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University Library Website Post-Redesign Usability Study Report

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University Library Website Post-Redesign Usability Study Report

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University Library Website Usability Study Report

BACKGROUND

The University Library commenced an in-depth usability study of its web site in 2003. Ethical approval was obtained from the Conjoint Faculties Research Ethics Board to interview faculty, graduate and undergraduate students, focusing on their perceptions of the website, as well as their ability to navigate through the website to answer specific library-related task questions. The purpose of the 2003 study was to provide a foundation for designing a new library website, based on user perspectives and navigation experiences. The data obtained from the 2003 study informed and guided the development of the new website.

The new website was launched in the Fall of 2005. With a continuation of ethical approval, the usability study was replicated in November and December 2005, with the addition of three new questions. The new questions were added to test key redesigned aspects of the website that were not covered by the existing questions.

PURPOSE

The University Library Website Post-Design Usability study was conducted to obtain data on the usability of the new (Fall 2005) University Library website. This data will be used to inform decision making in the analysis of the new website and to determine any areas that might need to be re-worked or re-designed.

METHODOLOGY

1. Study Participants

Participants were recruited in late November and December, 2005. Major recruitment methods included: emaling faculty and student mailing lists, and recruiting participants individually.

A breakdown of participants by group and faculty is presented in Table 1.

	Faculty Members N = 6	Graduate Students N = 5	Undergrad Students N = 4	Disabled Students N = 2
Faculty / Discipline	French/Italian	Comm/Culture	Kinesiology	Business (Grad)
	Comm/Culture	Geography	Engineering	Social Sciences (UG)
	Business	Music	Computer Sci	
	Sociology	EVDS	Art	
	Education	Business		
	Law			

The University's Disability Resource Center was contacted to assist in recruiting a disabled student participant. This participant was partially visually impaired. Another individual self-identified himself as learning disabled (Attention Deficit Hyperactivity Disorder). Both individuals were registered with the Disability Resource Centre.

2. Interview

At the beginning of an interview, each participant was provided a copy of the consent. The study was explained, as well as the tasks required of the participant. It was stressed that the study was not a "knowledge" test of the individual, but rather, a test of the Library's website.

A test moderator from the Usability Study Team administered the usability study test individually with each study participant. A recorder from the Usability Study Team recorded the movements of the participant through the website and noted the participant's comments**.** The participant's navigation through the website and his/her comments were also recorded on videotape, as well as audiotape.

The test moderator asked each participant a series of pre-test questions aimed at eliciting the participant's opinions about, and usage of, the Library website. The moderator then provided the study participant with a list of thirteen task questions that required the participant to search the University Library website for specific kinds of information. Each task question was provided a time limit, monitored by the recorder. The participant was asked to "think aloud" while searching the website, verbalizing his/her thought processes. Finally, the moderator asked the participant several post-test questions to elicit further information on the usability of the website.

Although an hour was scheduled for each interview, the majority were completed in 40 minutes or less. All audiotapes were transcribed verbatim by a professional transcriptionist.

3. Study Questions

The pre-test open-ended questions were designed to elicit the participants' opinions about and usage of the University Library website. The task questions were designed to test the usability of the University Library website for key tasks typically performed by faculty, staff, and students. Finally, the post-test open-ended questions were designed to elicit any further opinions brought to light during the process of navigating the website. As previously noted, the second study replicated the task questions from the first study, with the addition of three new task questions (T11, T12, T13). Further, Task Question 10 was revised to a different subject as the position of subject librarian for history (first study question) was currently filled by an acting librarian.

See Appendix A for a complete list of questions.

DATA ANALYSIS

Five individuals analyzed the study data. Coding templates for themes and navigation were developed. These templates assisted in maintaining consistency and standardization in analysis amongst the five researchers. Through consensus during group meetings, a list of standardized themes and sub-themes was developed and used to code all interview transcripts. The video recordings of interviews, along with the recorder sheets, were reviewed to analyze the navigation paths taken by each participant.

For two participants, the audio and video did not work; therefore their analysis is based on detailed notes from the Recorder, as well as debriefing immediately after the session with both the moderator and recorder. It was felt that the richness of the interview, along with accurate notes of chosen navigation paths, were captured by the moderator.

The results are broken into four main sections:
- Personal Impressions:
    o Why participants used the Library web pages
    o What participants like the best about the Library web pages
    o What participants like the least about the Library web pages
- Thematic Analysis
    o Design
    o Navigation
    o Terminology
    o Service Awareness
    o Architecture
- Navigation Analysis
    o Success/Non Success for each task question
    o Navigation paths chosen
- Disabled Students
    o Results from the two disabled students are considered separately because of problems with the technology used by the visually disabled student. As both students raised concerns regarding disability issues and the Library website, it is best to analyze these results together.

It is necessary to articulate the definitions used for Design, Navigation, Terminology, Service Awareness, and Architecture. For the purposes of this report, the following definitions were used for data analysis:

Design	The look and feel of the website including organization of information, color, links, amount of information, hover pop-ups
Navigation	The path to find information
Terminology	The terms/words used to describe links, resources, services
Service Awareness	Knowledge of the existence of a library service including document delivery, renewing books, subject liaison librarians, subject resources, etc.
Architecture	The underlying foundation of the website including layout of pages, new

windows, hierarchy of pages, banners

RESULTS – Pretest Questions (Personal Impressions)

The following discussion focuses on the personal impressions of the Library's website as discussed by the participants.

