Ursula C. Schwerin
Library
at
New York City College of
Technology
(Beta)



Diary Study Report

by Michael Benowitz, Alexandra Provo & Julie Schaeffer Pratt Institute, School of Information & Library Science

Executive Summary

The New York City College of Technology is the largest technical college in the American Northeast and is part of the City University of New York (CUNY) system. The college grants degrees in several STEM as well as liberal arts subject areas. The overall college website is bright and clean, with an eye towards attracting students to learn more about what the college offers.

The Beta version of the Schwerin Library website is clearly designed to match this image. The responsive design reflects the usage patterns of students and presents a clear voice of authority and a depth of resources. Overall, during the course of this study, we found that the Beta site functions effectively in enabling research and providing guidance to users. However, several areas of possible usability improvement were found, which could make the site an even more effective tool for new and returning users. Therefore this report makes the following recommendations:

Error Pages & Recovery Recommendations

- Provide specific "404" error pages for exterior resources and interior website pages, each including specific recovery information to users
- Provide multiple recovery options on each of these pages
- Notify users that error reports have been generated to provide a sense that their problem will be addressed

Desktop Homepage Recommendations

- Reposition Browse options to give them equal prominence to the search options, presenting users with a more balanced choice and making the browse options more visible
- Use uniform language for all search and browse functions, eliminating the term "Find" from some navigation options, clarifying the effects of all possible user actions

Mobile Homepage Recommendations

- Remove opening language and collapse "search" and "browse" functions to reduce the amount of scrolling required to locate resources on the page
- Emphasize the research options to allow for quick access to main library resources to match the fast mode of interaction many users have while on mobile devices

In contrast, the current library website, while offering plenty of research tools for students, looks a bit more dated. Therefore, one of the challenges the library faces is updating their look to appeal to students who are increasingly using mobile devices to access the Internet, while maintaining the functionality of a website focused on providing academic research assistance.

Table of Contents	
Introduction	3
Methodology	4
Findings & Recommendations	6
Overview	6
Error Pages & Recovery Recommendations	6
Desktop Homepage Design Recommendations	9
Mobile Homepage Design Recommendations	10
Conclusion	11
References	13
Appendices	14
Appendix A: Demographics, Questions and Responses	14
Appendix B: Diary Questions and Responses	15
Appendix C: Participant Diary Entries	17

Introduction

The New York City College of Technology (City Tech) is a large public college with a focus on technology, as the name indicates. There are about 17,000 students and the 2007-2008 library collection stats, as listed on the current website, are as follows:

- Print books 180,000 volumes
- Print periodicals 290 titles
- Microfilm 14.000 reels
- Databases 110
- Distinctive electronic journals 8,700
- Electronic periodicals access to 40,000
- Multimedia (including sound recordings and motion pictures) 4,900

The library is redesigning their website to help connect their users with their collections and help them when they conduct academic research. The authors of this report tested the beta version of the site on both desktop and mobile devices and facilitated four participants in a diary study (see "Methodology" for an explanation of how the study was conducted). This report looks at the diary study participants' comments on the site and based on their feedback, makes recommendations of changes for the website to create better usability.

The general consensus among our participants was that the site was easy to use, with most searching for research related items, such as databases, research guides, and print publications. There was some frustration with the error feedback on the site as well as the placement of resources on the homepage, both on the desktop and mobile sites, which we go into further detail under "Findings and Recommendations".

Methodology

The method chosen for this study was the diary study. Three expert usability evaluators from the Pratt Institute's School of Library and Information Science designed and conducted the study.

A field method of usability testing, the diary study gathers qualitative data about a user's experience with an interface in a relatively natural setting. Unlike in laboratory testing, users are asked to interact with an interface in their own environment. The diary study is intended to evaluate exploratory learning, or problem-solving that occurs outside of the context of a specific task (Rieman, 1993). It is a remote asynchronous method, meaning it does not require the evaluator to be physically present and the task can be completed at a time when the evaluator is not actively observing. Participants fill out diary forms describing their activities over a defined period of time, giving the data collected a longitudinal aspect. The advantage of all of these features is twofold: it both allows evaluators to get an idea of a user's real-world interaction with the interface, and the cost is lower than that of a laboratory-based usability test.

