TOWARDS A MORE USABLE ACADEMIC LIBRARY WEB SITE: A CASE STUDY

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Since most academic libraries have already built their online presence, the usability of those library Web sites becomes an important issue. This paper describes a usability study on the Duke University's Perkins Library Web site, which was conducted to evaluate the design of the Web site, identify usability problems, and set benchmarks for measuring future site designs. Nineteen tasks and two questionnaires were designed for a usability test with twenty participants. The results of the test were analyzed both qualitatively and quantitatively, and suggestions for the improvement of the Perkins Library Web site were made.

Headings:

World-Wide Web

Web sites – Evaluation

User-interfaces – Testing

Academic libraries

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Introduction

Today, almost all academic libraries have been connected to the Internet and have built their Web presence. With the rapid growth of a library site's scope and scale, its user interface becomes increasingly complex. The issue of a more usable academic library website becomes more and more important.

The Duke University Perkins Library Web site came into existence in 1994, when the Web Interface Team was organized to develop the library's gopher services. Ever since then, the library site has grown consistently. Now the library site (see its home page in Appendix A) consists of sub-sites for each individual library on campus, and serves as a gateway to various library Web services, including the online catalog, e-journals, research databases, e-reserves, and research guides. In early 2000, the site hosted 7,774 HTML documents authored by 80 staff members, and served 29,274 PDF files from the Electronic Reserves system. In February 2000 (the month before this usability test), the Web server received 3,728,351 requests, including 575,076 requests for pages, and transferred 92,719 MB of data (John Little, personal communication, September 28, 2000).

The chair of the Web Interface Team, John Little, fully recognized the importance of usability, and decided to launch a usability test on the latest version of the library site. An ad-hoc committee was organized and a usability test was conducted in March and April 2000. During the test, we evaluated the design of the Web site, set some

benchmarks for measuring future site designs, and identified specific usability problems for future improvement. With the data collected on this typical university library site, I hope to offer a better understanding of the status quo of current academic library web sites, and to provide some insights into the principles of design for a more usable library site.

Literature Review

The literature related to this study can be approached from three major aspects: 1) the current status of academic library Web sites; 2) the usability study and its value, with an emphasis on Web interface; and 3) usability evaluation of academic library Web sites.

Academic Library Web sites

With the rapid development of the World Wide Web (WWW), more and more academic libraries are offering information to their patrons electronically. In the United States, as early as 1996, WWW home pages had been developed by the libraries of 87% of Doctorate granting universities, 62% of Master's colleges, 51% of Baccalaureate colleges, and 26% of Associate of Arts colleges (Lynch, 1996). Though the most recent statistics are not available[1], it is likely that, within four years, there will not be an academic library without a Web site.

The academic library Web site plays an active role within the parent institution. Stover (1997) states that an academic library's mission is "tied to the three-fold mission of the academy: research, teaching, and public service." The function of its Web site should meet the mission accordingly:

> The academic library Web site can support research in higher education through providing access to Internet research tools and full text databases. It can support teaching through online full text reserves and other means. And it can

[1] Two standard sources of academic library statistics are the Association of Research Libraries (ARL) and the National Center for Education Statistics (NCES). At present, these sources do not address the percentage of academic libraries which have Web sites.

> support public service through allowing the general public to access its online resources, including the online public access catalog (para 5).

Literature shows that most initial versions of library Web sites include basic information, such as hours, policies, and links to Internet resources (Whalen, 1996), but now it is very common for a library to provide various resources and services to its patrons via the Web. Talking about the current trends in academic libraries, Fountain (2000) lists the services already available to academic library patrons:

> An increasing number of electronic resources in the form of Web-based databases, digitized special collections, full-text of thousands of electronic journals, useful links organized by subject on library Web pages and online catalogs with Web-interfaces are already accessible. Also available are automated ILL systems. Patrons are able to request an ILL using the OPAC or WebPAC. (p.92)

Fountain also speculates that better search algorithms, improved user interfaces, digital libraries, and increased bandwidth will lead to "virtual libraries" in the near future.