Chart 1: Use of Library Website
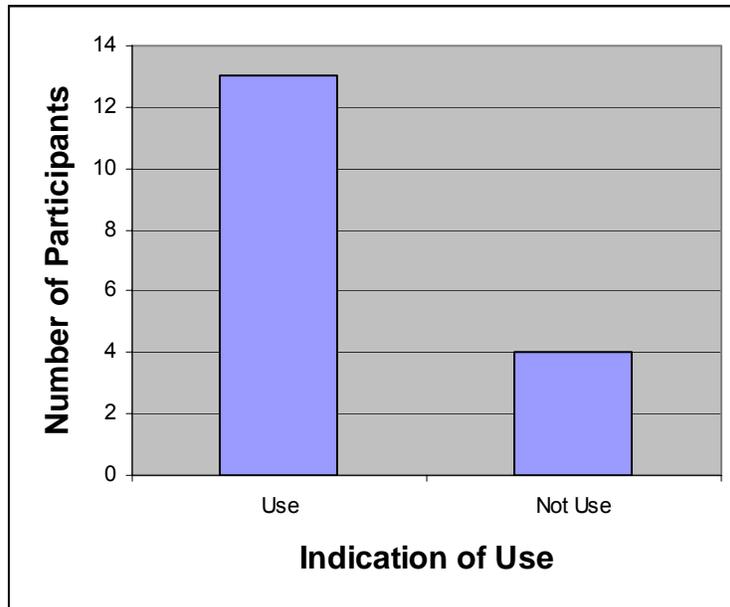
As can be seen from Chart 1, the majority of participants had used the website in the past. Of the 14 who do use the library's website, four stated that they do not use the main site, but rather use a Branch library page (3 for Business and 1 for Law).

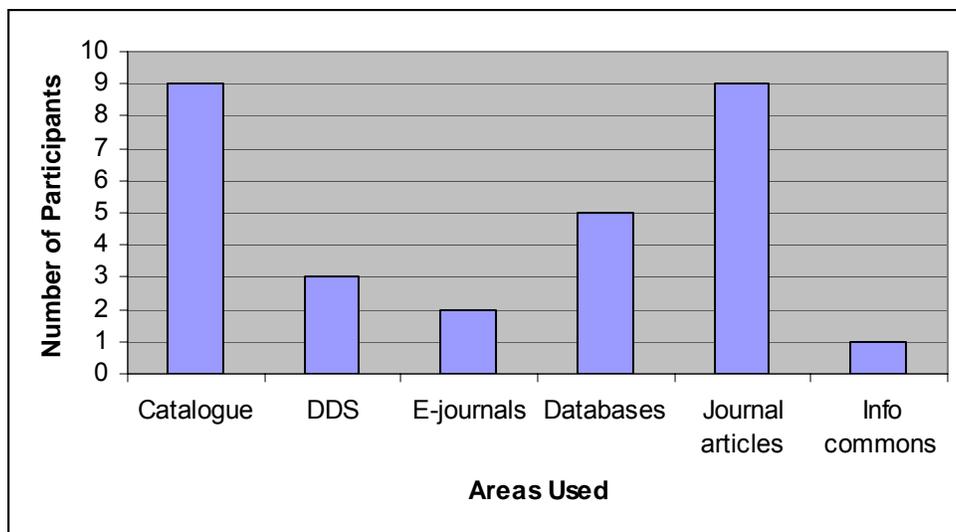**Chart 2: Reported Use of Library Website (N=17)**

Chart 2 indicates the areas of the library website which participants reported they use. Participants often indicated more than one area of use. The results clearly indicate that the catalogue and finding/retrieving are the high use aspects of the Library's website. Participants mentioned that they used the catalogue to find books, renew books, and put books on hold. It is a bit difficult to provide further analysis on the use of journal articles, as usually research databases must be searched to identify articles and then the library catalogue must be used to locate them in the UofC Library. No participant outlined this research process, but it can be safely presumed that participants used the library website for identifying and retrieving the journal articles.

Chart 3: General Impressions (N=17)
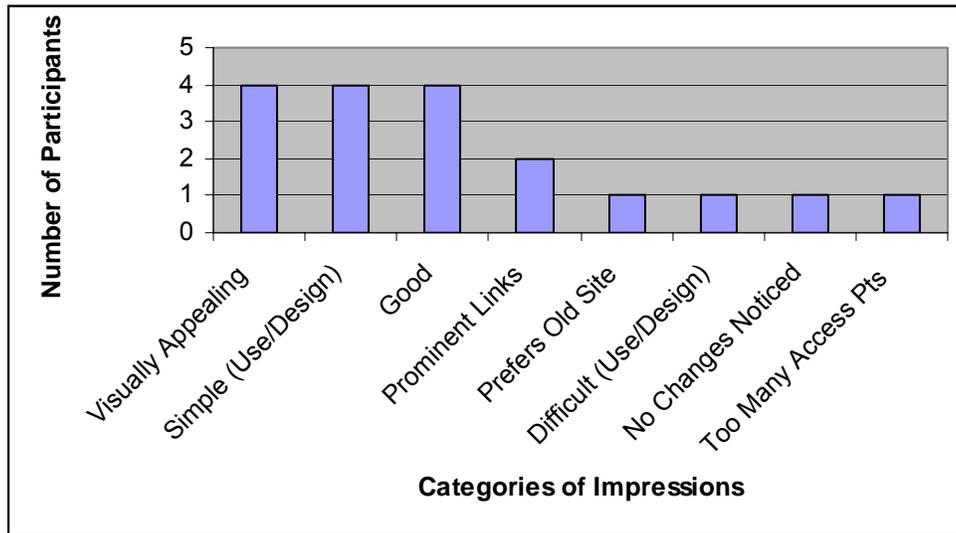
Overall, the participants responded favorably to the Library's new website. Several respondents offered more than one area related to impressions. The general impressions focused on design which participants considered visually appealing and simple to use. The location of important/most used links was viewed with favor as well. The response "Good" was not further explored by any of the interviewers (i.e. *why do you think it is good*) so further analysis cannot be drawn. Very few participants felt that the new website did not meet their expectations. One preferred the old site, which speaks to the role of familiarity of websites for this participant. It may be suggested that once the user has explored the new site further, s/he will view it more favorably. It is surprising to note that one participant did not notice much of a change (and this participant noted that s/he uses the website all the time!) For this person, the focused task of finding information and his/her familiarity with using library resources might be the reason why few changes were noticed.