For this study, two forms were created to collect participant data. The first was a demographic form, filled out only once at the beginning of the study (see Appendix A). Three of four participants filled out this form. The participant pool consisted of four female graduate students studying at the Pratt Institute School of Library and Information Science and residing in New York and New Jersey.

The second form was a diary entry form (see Appendix B) consisting of a series of questions aimed at ascertaining details about both the context and experience the participant had with the interface. The focus of the diary entries was limited to the window of time the participants spent on the City Tech Library's website.

The first set of questions asked participants about the environmental conditions involved in their experience. This included whether the participant filled out the form during or after their visit to the library website, technical details about the device they used (type, operating system, and browser), and technical issues encountered. Participants were also asked to narratively describe the environment they were in at the time of their visit to the library website.

Although typically diary studies do not provide tasks to participants, in this study the evaluators elected to include several suggested activities on the diary form. This was communicated to the participants by asking them "For what purpose did you visit the site?" The options (more than one of which could be selected) were as follows:

Look for scholarly articles

- Consult research guides
- Search for a book or print publication
- Planning your visit to the library
- Contact a Librarian
- Reserve a study space
- Other:

The evaluators chose to include suggested purposes in addition to a free-text answer field since the participants of the study were not City Tech students. Because of this, participant interaction with the site was not based on real-world needs and motivations, making the conditions of this study more artificial than most. Therefore, the evaluators deemed it necessary to include suggestions in order to ensure that relevant areas of the City Tech Library website were evaluated.

The second set of questions asked participants to describe their experience and interaction with the site in narrative form. Again, because the participant pool did not consist of City Tech students, more structure and specificity was given to the questions in order to ensure that certain aspects of the site, such as layout and labels, were investigated. The following questions were asked:

- Describe how you found the information you were looking for. How did you go about navigating the site?
- How did the layout of the site help or hinder your interaction with it?
- How did the labels of different sections of the site accord with your expectations?
- Please describe your experience of the site today.

Each participant was asked to fill out the diary form three times over the course of a week, making the total number of forms collected 12. Although the evaluators did not specify when or where participants should fill out the form, four email reminders were sent out using the Boomerang for Gmail email scheduler on March 16, 18, 20 and 24.

Six diary forms described computer use, four described phone use, and two described tablet use. Six of the forms were filled out while the participant was using the City Tech Library website, and six were filled out post-visit. Ten forms were filled out when participants were at home; one was filled out at Pratt's Manhattan campus and one was filled out while the participant was out of town on vacation (see Appendix C for full diary entries).

Findings and Recommendations

Overview

The new design for the City Tech Library, currently in Beta, is an effective and highly usable library website. In the course of this diary study our test users reported strongly positive experiences using the site to locate research materials and to learn about the library itself. Their diary entries show that they were able to access the site through a wide range of devices and quickly complete their selected tasks, which is highly important for a university library which must engage busy and frequently distracted student users.

However, the study did uncover several areas in which usability could be improved to further enhance user's experiences with the site. These issues generally did not prevent users from completing their tasks, but changes to the site design could make certain library resources more evident and help users avoid frustration when the site does not function as intended.

This report is broken into two main sections. The first concerns the "404" page displayed when a resource cannot be found and makes several recommendations for providing more detail through this error page. The second covers the homepage on both the desktop and mobile environments and recommends ways in which resources could be made more visible on these pages, bringing them to users attention and enabling a greater depth of use on the part of visitors.

