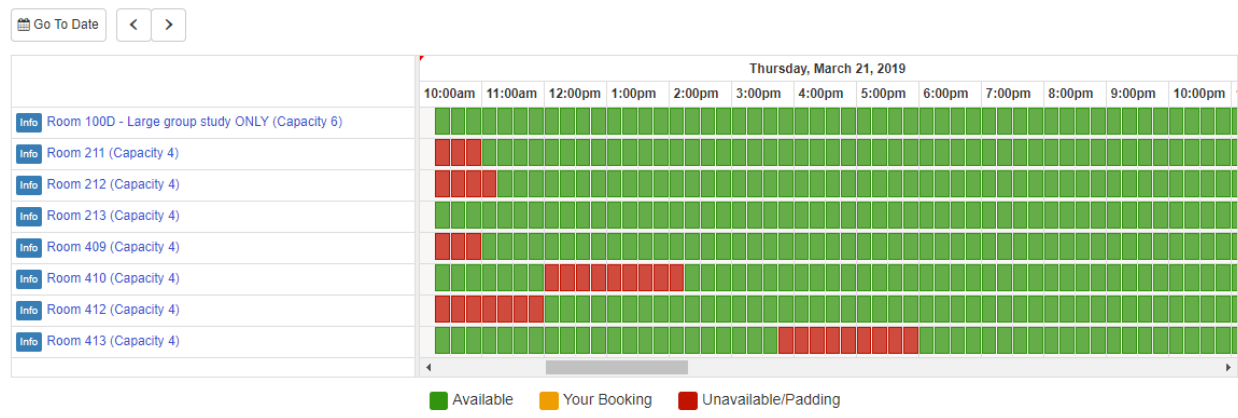(Figure 7).
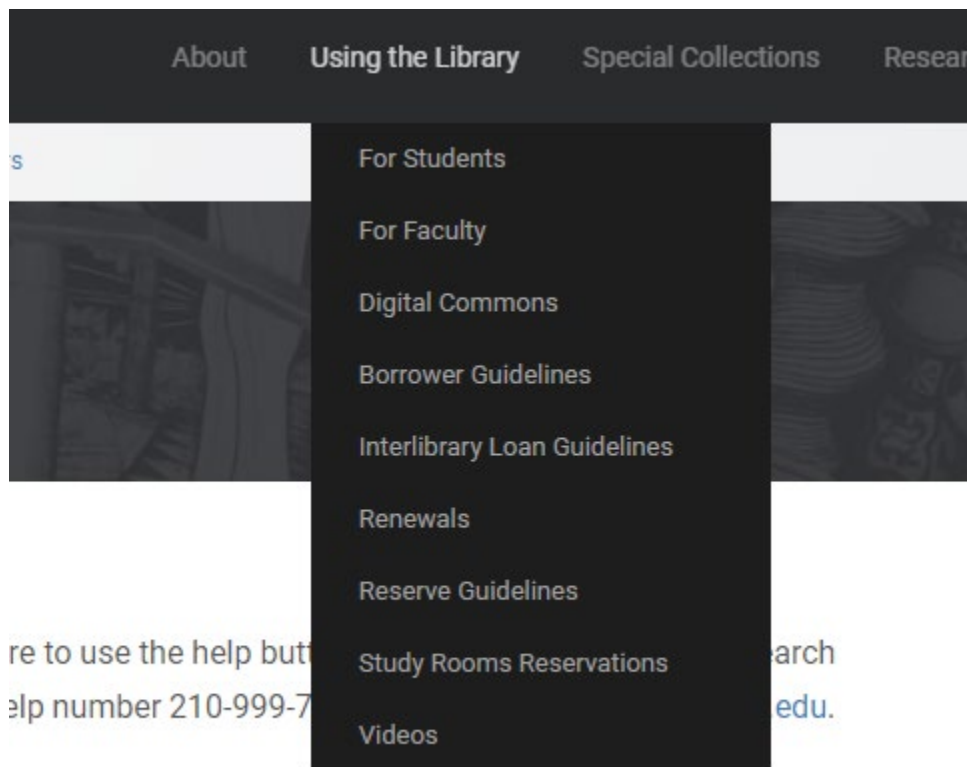
Figure 6: Using the Library Drop-Down Menu