Table 1: Likes and Dislikes of Library Website (N=17)

Best Liked Aspects of Library Website		Least Like Aspects of Library Website	
Aspect	**# Participants**	**Aspect**	**# Participants**
Overall design (layout, colors)	2	New windows opening	4
Clear terminology	2	Authentication	3
Obvious links	2	Scrolling	2
Organization	1	Too many links	1
Search buttons	1	Top banner confusing	1
Navigation (multiple access)	1	Too much information	1
Hover pop-ups	1	Slow loading (e.g. DDS)	1
Consistent design	1		

Generally, the participants are satisfied with the design of the library website. The use of clear terminology and hover pop-ups were also deemed to be of benefit for using the website. Four participants, however, were less satisfied with the architecture when new windows opened (for example, the library catalogue, which caused confusion). It was also felt, related to design, that there was too much scrolling (N=2), too many links (N=1) and too much information (N=1). Authentication is an issue beyond the library website, which caused confusion and frustration. Three participants were annoyed with multiple authentications and the confusing nature of the identification numbers required. Not all participants responded to these two questions, and some provided multiple answers.

RESULTS – Thematic Analysis

The following discussion focuses on analysis of transcripts for themes as they relate to the Library's website and navigation while completing task questions. Five main themes were identified: design, navigation, terminology, service awareness, and architecture. The themes are discussed in general terms, but may also highlight issues as evidenced from task questions. The disabled students are included in the following discussion.

1. **Design**
   - Transfer of learning – Three participants were able to successfully answer subsequent task questions because of their perusal of the page while navigating. This speaks to the consistency of design, the usefulness of hover pop-ups for explanations, the ease of identifying information that might be relevant for later use, and user-friendly aspects.
   - Hover pop-ups – Seven participants explicitly commented that they found the pop up menus (or hover menus) extremely helpful when attempting to locate something for which they were not familiar. These menus provided enough information to make an informed decision.

- Colors – The different colors of the "boxes" used on the landing page were deemed to provide visual cues to the user. One participant suggested that the color contrast was effective throughout the website. However, one person commented: Kind of a silly thing, but I don't like the colours…I know this is the U of C colours, …but this part right here [banner] doesn't seem to match this part here [main page columns] …wasn't very inviting for me to use."
- General comments – Respondents noted that the website was *"simple", "visually well designed", "pretty good", "features are accessible", "uncluttered".* The different colors used assist in guiding the user to the required information, and provide visual cues as to how information is grouped.
- Inconsistency of design – It does need to be noted that one participant was confused by the inconsistency of design from the landing page to subsequent pages. This is most probably due to linking to older pages and "outside" pages such as the book a workroom page.
- Confusing screen – Four participants mentioned that they found the Library Hours screen to be confusing. The screen does not open to the correct month, too much information is presented, not well organized, no labels, and poorly designed. A suggestion was made that the calendar be automated so that the current month is the default display, not a sequential listing by month.
- DDS/ILL Pages – Two participants noted that the Interlibrary Loan page was not very clear. They suggested that there are too many choices on the page, and that the link to the form should be more prominent.
- Scrolling – Three participants did not like having to scroll to find the information that is required. One participant commented: "Having to scroll through "fluff" to get the information you want. Information should be "right at the top"
- Multiple access points – Two participants preferred multiple access points whereas twp others did not like this redundancy. One participant commented that the choices were too specific and wanted more general choices. Another stated that there were too many choices, and that the choices seemed parallel (i.e. multiple access to the same information).
- Font size – Five participants mentioned font size was too small or "thin" in general. Another participant stated that font size was too small for Interlibrary Loan pages. Still another indicated that larger font is required for What's New and the hover pop-ups.
- Images – One person commented that the images provide a "human touch' to the web pages. Caution was given not to use too many or it would become cluttered.

2. Navigation
- Left-hand links – The left hand links on an inner webpage (i.e. not the landing page) were commented on by six participants. These left hand links were not readily noticed, as participants expected relevant information to be in the centre of the page. One participant stated specifically that the links were too tiny (font size). However, it was noted that the left hand links are very helpful, once it is realized that the links are there.
- Top Search Box – Although mentioned as a useful feature, two participants were confused by the options provided in the drop down menu. Either they did not realize that the search box searched the Library Catalogue by default, or they thought that this was the only option.
- E-Journals Search Box – Six participants were confused by the search box provided on the e-journal page. Although the instructions above the search box state "find an E-

Journal using the Library Catalogue" the participants were surprised that they conducted a catalogue search. One participant wanted to use the search box to find articles on a specific topic (i.e. keyword search). Another individual was confused by the A-Z listing and the search box.

▪ My Account – One participant mentioned that having "My Account" on the top red banner would mean that it is accessible from every page rather than just the landing page. Another participant concurred, suggesting that My Account be more prominent

3. Terminology
▪ Research Tools – Two individuals were not sure what Research Tools meant.
▪ Find Facts – Two participants did not know what Find Facts would provide. One stated that " I would never, ever in my life, have clicked on Find Facts".
▪ FAQs and How do I – Five participants used FAQs and six participants used How Do I menu choices to find the answer to a task question when they were not aware of the concept.
▪ Multiple Access Terminology – It was noted by two participants that the multiple access points were confusing when they used different terms. For example, when discussing the top red banner and the major columns, a participant suggested that "It's a little bit confusing that there's a "services" and a "library services"
▪ Jargon – Two participants stated that the terminology used on the new pages were less jargon-loaded than on the previous version.

4. Service Awareness
▪ ILL/DDS – Six participants were not aware of the service Interlibrary Loan/Document Delivery. Although three of these individuals knew to search FAQs, the other three were unsuccessful in attempting to figure out how to order a book from another library.
▪ E-Journals and Catalogue – Four participants tried to use either e-journals or the Library catalogue to find articles on a specific topic. These people were not aware of how articles are indexed in research databases.