A recent study done by Cohen and Still (1999) compared the library Web sites of 50 research universities and 50 two-year colleges. The authors reviewed three aspects of the Web sites: content, functionality, and structure. To investigate content, they examined whether the sites offer various resources for information, reference, research, and instruction purposes. To assess functionality, the authors counted the use of site search engines and interactive request forms. They also checked Web site structure by counting services available from the main screen to pages at the fifth level. The research revealed that, "there is a core common content that can be identified for academic library Web sites independent of the parent institution when research universities and two-year colleges are compared" (p.289). Nevertheless, research university sites and two-year college sites were found to be different in scope and scale. Larger research institutions

provide significantly richer services, such as library information and a search engine, within a more complex site structure than smaller colleges. While these results are not surprising, the tables in this article provide a good summary of services currently available on academic library sites.

Usability and Usability Testing

As loosely defined by Nielsen (1998), usability is the measure of the quality of the user experience when interacting with something -- whether a Web site, a traditional software application, or any other device the user can operate in some way.

The International Standards Organization (ISO) formally defines usability as " … the effectiveness, efficiency and satisfaction with which specified users can achieve specified goals in particular environments" (ISO DIS 9241-11). Accordingly, usability can be measured in three aspects: effectiveness (the extent to which a goal, or task, is achieved), efficiency (the amount of effort required to accomplish a goal), and satisfaction (the level of comfort that the user feels when using a product and how acceptable the product is to users as a vehicle for achieving their goals) (Jordan, 1998).

Mayhew (1999) proposes that the benefits of a more usable or user-friendly product to business users are increased productivity, decreased user training time and cost, decreased user errors, increased accuracy of data input and data interpretation, and decreased need for ongoing technical support. Dumas and Redish (1993) also claim that "everyone benefits from usability," (p.14) including the customers and the companies.

Web usability is an emerging field, but its importance has already been widely recognized and it has attracted more and more interest. With the phenomenal growth of

the World Wide Web, a body of useful literature has been accumulated about the principles that are crucial to usable Web sites.

Nielsen's bi-weekly online column "Alertbox" is focused on the Web usability issues. Among his column articles, "Top Ten Mistakes in Web Design" (May 1996) and "The Top Ten New Mistakes of Web Design" (May 30, 1999) list the most common mistakes made by web designers and raise awareness for usability issues. Some mistakes are common in academic library sites, such as "long scrolling navigation pages" and "anything that looks like advertising."

Garlock and Piontek (1999), drawing from usability studies and web interface design studies, developed a set of principles for creation of library Web interfaces:

- Plan your structure carefully
- Let content inform design
- Be consistent
- Create an intuitive web site
- Make sure your interface is compatible and accessible
- Provide a solid navigational base
- Design your interface for your audience
- Put user input into perspective
- Be aware of the dynamic nature of the web.

The *Web Style Guide* (Lynch and Horton, 1999) is one of numerous style guides in print or online which discuss basic design principles for Web sites. The guide covers interface design, site design, page design, Web graphics, and Web multimedia and animation. It emphasizes careful planning and a clear sense of purpose, and promotes a user-centered design. These guides emphasize simplicity and consistency in interface design, promote discrete chunks of information instead of long passages of text, and advocate balance between visual sensation, text information, and interactive hypermedia links. These principles are all applicable to the design of a usable library Web site.

Testing plays an important role in ensuring usability. Both Rubin (1994) and Dumas and Redish (1993) provide a detailed description of testing procedure and methodology. They cover all the stages of a usability test, including planning a test, recruiting participants, creating task scenarios, conducting a pilot test, conducting the test, analyzing data, and communicating the results. These authors offer many useful suggestions on designing and conducting a test, such as creating task scenarios that focus on the problem-prone parts and taking a pilot test before the formal test.