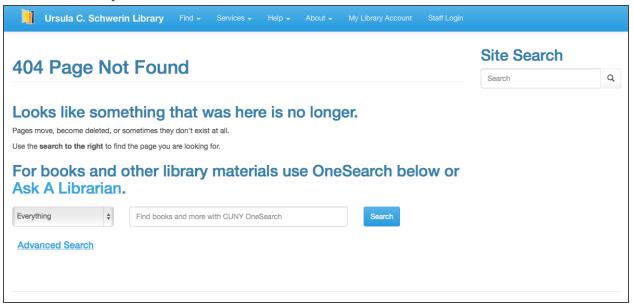
Error Pages & Recovery Recommendations

With dozens of databases and a full catalog of print and digital materials, in addition to the myriad services offered through the library, the City Tech Library site must provide hundreds of unique pages to enable access to this wealth of information. This of course presents a challenge in terms of maintaining accurate links and preventing link rot, particularly when managing numerous digital subscriptions that may expire or have their URLs change.

In the course of their diary reports, several users found that pages did not exist, and were presented with a basic "404 page not found" error. This page effectively ended the users task in each case, preventing them from achieving their goals. Nielsen specifically identified this issue in his 9th heuristic, which calls for error pages to provide precise information as well as a possible solution. (Nielsen, 1995)

At present the City Tech Library site does not provide this usability, with a single 404 page offering users the opportunity to search for a resource or contact a librarian. However, these options do not address the issue of a broken link, as presumably the user has already found the resource they were interested in and then found it inaccessible. Further, while the contact the librarian function is a valuable tool (& one that should be available at all times) using it in

error recovery does not match with most users' information seeking methods. When confronted with an error, they are not likely to delay their search to speak with a person, they will be more likely to seek the information from another source.

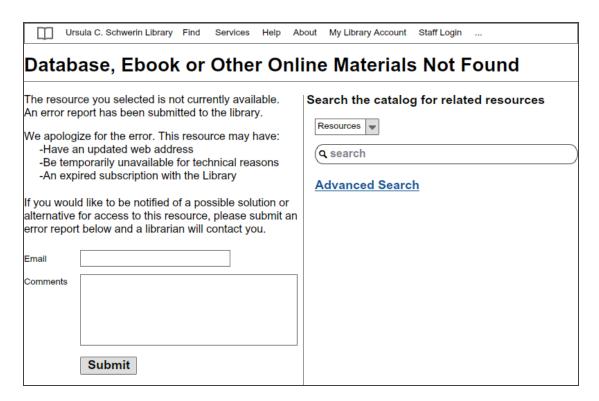


The current City Tech Library 404 Page

Therefore we recommend creating two error pages to help users recover from a page not found error. The first of these pages will cover errors with outside resources and the second will concern errors with the internal pages of the City Tech Library site. We would suggest that these pages contain the following information:

Recommendation For a "Database, Ebook or Other Online Materials Not Found" page

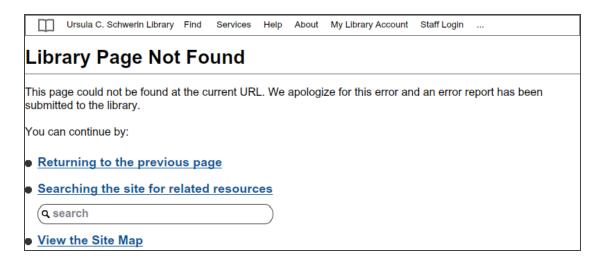
- Indicate that this outside resource could not be connected to and state possible reasons
- State that an error report has been submitted to the Library
- Provide the option of submitting an error report to the library, allowing for an explicit follow up specific to the error
- Enable another search of the library catalog, suggesting "Search again for related resources."



Proposed new item not found page for use with external resources

Recommendation for a "Library Page Not Found" page

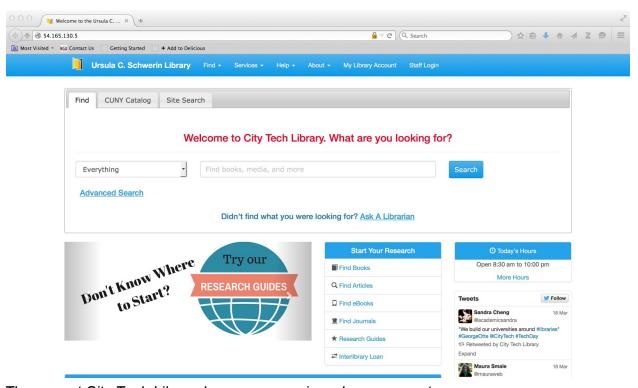
- Indicate that this page could not be found at the current URL
- State that an error report has been submitted to the Library
- Provide several recovery options, including:
 - Return to your previous page
 - Browse main navigation
 - Search the site for your resource