5. Architecture
▪ Inconsistency of design – One participant expected that the Library Catalogue's banner would reflect that of the Library homepage. The banner choices are not similar to the Library landing page Red Banner choices. Further the colors are not very similar.
▪ Booking – Four participants suggested that a better booking system for the workrooms is required.
▪ Hierarchy of choices –Multiple access choices – Two participants responded that they were confused by the different choices to link to the same destination. The top banner, particularly, seemed to duplicate the choices below.
▪ Catalogue – There appeared to be some confusion surrounding the catalogue and whether or not it belonged to the Library's web pages because of the inconsistency in look. This was mentioned by three participants.

RESULTS – Navigation Analysis

The following discussion focuses on analysis of transcripts and video for navigation paths chosen when completing task questions.

Chart 1 presents the percentage of participants who successfully completed each task. It can be seen that, overall, there was a high rate of success for most questions, except T13 (Find a Sound Recording). The following discussion focuses on the success/nonsuccess for each task in light of the navigation paths chosen by participants. Tasks are presented in order of participant success rate with the most successful discussed first.

Chart 1
Success Percentage for Task Questions (N=15)
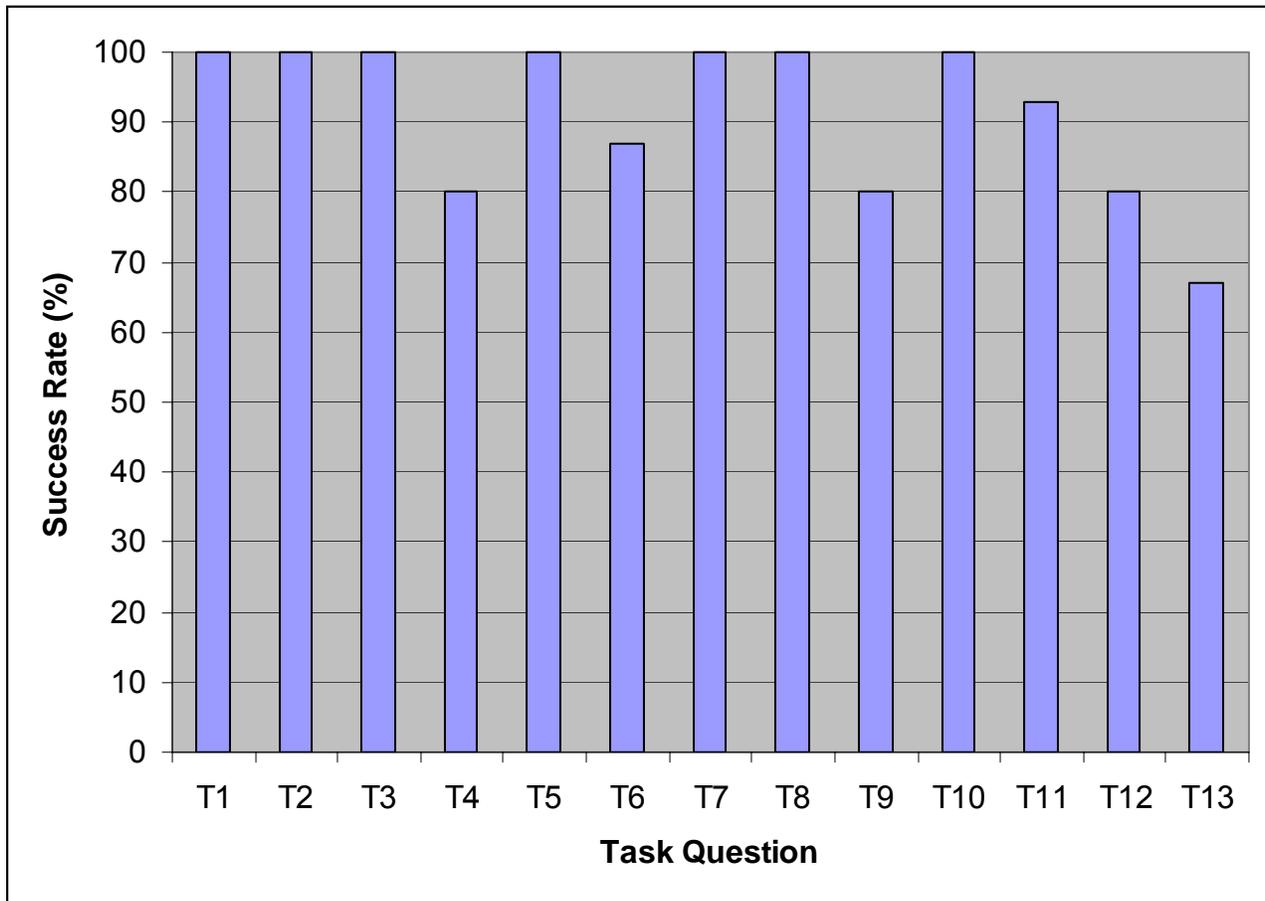
The following table illustrates the number of attempts per question arranged by % successful. Attempts is defined as the number of tries to get to the correct answer. An attempt was coded as such when the participant returned to the landing page, or used the browser's back button. Attempts does not relate to the number of clicks. Participants #5 and #12 are excluded from this analysis as they were the identified disability students. The number of attempts for

unsuccessful task completions are also noted. Multiple attempts are in bold for ease of identifying.

Table 2: Number of Attempts for Task Navigation Questions by Each Participant

	100%							93%	86%		80%		67%
	T1	**T2**	**T3**	**T5**	**T7**	**T8**	**T10**	**T11**	**T6**	**T4**	**T9**	**T12**	**T3**
P1	1	1	1	1	1	1	1	1	**3**	1	1	**2**	**2**
P2	1	1	1	1	1	1	1	1	1	1	**2**	1	1
P3	1	1	**2**	1	1	1	1	**3**	1	1	1	**2**	1
P4	1	1	1	1	1	1	1	1	1	**2**	1	1	**3**
P6	1	1	1	1	1	1	1	**2**	1	1	**2**	1	1
P7	1	1	**2**	1	1	1	1	1	1	**2**	1	1	**2**
P8	1	1	1	1	1	1	**2**	1	1	1	1	**2**	1
P9	1	1	1	1	1	1	**2**	1	**3**	1	**2**	1	1
P10	1	1	1	1	1	1	1	1	1	1	1	1	**2**
P11	1	1	1	1	1	1	1	1	1	**2**	1	1	**4**
P13	1	1	1	1	1	1	1	1	1	1	**6**	1	**2**
P14	1	1	1	1	1	1	1	**3**	**2**	1	**3**	1	1
P15	1	1	1	1	1	1	1	**2**	**3**	1	**5**	**4**	**3**
P16	1	1	1	1	1	1	1	1	**3**	1	1	**2**	1
P17	1	1	1	1	1	1	1	1	**4**	1	1	**4**	1