However, perhaps for commercial reasons or confidentiality restraints, there are only a few research studies published about usability testing on Web sites. Spool et al. (1999) report on an evaluation of 11 different e-commerce site designs. They present data collected in an extensive study of actual users, demonstrate how people seek information on Web sites, and make suggestions on evaluating and improving the usability of Web sites. The researchers share many insights on user behavior and Web design, for example, "when users navigated, they often tried text links first, ignoring nearby graphics" (p.9). The lesson is that Web designers should not rely on graphic design too much. Besides the interesting findings on Web site usability, the testing methodology used in this research is also very instructional. The design of four types of information retrieval questions – factual, judgment, comparison of factual, comparison of judgment questions – are good examples of task scenarios.

Molich, et al. (1999) compared various approaches to usability testing. Nine professional and student teams conducted usability tests on the www.hotmail.com Web site simultaneously. Then, all participating teams reviewed other teams' reports, and discussed strengths and weaknesses of each approach. This project provides "a survey of

the state-of-the-art within professional usability testing of Web sites." Most teams can conduct a test efficiently with four to six participants. The result conforms to what Nielson (2000) claims: "Elaborate usability tests are a waste of resources. The best results come from testing no more than 5 users and running as many small tests as you can afford" (para 1). Many groups used the think-aloud method, which was covered in detail by Dumas and Redish (1994). All teams designed good test tasks and questionnaires to cover the Web site features. These nine reports will be very helpful for future test designers.

Evaluation of academic library Web sites

While the literature on usability keeps growing rapidly, it is hard to find literature on the specific topic of academic library Web site usability. However, a few publications on the design of library Web sites are helpful for our discussion of the usability issues of academic library Web sites.

Stover and Zink (1996) reviewed a sample of forty university library Web pages randomly selected from the Yahoo! directory. The study took both qualitative and quantitative approaches, gathering information about the library home pages and ranking the pages according to "a set of criteria grounded in existing hypermedia principles and the emerging literature of home page design" (p.13). The researchers concluded that most home pages were "incomplete and substandard," created rapidly with "a sense of false urgency" (p.15). They state that the librarian Web designer should "take more care in presenting to the world their information 'expertise' if librarianship is to be a profession in the forefront of processing and organizing information for optimal accessibility and usability in the twenty-first century" (p.16).

King (1998) compared design similarities and differences of home pages of all 120 libraries in the Association of Research Libraries (ARL). He examined home page background, document header, footer and body, page length, number of steps to library home page from parent institution Web site, and domain name server. However, the author did not try to comment on the usability of these Web sites, but only wanted to show "simply what is being done" (p. 464). Nevertheless, with the statistics in that article, we can make a cautious statement that most ARL library home pages share common design features, and to some extent, the site design has followed basic usability principles. For instance, 50% of home pages use no background image or color, while the other half most likely use a solid color for the background. Hypertext links are mostly text based and use default color. Standardized page header and footer are used by most home pages. Page length is reasonable, with 68% of home pages being one printed page long and 29% two pages long. A typical ARL library home page is only one or two clicks away from the parent institution's main home page, and has its own domain name, which is short and easy to memorize. The author suggests that "through close examination of the library home page standard and consideration of deviations from that standard," library Web masters can create home pages "combining uniformity with originality" to help visitors find information quickly (p.464).

The usability test report of the Washington State University library site (Chrisman et al., 1999) shares the same purpose and scope as our study. Librarian Web designers in WSU conducted a usability test for the first time on their Web site. The report describes the test preparation in great detail. The questionnaire and tasks are good examples to be followed in our study. The researchers identified problems and suggested solutions after

the test, and they also offered valuable advice to others, such as “test early and test often,” “keep the process simple and straightforward,” and “debrief promptly after each test session” (p.569). Among their findings, some usability problems may also be found in other academic library sites, for example, “typing in the wrong format led some participants to conclude that the item they were looking for was not in the WSU libraries’ catalog” (p.556), and “most users were able to find the limiting function but were unable to use it effectively” (p557). Our study also covers similar problems in the catalog and search engine at Duke’s library site.