Figure 7: FAQs Link on the "For Students" Page

5. Check to see if study room 211 is available at 3pm today

Success – Laptop	100% (n=6)
Success – Mobile	100% (n=5)
Avg time – Laptop	14.22 seconds
Avg time – Mobile	34.70 seconds

All students completed this task fairly quickly. Five of the six laptop students and one

mobile student used the big icon button at the top to access the study rooms. One laptop student

and four mobile students used the menu option "Study Room Reservations" under the "Using the

Library" menu (Figure 6). Some students took a moment to figure out how to read the room

reservation calendar (Figure 8), but all managed to answer the question. The average time

difference between laptop and mobile completion was attributed to slower calendar load time on

mobile devices.

Figure 8: Room Reservations Calendar

6. Find the online digital special collection: Ziperman Postcard Collection

Success – Laptop	67% (n=4)
Success – Mobile	40% (n=2)
Avg time – Laptop	70.01 seconds
Avg time – Mobile	82.86 seconds

Overall, students struggled with this task. At some point during the task, however, most

students navigated to the correct area using the top-level menu item "Special Collections" and

then selected the "Digital Collections" link. Students who reached the page and scrolled down

through the collections, successfully completed the task (Figure 9).
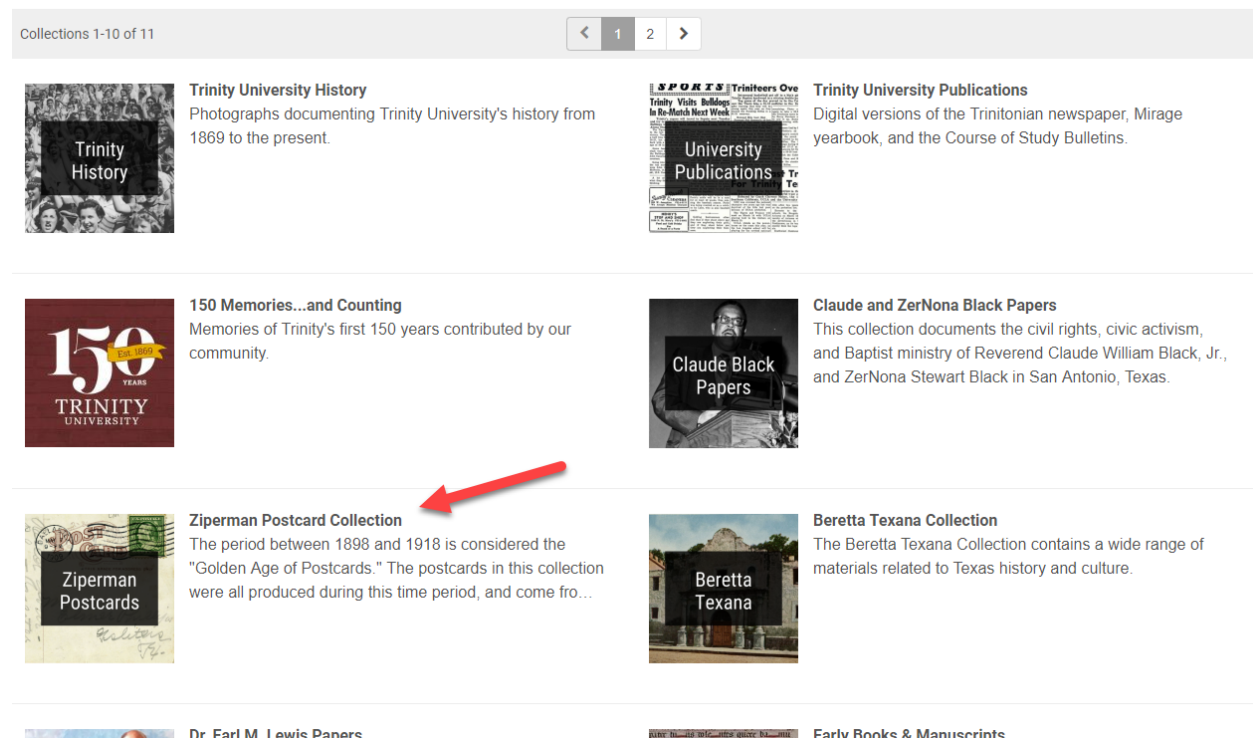
Figure 9: Ziperman Postcard Collection Link on the Digital Collections Main Page

Two laptop and two mobile users who reached the page entered the collection name in the search box at the top only to be shown that there were no results. Some of these students continued to search for the collection on the site using One Search or menu items while others stopped the task and concluded that the library did not have the collection.