The following discussion is arranged by the %successful for task questions in descending order. Focusing on what is most informative, only the successful navigation paths are discussed in detail. As unsuccessful navigation paths were often complex, convoluted and confusing, for simplicity sake they are not highlighted. The number of clicks responds to the successful path only (that is, if a participant started on a wrong path, returned home and then made a correct choice, only the correct choice is indicated.)

1. 100% Successful Task Questions

As can be seen from Table 1, all 15 participants successfully completed six task questions (T1; T2; T3; T5; T7; T8, T10).

Task 1: Find a Known Book Title

Successful Navigation Path	# of Clicks	# Participants
Red Banner, Catalogue	1	6
Research Tools, Find Books	1	5
Search Box, Catalogue (required to type title of book prior to connecting to the catalogue)	1	4

The Library's landing page offers several choices that immediately connect to the Library Catalogue. Indicated by the success of all 15 participants, these varied options appeal to users, and ensures success when trying to access the Library Catalogue.

Task 2: Find 2 Business Databases

Successful Navigation Path	# of Clicks	# Participants
Red Banner Research Databases → Business/Alphabetical	2	5
Subject Resources, Business → Business Research DB (Business Library Homepage)	2	5
Research Tools, Find Articles → Business	2	3
Red Banner Subject Resources → Business Subject Guide → Business Research DB	3	2

Again, it can be seen that different navigation paths are chosen by participants to answer the same question. Participants understood the terminology used for this question during the interview, and were all readily able to choose an appropriate path to find the answer.

Task 3: Find a Known Online Journal

Successful Navigation Path	# of Clicks	# Participants
Red Banner e-journals	1	11
Red Banner catalogue	1	3
Research Tools, Find Articles	1	1

Of the 11 participants who chose E-Journals via the Red Banner, seven found the journal title through the title search box and four used the alphabetical list.

Two of the participants were not initially successful as they both first attempted Research Databases (Red Banner). Once it was realized that individual journal titles were not listed, each quickly corrected their navigation path, where one respondent chose E-Journals from the Red Banner, and the other chose Catalogue from the Red Banner.

Task 5: Book a Workroom

Successful Navigation Path	# of Clicks	# Participants
Quick Links, Book a workroom	1	14
Library Services, How do I? → Question #10 book collaborative workroom, then followed instructions	4	1

This task demonstrated the least variability in navigation path, where 93% of the interviewees chose Book a Workroom from Quick Links. This option readily appears at the bottom of the screen.

It must be noted, however, that the efficiency with which this task was completed may indicate that the participants might have been led by the phrasing of the task question "Book a Workroom". This phrasing matches exactly the text and link provided on the homepage. All other task questions refrained from using the exact terminology displayed on the Library's landing page.

Task 7: Renew Books Online

Successful Navigation Path	# of Clicks	# Participants
Library Services, My Library Account → Renew my Books	2	13
Quick Links, Renew Books	1	2

Thirteen of the 15 respondents used My Library Account to access renewing books. These individuals understood that renewing books would be associated with their own personal library account. The remaining two chose Renew Books from the Quick Links menu. Interestingly, no participant chose to renew books through the Library Catalogue directly.

Task 8: Information Commons Open 24 Hours

Successful Navigation Path	# of Clicks	# Participants
What's New	1	7
Library Services, Hours	2	6
UofC Libraries, MacKimmie → Library Information, Hours → Information Commons	3	2

Given the timing of the research, the Information Commons extended 24 hours notice was posted on Quick Links, which was readily noticed by seven participants. Six other participants chose the logical route of Library Services, Hours, to answer to the task question. Two people took a less linear navigation path, choosing UofC Libraries, MacKimmie, and then following the left-hand menus to determine the hours of operation for the Information Commons. This demonstrated an understanding that the Information Commons is a component of MacKimmie Library.

Task 10: Find Philosophy Librarian

Successful Navigation Path	# of Clicks	# Participants
Subject Resources, Contact Subject Librarian	1	8
Subject Resources, Humanities	1	5
Red Banner Subject Resources → Philosophy	2	2

The majority of participants (13) used Subject Resources either through the Red Banner or as a category as their first attempt. These participants knew that librarians are assigned to a subject, so determined that one would be able to find out contact information. The other two participants, although successful on their second try (as indicated in the table above), felt that they should be able to retrieve specific librarian information from Library Services in either Contact Us, or Staff Directory (as outlined below). Both of these choices make sense. Perhaps consideration should be given to providing links to Subject Librarians within these pages.

Two participants were not successful with their initial choices.
- One chose Library Services, Contact Us. When realizing that this did not provide direct contact to the Philosophy librarian, the participant then chose Red Banner Subject Resources, Philosophy.
- One participant initially chose Library Services, About the Library → Staff Directory. When this proved fruitless, the participant returned home tried Research Support, Home again, Subject Resources Social Sciences, then finally Subject Resources Humanities, Philosophy and correctly identified the librarian.

2. 93% Successful Task Questions

As can be seen from Chart 1, only one participant was unsuccessful for Task 11; that is, 14 of the 15 participants were able to complete the task successfully.

Task 11: Library Hours for Mount Royal College

Successful Navigation Path	# of Clicks	# Participants
Research Tools, Use Other Libraries → Mount Royal College	1	11
Search Box, Google	1	3

Although 14 participants were successful, four of them had unsuccessful first or second tries. These participants attempted a two different navigation paths including: Library Services, Hours (n=3), Library Services, Services for . . ., (n=1). Of the four, two needed two attempts before becoming successful on the third navigation path.