Proposed new item not found page for use with internal resources

Desktop Homepage Design Recommendations

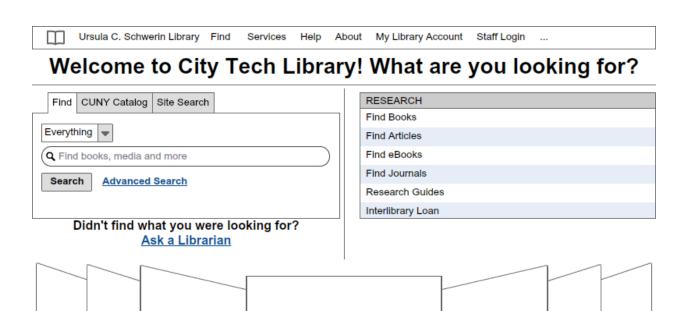
Overall, users accessing the City Tech Library website on a computer reported positive experiences with the site and with the labels of different sections of the site. Across devices, users were drawn to the top navigation bar and the large search box as opposed to the "Start Your Research" links. One user commented that although the "Start Your Research" box was findable, it was not ideally placed.



The current City Tech Library homepage as viewed on a computer

Recommendation for Search Box and "Start Your Research" Box Placement

To address this concern, and to encourage library patrons to utilize other access points besides the large search box, we recommend reducing the size of the search box and giving equal weight to the "Start Your Research Box." Placing the two boxes side-by-side is one method for achieving a more balanced emphasis on the two modes of access.



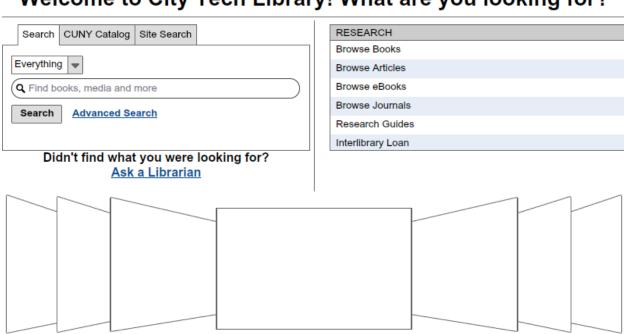
Proposed Redesign of the City Tech Library website (for computer users)

Recommendation for Dividing Areas by "Search" and "Browse"

Users also commented about their ability to browse for resources on the site. One user arrived at the Journals page from the top navigation bar's "Find" dropdown menu, but expressed confusion at not being able to browse journals by title on the Journals page. Since she did not have a particular journal in mind, this user was interested in accessing a list of available journals. Another user clicked the "Find Articles" link from the "Start Your Research" box but was surprised to find a browsable list of databases rather than a search box.

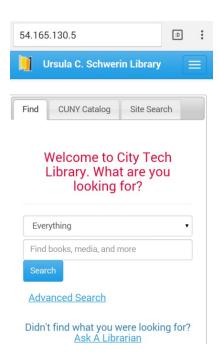
One way to address this semantic confusion might be to develop dedicated browsing pages and label them as such. The previous recommendation sets up a natural spatial division for a "Search" area and a "Browse" area. The top navigation label "Find" could remain, while the large search box could be labeled "Search." The "Start Your Research" links could be renamed "Browse Books," "Browse Articles," and so on.





Proposed renaming of the search and browse areas.

Mobile Homepage Design Recommendations



Users commented that there was a lot of scrolling on the mobile version of the site. While the overall look is clean, the mobile design could benefit from some mobile specific tweaks.

Recommendation for Welcome Text

The search bar is very prominent so most users relied on that rather than other resources. The red heading "Welcome to City Tech Library. What are you looking for?" dominates most of the screen and doesn't have any functionality. It would ideal to just remove and thereby move all content up. Users will still have the name of the library at the top of the screen.