Two laptop and two mobile users attempted to use One Search which did not produce the collection. One mobile and one laptop user from this group continued to search the site and successfully found the collection.

One laptop user eventually left the library's site altogether, opened Google search and found the collection by searching "trinity university library ziperman postcard" and found the collection by clicking on the first result returned.

None of the students scrolled down to the Special Collections section on the home page

and clicked on the Special Collections button (Figure 10).
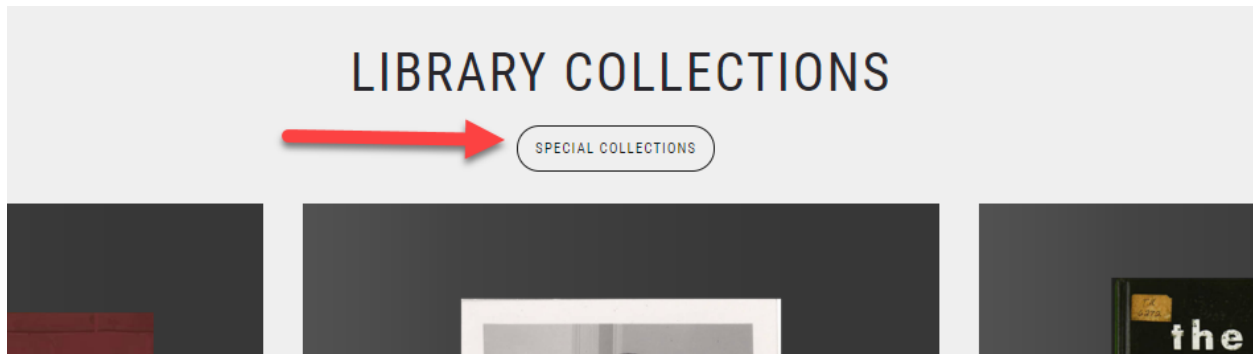
Figure 10: Special Collections Button on Home Page

Follow-up Questions

Students were asked a series of questions after the tasks to gain feedback about their

overall thoughts on the website and the study. Below is a summary of the students' answers.

What do you think are the strongest or best characteristics of the library website?

Most students indicated that they thought the main search options at the top including

One Search, the databases search and the book search were the best part of the site. Several

students mentioned that the layout of the site and organization of the menu items were the

strongest part of the site. Other students mentioned the room reservation system and the citation

information.

How helpful is the design of the library website?

Overall, most students indicated that the design was helpful and that they were able to

find what they needed when doing their own research. One student thought there was too much

information to scroll through on the main page and another student thought that the "Services"

icon button should match the top menu item and be labeled "Using the Library". A mobile

student indicated that the only issue was the sensitivity of the menus – mobile menus locked onto

the main content causing the menu to "jump" which required re-scrolling to access the contents

of the menu.

Can you briefly describe any problems that you've had in the past when using the library

website?

Several students indicated that they had not had any issues with the site. One student

indicated that ILL was confusing. Several students complained that One Search did not return the

results that they wanted and two students searching for specific music scores had difficulty. One

student had trouble using Nexus Uni and another indicated a course reserve had been hard to

find.

Do you have any thoughts or observations related to this usability exercise?

Most students indicated that it had been a good experience and were pleased that the

library was interested in the students' opinions to help improve the site. Several students said the

experience gave them an opportunity to learn about different parts of the site that they did not

know about. Several students who had difficulty with a particular task took this time to verbalize

the areas they had trouble with and several students asked to see how to complete unfinished

tasks.

Discussion

This usability study was an important step to engage students and learn how they interact

with the library's website. Discussing the site with students after the tasks helped gain insight

into how students currently use the site for their own needs and what they thought of the site overall. Conducting the study led to a variety of takeaways.

Takeaways

Laptop and mobile users navigated the site differently. Though there was overlap in behavior, most mobile users depended on the top menu items to help them navigate the site, while laptop users tended to use on-page links and tools and very rarely used the top menu.