The participant who was unsuccessful did not understand why the University of Calgary Library would list the hours of another library. She tried a number of different navigation attempts, but had immediately stated when the question was asked that she would search the Internet. She was unaware that the search box at the top of the Library's landing page provides access to Google.

3. 87% Successful Task Questions

As can be seen from Chart 1, two participants were unsuccessful for Task 6; that is, 13 of the 15 participants, or 87%, were able to complete the task successfully.

Task 6: Find Recent Journal Articles on SARS

There was considerable variability in terms of navigation paths chosen by participants, and clearly some confusion amongst the majority of participants. Although only two individuals were unsuccessful in the task, six participants experienced false starts. The majority of the false starts included choosing Red Banner E-Journals.(three, with a fourth individual choosing this option as a second choice). Participants, then, were under the false impression that E-Journals would provide access to individual articles rather than to e-journals themselves. This situation relates to an information literacy concern rather than a web usability issue.

The other two false starts involved the participant choosing the Library Catalogue. This indicates that the users were not necessarily knowledgeable about the content contained in the Library Catalogue.

Successful Navigation Path	# of Clicks	# Participants
Research Tools, Find Articles → Medicine	1	5
Red Banner, Research Databases → Medicine	1	4
Red Banner, Subject Resources → Medicine		3
Subject Resources, Health Sciences → Medicine	1	1

The two unsuccessful participants both tried Red Banner, E-journals. Unlike the other participants discussed above, these two individuals were not able to discover another navigation path to correctly answer the task question.

4. 80% Successful Task Questions

As can be seen from Chart 1, three participants were unsuccessful for T4, T9, and T12; that is, 12 of the 15 participants, or 80%, were able to complete the task successfully.

Task 4: Order Non-UofC Book

For this task question, participants were either successful after the first attempt, or never did succeed. Again, there was diversity amongst the participants and their chosen navigation

paths. Five participants immediately, and successfully, used Library Services, Interlibrary Loan link. These people were obviously familiar with the term "Interlibrary Loan" which was not a phrase used in the question. The two participants who chose Library Services, How Do I … indicate that they were not familiar with the concept of borrowing books from other libraries, so looked up this service. A similar statement can be made for the participant who used the FAQs from the Red Banner.

Successful Navigation Path	# of Clicks	# Participants
Library Services, Interlibrary Loan → ILL Form	1	7
Library Services, How Do I … → #11 How do I get a book → ILL Link	4	2
Red Banner, FAQ → #11 How do I get a book → ILL Link	4	1
Quick Links → ILL Form	1	1
Subject Resources→ Request ILL	2	1

Two of the unsuccessful participants both tried Research Tools, Use Other Libraries; whereas the third tried Red Banner, Services → Use Other Libraries. These individuals might have thought that one must actually search another library catalogue to find the required book and, therefore, were not familiar with the service of Interlibrary Loan.

Task 9: Find Guide to Computer Science

The 12 participants who were successful chose one of two paths that readily took them to the required page.

Successful Navigation Path	# of Clicks	# Participants
Subject Resources, Science/Engineering → Computer Science	2	7
Red Banner, Subject Resources → Computer Science	2	5

The three unsuccessful individuals, however, floundered significantly in this task. There is no commonality in what they chose as their navigation paths. Clearly these participants were not familiar with pathfinders/Guides to the Literature and the Library's landing page provided them with insufficient information from which they could make an informed choice.

Task 12: Dictionary / Encyclopedia

Although, there was some variability in terms of navigation paths chosen by participants, the majority of participants who were successful (nine) answered the task question on their first try. Two participants searched the Catalogue first, but were prompted to attempt a different route. One individual clicked on Research Tools, Find Other before choosing a successful path.

Successful Navigation Path	# of Clicks	# Participants
Research Tools, Find Facts → Dictionaries	2	6
Red Banner, Reference Sources → Dictionaries	2	5
Library Services, Reference → Reference → Reference Sources → Click Here → Dictionaries	4	1

The three unsuccessful individuals, however, tried several different ways to answer the task question. Two initially searched the library catalogue, but when prompted for an alternative route, they were unable to find an answer to the question. These participants tended to rely on their previous knowledge (i.e. use of the catalogue to find dictionaries, or using the Law webpage). The third participant attempted a number of different ways, finally searching the catalogue. Again s/he was unable to come up with an alternative.

5. 67% Successful Task Questions

As can be seen from Chart 1, five participants were unsuccessful for Task 13; that is, 10 of the 15 participants, or 67%, were able to complete the task successfully. It must be noted that when developing this task question, a successful completion was considered to be using Research Tools to get to Sound Recording. It was not anticipated that participants would use the Library Catalogue to answer the task. Those who did use the Library Catalogue (4 participants) were scored as unsuccessful. The success rate, therefore, would have been much higher (14 out of 15).

Task 13: Find a Sound Recording

Successful Navigation Path	# of Clicks	# Participants
Research Tools, Find Other → Sound Recording	1	5

RESULTS – Disability Students

The following discussion focuses the results from the two disabled students. The students' success/non-success for each question is shown in the table below. It can be seen that the student with diagnosed ADHD fared as well as many other participants in the study. Two of the three tasks where he was unsuccessful were those tasks that other participants experienced problems.

The student with the visual disability performed the worst of all participants. The lack of success on task questions is directly related to the software (JAWS, version 5.0), which is unable to easily handle the web pages. This software, the most used by the visually impaired, "reads" out the text on a screen. The program will "read" links, hover pop-ups, etc which is time consuming, confusing, and frustrating. This student usually uses a magnifying glass for

reading/reviewing/searching the Internet, but was asked to use JAWS for the purposes of this study. The student, therefore, might have been less comfortable with the software. Further, there was no adjustment to the time allotted for successful completion of each task. The JAWS technology simply required much more time given the complexity of reading every scroll over and movement of the mouse.