Recommendation for Emphasizing "Start Your Research" Box

Similarly, because on mobile space is limited, the "Start Your Research" options seem far more valuable to app users than

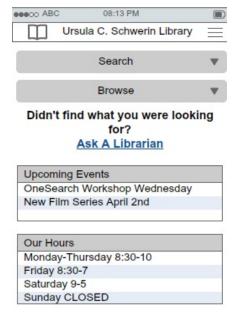
images. While first time users might find the scrolling images charming and inviting, the main goal for the app should be to encourage return visits. This app could be a valuable library tool if it were more user friendly and used space for actions rather than images.

Recommendation for Expandable Search and Browse Buttons

With these two items removed, more real estate will then be available for functions like "Search" and "Start Research". To create more space on the screen and eliminate scrolling, the blue headers would make nice buttons that expand to offer more in-depth option.

Since many users rely on mobile devices to find information, ease of use is essential. To the right is a mockup of how the City Tech library could redesign the homepage to make the "Search" and "Browse" functions more prominent as well as provide useful information such as upcoming events and library hours.

Once patrons are looking at their results in "Browse" or "Search" then scrolling isn't as much of an issue because people are accustomed to scrolling through lists of results. But putting everything on one and a half screens to start is a good design choice for the homepage.



Conclusion

Overall the City Tech Library site is a highly effective tool for locating resources. It puts the full wealth of the library's materials at the fingertips of the site's users and enables them to quickly find what they are looking for. The responsive design presents a unified experience across all devices, a clear advantage for users who access the site in many different environments, allowing them to quickly recognize and take appropriate actions on the site.

The current design, however, can introduce a bias in users towards one mode of operation, search, and occasionally obscures useful navigation tools in its design. Similar issues can be found in the site's "404" page, which currently does not present applicable recovery options, and does not direct users to specific actions that may be taken. By simplifying several design elements, unifying language used in menu navigations and clearly indicating possible actions, as described in the recommendations above, the site should feature a user experience that is smooth for returning visitors and easily understood by novice users.

References

Rieman, J. (1993). The Diary Study: A Workplace-Oriented Research Tool to Guide Laboratory Efforts. Proceedings from *INTERCHI '93 Conference on Human Factors in Computing Systems*. New York: ACM, 321–326.

Appendices

Appendix A: Demographics, questions and responses

Questionnaire:

City Tech Diary Form User Info

Your Name

Your Age Range

- 0 20-24
- o 25-29
- 0 30-34
- o **35-39**
- 0 40-44
- 0 45-49

Are you:

- Male
- Female

Your Location

Your Occupation

Submit

Responses:

Your Name	Your Age Range	Are you:	Your Location	Your Occupation
User 1	20-24	Female	New York, New York	Student
User 2	25-29	Female	Hoboken, NJ	Student
User 3	35-39	Female	New York City	Student
User 4	no response	no response	no response	no response

Questionnaire

City Tech Response Website Diary Entry

Thanks for helping us evaluate the City Tech Library's http://54.165.130.5

* Required

Your Name *

Are you filling out this form while you visit the library website or post-visit?

- While visiting the website
- Post-visit

What type of device are you using? *

- Phone
- Tablet
- Computer

What operating system are you using? *

- Apple iOS/OSX
- Android/Google Chrome OS
- Microsoft Windows Desktop/Mobile
- Other:

What browser are you using? *

- Firefox
- Safari
- Chrome
- Internet Explorer
- Other:

Did you notice any technical issues?

If so, please describe.

Could you describe the environment you were in when you visited the library website? *

For example, where you were or context about what else you were doing at the time.