Whether students used the databases search tab or accessed the databases through the databases page via the top-level menu, locating a particular database proved to be a straightforward task for most students. The databases search tab was self-explanatory for most users. Some students even commented that they liked the search tab options giving them an opportunity to "dig deeper" into different resources.

Students tried to use One Search for different questions, especially when searching the special collections. This caused confusion and several students initially concluded the library did not have a certain collection based on these results.

The majority of students access the website by searching for it through Google versus knowing the web address. No student went through Trinity's main website to access the library's site.

Students did not scroll down pages to find content. This was especially true of mobile users. When students did attempt to scroll, they went quickly through items on a page without stopping to look and then quickly scrolled back to the top without ever scrolling all of the way down to the menu items in the footer.

No student used the on-page help bubble nor did most access the website's search tool in the top menu. When asked why they did not utilize these tools, students indicated that they did not see these options and/or they had never had success using on-page help or search on other sites.

Recommendations

The following are recommendations based on observations during the study.

1. Consider educating students about the "help bubble" (Figure 11) and FAQs section. Experiment with colors to make it more visible on the page.
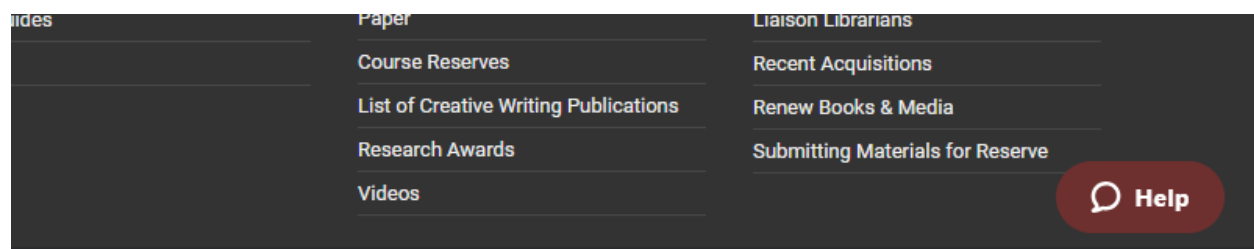

Figure 11: Help Bubble

2. Overall, students often rely on Google for reaching the site. On more than one occasion students left the site to search for information. It is important for the library to maintain a good SEO strategy so that all resources are searchable inside and outside of the library's website structure.

3. Desktop students were not aware that the clear outlined buttons on the main page were actually clickable and missed these altogether (Figure 10). Consider changing these to black or a color so they are more visible.

4. Students rely on text clues like menu items or text-based links while searching for information, and are less likely to look to visual clues like banners. Re-evaluate the "For Students" page structure (Figure 12).
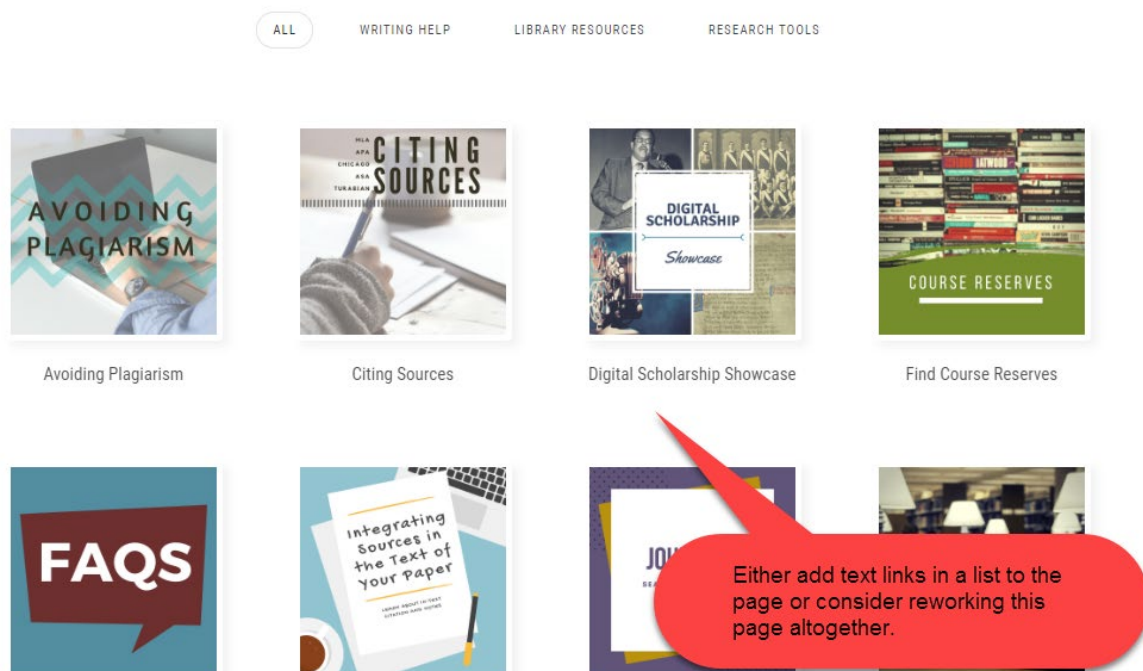
Figure 12: For Students Page