Student 1 (visual disability)		Student 2 (Diagnosed ADHD)	
Task	**Success/Not**	**Task**	**Success/Not**
T1:	Success	T1:	Success
T2:	Not	T2:	Success
T3:	Not	T3:	Success
T4:	Not	T4:	Not
T5:	Not	T5:	Not
T6:	Not	T6:	Success
T7:	Success	T7:	Success
T8:	Success	T8:	Success
T9:	Not	T9:	Success
T10:	Success	T10:	Success
T11:	Not	T11:	Success
T12:	Success	T12:	Success
T13:	Not	T13:	Not

RESULTS – Post-test Questions (Personal Impressions)

The following discussion focuses on the post-test questions. The disabled students are included in the following discussion. Comments related specifically to the five main themes (design, navigation, terminology, service awareness, and architecture) are included in the thematic analysis section, to provide continuity of results for participant feedback, and to provide a more holistic picture.

The majority of respondents stated that they were "fairly comfortable" or "comfortable" performing the required navigation tasks. One participant stated "I thought it would be more difficult than it was" Several spoke to the fact that although they were fairly comfortable using the website, they expected that over time, and with more familiarity, it would become easier. Another participant mentioned that "It seems like even when I didn't know what I was doing, it never took me very long to find where I was going."

Many of the navigation task questions focused on specific services offered by the Library including document delivery/interlibrary loan, liaison services (i.e. subject guides, subject librarians), and workroom booking. When asked about what was new aspects about the library web pages to them (i.e. services, etc. that the participant was not previously aware existed), participants mentioned the following:
- booking a workroom

- provides links to other libraries, not just UofC
- direct access to e-journals (i.e.. e-journal list)
- subject guides / subject resources
- interlibrary loan
- librarians for different subjects
- online dictionaries and encyclopedias
- did not know that you could not search for articles in the library catalogue
- find facts
- reference sources

One participant aptly noted, when commenting on what s/he on the range and depth of services offered through the Library's homepage: "…all of the different services it offers, like, you could do everything that you ever needed to do straight from the homepage".

Given the wealth of services provided and the various ways of accessing these services, the fact that participants felt "fairly comfortable" navigating the website provides evidence for the user-friendly aspects of the library's website.

DISCUSSION AND RECOMMENDATIONS

Overwhelmingly, the new library website works well, and accomplishes what it set out to do: assist faculty and students in finding information. A few areas may need to be re-visited, but on a whole, the design is user-friendly and navigation tasks are accomplished quickly and easily.

Task Questions
In general, evidenced from the task questions, the new library website is user-friendly, transparent, and considered to be well designed. Participants, for the most part, were able to easily complete navigation tasks. Usually, participants were unsuccessful when they were not familiar with a particular service, such as interlibrary loan/document delivery, liaison/subject librarians, and specialized formats (sound recording). There did appear to be confusion surrounding how to find an encyclopedia/dictionary to answer a factual question. Again, however, this may be linked to not understanding or knowing that such resources exist online.

Task question recommendations are merged together with other feedback and comments.

Design:
From participants' feedback, most deemed that the design of the website is easy to follow, visually appealing, and user-friendly. A few inconsistencies amongst pages still exist, but this is mostly due to either connecting to old library pages or linking out to other resources (such as the catalogue). The Interlibrary Loan page did appear to cause some difficulty and should be revisited and redesigned. The problems probably arose from directly cutting and pasting old information into the new cascading templates, and not considering the layout of the page, and what information should be front and center. Further, the library hours screen is difficult to comprehend because of how it is organized. Participants were dissatisfied with the amount of scrolling required to find required information.

Recommendations:
- Revisit all library web services for consistency of look (i.e. catalogue, booking a workroom, etc)
- Revise Interlibrary Loan page
- Revise Library Hours page. Investigate the possibility of an automated calendar, and consider the wide range of choices offered for library hours (i.e. all the various access points in MacKimmie)
- Consider minimizing the prime real estate taken up by the top yellow "banner" so that there would be less scrolling to Quick Links, and other relevant information on inner pages.
- Consider incorporating more hover pop-ups that provide an "instructional element" to the library page, where appropriate
- Minimize scrolling where possible
- Revisit font size
- Revisit multiple access points

Navigation:
The links on the left-hand menu of inner pages (i.e. not landing pages) caused some problems for participants. These links are not readily noticeable, as the person's attention is on the middle of the screen layout. Comments included small font and expectation that relevant information is in the centre. Participants also deemed that the search box at the top of the landing page was useful. This was further supported by many participants using it during the task questions. However, there was confusion as to what was being searched, or lack of awareness that it was a pull down menu. This is similar to the difficulty using the E-Journals page where some participants weren't sure what the search box searches, and expected to find individual articles listed.

Recommendations:
- Revise left-hand menu links for inner pages so that they are more noticeable and have a larger font. This issue ends up relating to architecture as it might result in reformatting and revising the layout of the inner pages including aligning banners (left and centre) so that one's eye is drawn across the entire page, not just to the centre.
- Drop down menu search box – research ways to make this essential search box more evident that it searches a variety of resources and is a drop-down menu.
- Solutions for the e-journal listing need to be investigated. Confusion speaks to a lack of awareness that e-journals just provide titles, not articles, so again providing feedback to the information literacy coordinator might prove to be useful. Although it appears to be clear that one is searching the library catalogue, investigate alternative ways to state this to erase the confusion.

Terminology:
Essentially terminology appears to be appropriate and relevant to the majority of users. There was some confusion around the terms: Research Tools, Find Facts, and Find Other.
- Investigate alternative ways to express these ideas. For example, Find Other might be better stated as Find Other Formats.
- Standardize multiple access points (i.e. use same terminology)

Service Awareness:
Participants were unsuccessful not because they were unable to find a particular page (such as subject pathfinder or interlibrary loan) but because they had no expectation that such a service existed, and, therefore, did not know how to classify or find the required information to complete the task. This speaks not to the webpage but to service awareness.
Recommendations:
- Documentation should be prepared to pass along to the Information Literacy Coordinator. A plan needs to be developed to address areas such as subject librarians, subject resources, and document delivery where it appears that some students and faculty are unaware of these services. If one does not know that something exists, links, terminology, and other "hints" are of little use. Awareness of these services, then, is an information literacy issue, not an issue of the design of the library's website.
- It might also be useful to create a new link "Did you know that" and respond to these service awareness issues. The library's landing page, and subsequent pages, are informative, educational, and promotional. The last two appear to be missing for the services mentioned above. Striving towards developing an information literacy plan and marketing plan for these services is essential if we expect students and faculty to be aware of them, and to use them.