For what purpose did you the visit the site? *

- Look for scholarly articles
- Consult research guides
- Search for a book or print publication
- Planning your visit to the library
- Contact a Librarian
- Reserve a study space
- Other:

Describe how you found the information you were looking for. How did you go about navigating the site? *

How did the layout of the site help or hinder your interaction with it? * How did the labels of different sections of the site accord with your expectations? *

Please describe your experience of the site today. *

Appendix C: Participant Diary Entries

nestamp	What type o	Your Name	For what nursose did you the vis	What operating system	What hm	Did you notic	Describe how you found the information you were looking	How did the layout of the site help or hinder your interaction	How did the labels of different sections of the site accord	Please describe your experience of the site today	Could you describe the environment you were in when you	Are you filling out this form while you visit the library of
3/24/2015 23:43:18	•		Planning your visit to the library				I went to About and clicked both "Hours" and "Directions".			This was the shortest interaction I had with the site. It was really easy to find the info that I thought fit the task of planning a visit. I scanned the top navigation, clicked "About" then "Directions" and scanned that page. It had a Google maps and public transportation options. The or in went to "Hours" and found a nice calendar with each day's hours.		While visiting the website
						Every database I clicked on gave me a	It was fairly simple on the mobile site, you just scroll to the	Well It was really minimal, stripped down to the basic	Ven Eloding scholarlu artislas under "Elod Artislas" mode.	Not very successful. I decided to browse for articles under the "Vision Care Technology" subject since I am working on a LibGuide for visually impaired patrons for LIS 652. I wanted to see how far I could get before I had to log in or something. However, every database I clicked on sent me to a 404 Paoe. Not sure if it was because I was on mobile.	In a hotel coop in St. Louis Lam on a trip with my family.	
3/20/2015 0:01:36	Phone	User 1	Look for scholarly articles	Apple iOS/OSX	Safari		option on the main page ("Find Articles").	anything.	perfect sense.		am doing this basically right before I got to bed tonight.	
3/16/2015 13:41:24	Tablet	User 1	Contact a Librarian	Microsoft Windows Desi	k Firefox	No.	First I looked under "Services", but it was not there. Then I looked under "Help" and was able to find it.	Well I really like the color scheme. At first glance I thought it would be confusing but as soon as I began to look around it was easy and everything made sense.	Well I assumed asking a librarian would be under "Services" but that may just be my own semantic disposition.	It was really positive! Maybe because I picked any easy task, but I did not have any problems at all.	I was at my home on the couch. It was during a break between some other work I was doing. The Chew was on.	While visiting the website
3/18/2015 13:27:03	Computer	Hor 2	Look for scholarly articles	Apple IOS/OSX		homepage 1 could not browse by drop-down menu. Also, after resorting to the "Find" tab to browse articles, my selections from the drop-down menu didn't pull up any database	to the older website and not the newer interface being tested. After searching via database, I decided to try browsing by journal. However, the only option on the "Journals+" tab (under "Find") was to type in the specific name of a	The layout helped me find an alternative to the faulty homo door menu in providing the top-ravigation tabs. However, the lack of a response to my failed distance categories that district the categories that district the categories that district expenses to extend the supervision of the categories that district expenses to except the categories that district expenses to except the categories that district expenses the categories that district expenses the categories and the categories	The labels met my expectations.	Not successful. I was not able to browse by database unless I resorted to the other version of the Library	Al home, eating lunch	Post-visit
3/15/2015 12:12:42			Search for a book or print public			Links on the Archives page that do not work: digitization link; NYCCT historical photographs link.	I automatically explored the top-navigation tabs, first choosing "Services". I checked out the Archives page to see if any archival materials were available online. Unfortunisely, the line to digitace materials were notion. On the page of the page of the page of the page of the colors in utilized the drop-down menu. "Find by Subject, ordine." I utilized the drop-down menu. "Find by Subject, and chose." Popular." Only two options: "ebrary and child." a page end as results to "Popular so of chose the page of the page of the page of the page of the through this logic manifest." I cannot a lot of resources through this logic manifest. I cannot a lot of resources	The top-navigation bar definitely helped my interaction will the airs but fonly initially used it because the rest of the site home screen intrimidated my.	,,,	Not a bad experience. The site isn't anything special visually, but the information is laid out appropriately. I would have been the fine-flower limit to love to so that flouid control to the control of the control o		While visiting the website