5. Students typically stayed "above the fold" – using header menus (1), search boxes (2), and big icons (3) when looking for content (Figure 13). Students often only scrolled when they ran out of options. Desktop students preferred the large icons below the search. Mobile students liked the well-structured menu navigation layout. Continue to monitor user statistics to ensure major areas are highlighted in the big icon area and also appear in the top menu.
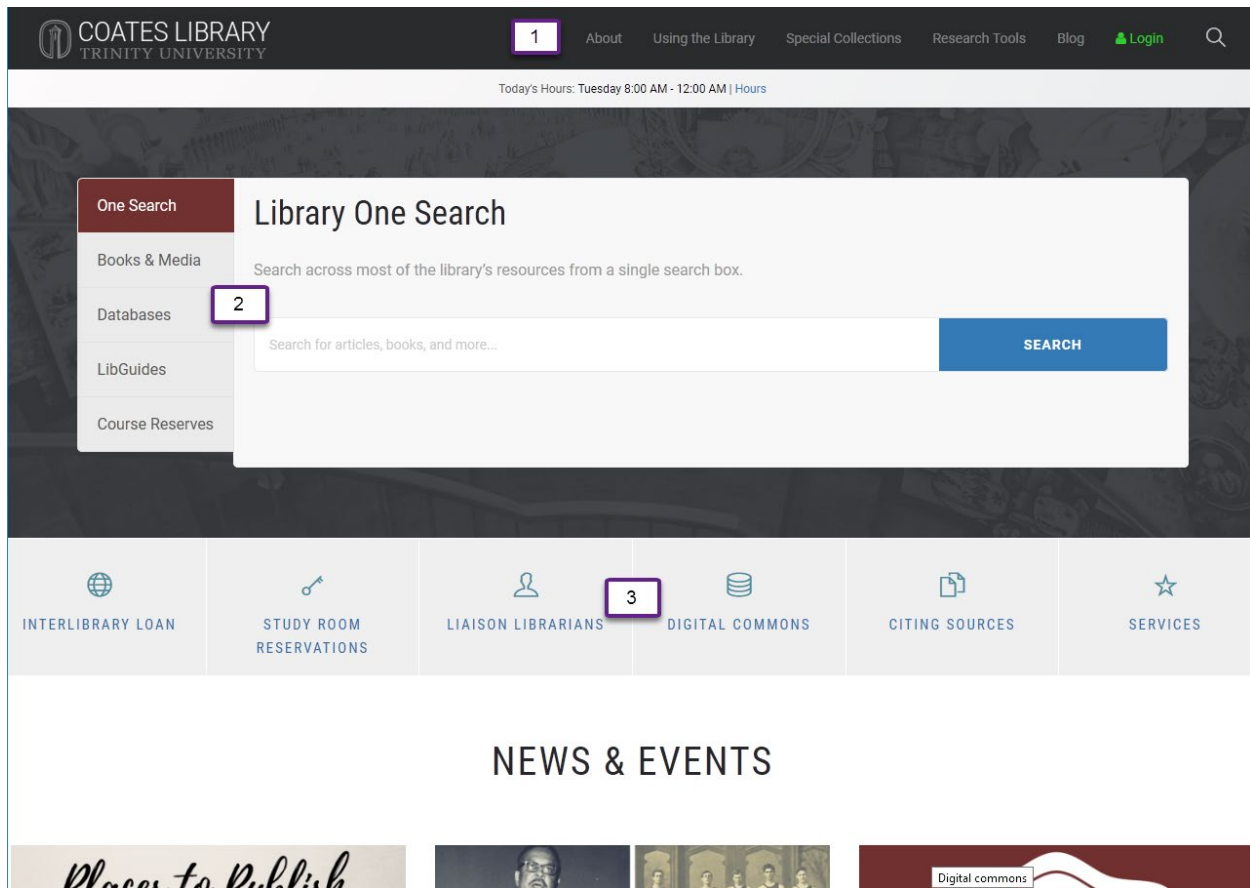
Figure 13: Top Area of Home Page