Architecture:
There is an expectation that all "library" pages will resemble each other. For example, the library catalogue banner is quite different from the library webpages as is the header on the workroom booking system pages. While these services were outside the mandate of the library website redesign project, this input is provided for future developments of those services. Multiple access points proved to be confusing for some participants. They were unsure why the same choices in the quick "red banner" were duplicated below. Complaints were also noted with respect to the booking form for Booking a Workroom. Authentication continues to be an issue, with participants frustrated by the unnecessary complexity.
Recommendations:
- Review library web pages to see which internal pages are linked to that do not reflect the look and feel of the Library's landing page, focusing on color, banners, and layout where possible.
- Revise the Booking a Workroom page, perhaps consider looking at other booking systems used at the University of Calgary.
- Revise authentication to be user-friendly. Specifically work towards authentication requiring UofC ID and password, for consistency across campus functions.
- In the context of the University's current web redesign, ensure a closer similarity between the header on the Library Catalogue and the Library's web pages.

Disability:
Of the 26,250 students enrolled at the University of Calgary, approximately 525 students with disabilities are registered with the Disability Resource Centre. Fundamental to the creation of access within post-secondary environments are the determination and implementation of academic accommodations for disabled students.
- Investigate appropriate technology, such as more current versions of JAWS, which facilitate the visually disabled reading web pages.

CONCLUSIONS

Overwhelmingly, the new Library website was well received by the participants, and the navigation tasks were quickly and easily accomplished. The recommendations stemming from the data suggest minor enhancements and revisions.

FUTURE IMPLICATIONS

The following should be considered for dissemination of results, and published results.
- The University Library Website Post-Redesign Usability Report should be posted on the Internet in PDF format so that others may be able to access the results.
- The University Library Website Post-Redesign Usability Report should be distributed to the larger university community, particularly those individuals and groups who are involved with the redesign of the University's site.
- In light of the University's website redesign project, this report should be used as a guideline for the Library implementing required and mandated changes from the University.
- Further dissemination of results should be in the form of peer-reviewed published papers in recognized journals. Members of the University Library Website Usability Study Team should develop a potential outline of publishable research from this report, form groups working on the various aspects, and strive for publication of articles within a year of the submission of this final report so that information is current and relevant.

Appendix A
Usability Study Questions

Pre-Test Questions

1.   Briefly tell me about your experience using the University Library's web site.

Prompting Questions:
a) Do you use the Library website?
b) What do you use the site for?
c) What is your general impression of the website?
d) What do you like best about it?
e) What do you like least about it?
f) What type of information do you expect from the Library website?
g) What would you like to see changed on the website to make it better for your research purposes?

Task Questions

T1.   Find out if the Library has the book *How Canadians Communicate* in its collection.
        Successful Performance: Type the book title in the Library Catalogue text entry box.

T2.   Explain to the participant: For the purposes of this question, a database is an online collection of references to articles in a particular subject area.
        Find 2 business/management databases available at the University of Calgary that you can use to find articles on a business-related topic.
        Successful Performance: Display the business/management Indexes & Abstracts page.

T3.   Does the Library have the *International Journal of Comparative Sociology* online?
        Successful Performance: Display the journal title record in the Library Catalogue, <u>or</u> Display the journal title on the Electronic Journal list

T4.   If you wanted to obtain a book that the Library does not own, how would you get it?
        Successful Performance: Display the page for the DDS Online Request Form. The participant does not need to complete the authentication form.

T5.   Book a workroom for group study in the MacKimmie Library Information Commons.
        Successful Performance: Display the authentication page for booking MacKimmie Library Information Commons workroom. The participant must complete the authentication form, and make a booking.

T6.   Find recent journal articles on the topic of: Treatment of SARS.
        Successful Performance: Display an online Indexes & Abstracts subject page – Example: complete list, medical, nursing, psychology

T7.   You currently have 3 books out. Renew them online.
        Successful Performance: Display the authentication page for online renewal of books.
        Participant does not need to complete the authentication form.

T8.   Is the MacKimmie Library Information Commons open 24 hours today?
        Successful Performance: Display the current month's MacKimmie Information
        Commons hours page.

T9.   Explain to the participant: Librarians develop web guides for the information resources
        in a particular subject or discipline. These guides contain information on print and
        online indexes, reference books, Internet sites and other resources.
        Does the library's website have a guide to the computer science literature?
        Successful Performance: Display the computing science information resources page.

T10.   Explain to the participant: Every major subject area / discipline at the University of
        Calgary has a librarian assigned to that area.
        Who is the librarian for Philosophy?
        Successful Performance: Display either the history information resources page, or the
        liaison librarian contact information page.

T11   Find the library hours for Calgary's Mt. Royal College Library.
        Successful Performance: Display Calgary Area Libraries page.

T12   You are writing a paper, and want some dictionary definitions, and some general
        background information from an encyclopedia on your topic. Where would you look for
        this information?
        Successful Performance: Display Reference page.

T13   You are looking for a sound recording for one of your courses. Where would you look
        for this type of information?
        Successful Performance: Display Sound Recordings page.

Post-Test Questions

 1.   Now that you've done some specific tasks on the website, we'd like any additional
        feedback you have on the website.

        Post-Test Prompting Questions:
            a) How comfortable were you searching the website for our defined tasks?
            b) Did you discover anything new today?
            c) What worked well while searching the library website?
            d) What didn't work well?
            e) Would you recommend any changes to the Library's web site?