3/16/2015 20:58:53	Phone	User 2	Explore site features	Apple iOS/OSX	Safari	unable to use the drop down menu under the	Navigation was difficult by phone, as all of the information and links were stacked in a long list. I scrolled down through the homepage to see what the library and site have to offer and found (all the way at the bottom) that the site includes recent news, tweets, and an instagram feed, then explored these external links.	The layout is definitely not responsive to mobile use, and if my goal wasn't to explore the site's features, I would easily get trustrated by the long scrolling process.	The labels met my expectations.	Not horrible, as I learned a lot about what the library has to offer and how it presents itself via social media and news selections. However, the scrolling became tiring, as I kept trying to zoom out to see more information on my screen at one time.	At home, just finished my heuristic evaluation.	Post-visit
3/24/2015 22:08:04	Computer	User 3	To look up information on the lib	Annie iOS/OSX	Firefox		I immediately went to the the top navigation bar and clicked on the "About" drop down button. I then selected directions and was lead to a page that showed a map and also provided the address information for the library.	I felt as though the lay-out helped. Usually on most websites the address information of the organization can usually be accessed through the top navigation bar, by way of an "About" button or "Visit" button	The labeling was actually fine, while doing this task. I felt that the location of the address information was in a conventional location.	Actually I had a good experience.	I was at home	Post-visit
3/17/2015 23:29:28		User 3	Search for a book or print public				When I first arrived onto the website, I immediately saw a search bar that had a drop down menu(that help me narrow my search). I typed in the name of the book and the book information came up.	It helped, because the page immediately displayed the search bar allowing me to narrow the search, so that I could get the information I was looking for more quickly.	Based on what I saw, the labeling was fine. I didn't see any ambiguous labels.	I felt like it was a good experience. I knew exactly what I	I was at Pratt's Manhattan Campus for a study group. I began the questionnaire after my study group session was over.	While visiting the website
3/23/2015 23:56:20		User 3	Look for scholarly articles	Apple iOS/OSX			When I first arrived on the site. at the top of the page(under the navigation bar) there was a search bar, and to the left of it a drop down menu box, that let you narrow your search(i.e. to articles, printed books, ebooks, etc.). I typed in my topic(in the search bar), then selected the term 'Article' in the drop down box(to the left of the search bar), then clicked search. I was them led to a list of the left of the search bars.		I must admit, even though I went to the top portion of the page to do my search initially. When I completed the task I went back to the home page just to do a little browsing. I noticed that near the center of the page their was another box that would allow you to search for materials as well. When I clicked on the box that said "Find Articles", when I entered the new page, I noticed that the page gave me a		I was at home.	While visiting the website
3/21/2015 10:34:41	Computer	User 4	Search for a book or print public	Apple iOS/OSX	Firefox	None	I used the search bar on the home page to navigate the site.	The search bar was prominently featured on the home page significantly helping my interaction with the site.	Labels made sense for a library website. The only slightly confusing one was the "eShelf," but upon clicking the tab the idea made sense.	Positive, simple website design.	At home	While visiting the website
3/25/2015 18:10:59	Computer	User 4	Consult research quides	Apple IOS/OSX	Firefox		The "Start Your Research" box led me to the Research Guide section.	The "Start Your Research" box is in a slightly awkward position on the page, although it is findable. The Subject Guides page is poorly designed, with all inks difficult to differentiate and arranged very tightly. It is a simple Wiki style page, and does not match with the other pages on the site making it slightly disarming. Additionally, the title of the page were view to the page which page with page.	As stated previously, the label for the Subject Guides page is below a generic "Main Page" title. The entire generic Wkit page header is out of place following the rest of the site.		Sitting in the kitchen after dinner	While visiting the website
3/26/2015 11:22:40		User 4	Look for scholarly articles	Apple IOS/OSX		The "Find Journals" page does	I attempted to search for scholarly articles by following the "Find Journals" link on the home page, but was directed to		I did not expect to come across a 404 page not found section at all, so that occurrence did not accord with my expectations of a fully functioning site.		At home eating lunch	While visiting the website