6. Menu navigation on mobile devices would often jump and lock onto the content, causing users to re-scroll through the menu items. Investigate the cause and consider recoding the menu structure so that it allows for smooth scrolling through menu items.

Note: this was only observed with mobile users.

7. Change the search option for special collections in CONTENTdm to search collection-level content.

8. Assess current library instruction and materials to identify opportunities to improve use of the site and its search tools.

Conclusion

The purpose of this usability study was to determine if the initial goals of the new website were met, and to track the usage patterns of students to determine if there was an opportunity to make minor modifications or provide additional instruction on best usage practices.

Conducting both a mobile version and laptop version of the study was a valuable experience since students did navigate the site very differently depending on the device they used. Students using the mobile version typically relied on the menu items at the top, while students using the laptop generally depended on the on-page links.

Even though most of the library's online users access the site via a desktop or laptop computer, mobile usage continues to rise. Mobile usage for the library's site is up 3 percent since the redesigned site was launched in May 2018 (Google, Inc., 2019). It is important to monitor mobile access and usage and make sure that students can browse the site successfully from any screen size or device.

Overall, most students indicated the site was easy to navigate and the search tabs, large button links at the top, and menu items allowed them to discover what they needed in a timely manner. Though students often navigated the site differently depending on the device used, both groups were able to negotiate the site relatively successfully and complete most of the tasks. Pursuing the recommendations outlined in the discussion section should help remedy areas where there were issues, and an additional usability study with a variety of stakeholders might be beneficial to gain perspective on how others interact with the site.

References

Cao, J. (2015, November 20). Top 5 UX trends every web designer should know. Retrieved

March 19, 2019, from https://www.awwwards.com/top-5-ux-trends-every-web-designer-

should-know.html

Coates Library. (2018). *Annual Assessment Plan* (Assessment Plan No. 2017–2018). San

Antonio, Texas.

Google, Inc. (2019). *Google Analytics for Coates Library* [Google Analytics].

Harris, B. R. (2008). *Usability Study of the Coates Library Website at Trinity University: Two

Years Later*. Digital Commons @ Trinity.

Nielsen, J. (2000, March 19). Why you only need to test with 5 users. Retrieved March 19, 2019,

from Nielsen Norman Group website: https://www.nngroup.com/articles/why-you-only-

need-to-test-with-5-users/

We Are Social. (n.d.). Percentage of all global web pages served to mobile phones from 2009 to

2018. Retrieved March 21, 2019, from Statista - The Statistics Portal website:

https://www.statista.com/statistics/241462/global-mobile-phone-website-traffic-share/

Appendix

Student Questionnaire

1. What is your expected year of graduation? (n=11)

2021	2
2022	9

2. What is your age? (n=11)

18	4
19	6
20	1

3. How do you identify your gender? (n=11)

Male	3
Female	8
Gender Diverse (non-conforming and/or transgender	0

4. What is your major? (n=11)

History & Spanish	1
Music Education	1
Music & Communications	1
Undecided	8

5. Over the course of a semester, on average, how often do you use the library's website? (n=11)

Never	0
Once or twice a semester	4
One to three times a month	7
One to three times a week	0
More than three times a week	0

6. Which of the following devices do you most often use to browse the internet (multiple responses allowed). (n=15)

Desktop Computer	0
Laptop Computer	9 (4 also used phone)
Tablet	1
Phone	5 (4 also used laptop)
Other (please specify)	0

7. Have you received library instruction prior to this study? (n=11)

Yes	8
No	3