Summary

With this brief review of the literature in academic library Web site and usability studies, we obtained a clear picture of the field, with a focus on the features of academic library sites. Following the detailed instructions and tips in the textbooks and articles on usability testing, we started to conduct the usability test on Duke’s Perkins Library web site.

Methodology

We recruited 20 participants from Duke and UNC, designed 19 tasks and two questionnaires, used think-aloud approach, and videotaped the whole test. Test results were analyzed both quantitatively and qualitatively.

Tasks

As advised by other library site usability evaluators (Chrisman et al. 1999), we kept the test limited and focused. We only tested the Perkins Library Web site, and gave up any attempt to compare it with other university library sites in RTP area. We did not probe every corner of this site, either, which contains more than seven thousand Web pages. The final list of 19 tasks (see Appendix G) covers the library catalog, e-journals, e-reserve, hours and directions, individual libraries (science, biology and music), request forms, the reference desk, research guides, newspapers, specialists, and other Web site content. Though the test only covers a small part of the whole library Web site, the pages tested are among those most frequently visited pages and typical of the whole Web site, according to the Web server statistics.

The tasks were designed to simulate real-world scenarios, such as searching for a book with the online catalog, or checking hours and location of a library. We designed a second task for some important services, including the online catalog, e-journals and databases, and those extra tasks were arranged in a way to test whether there would be some improvement in task performance when participants tried to complete them for the second time.

Participants

Nielsen claims that usually five participants are enough to uncover most significant usability problems, but he also mentions that, "you need to test additional users when a website has several highly distinct groups of users" (2000, para 18). Therefore we recruited a convenience sample of 20 participants from three different groups, Duke faculty, Duke students, and UNC students. The committee recruited four faculty members by personal contact. Posters (see Appendix B), a newspaper advertisement, and email messages were used to recruit 12 students from Duke University, and four students from the University of North Carolina at Chapel Hill. We did not impose any special restriction on participants. An incentive of $10 was paid to each participant for taking the test, which lasted for about 50 minutes.

All participants were properly informed of the goals and procedures of the test and were asked to sign a consent form in accordance with the university requirements.

Types of data to capture

We collected demographic data about participants, calculated the time and mouse clicks participants used to find correct answers, recorded participants' spontaneous comments during the test, videotaped the computer screens, observed participants' behaviors, acquired participants' evaluations of some important features of the site, and interviewed participants for their opinions.

Data capture techniques

A computer lab in Perkins Library at Duke University and another in UNC-Chapel Hill were used for the test. Both computer labs have high-speed Internet

connections and PCs. Participants used Internet Explorer 5.0 with the Perkins Library Web site as the browser's home page. Each time before testing, the history and disk cache of the browser were cleared.

A think-aloud approach was adopted in our usability test. Participants were encouraged to speak aloud their thoughts during the test. Evaluators used a Sony camcorder to record the computer screen and participants' comments during the whole procedure.

Evaluators counted the time and clicks while participants worked on the tasks, and checked accuracy of data by reviewing videotapes. Participants' comments were transcribed from the videotape, and compared to the notes taken by evaluators.

Procedures

The test was conducted from March 28 to April 11, 2000, according to the preset procedure (see Appendix C). Participants were first ushered into a computer lab, and shown a videotaped introduction of the test (see Appendix D). Then they were asked to sign a consent form (see Appendix E) and complete a pre-test questionnaire (demographic information, see appendix F).

Participants were informed that the Perkins Library's home page was set as the home page of the Internet Explorer, and instructed to return to the home page after completion of every task and wait for instruction to proceed to the next one. Immediately before the test, they were trained to speak out their thoughts while completing an extra task, i.e., to find the weather of their favorite city via Yahoo!

During the test, evaluators encouraged participants to speak aloud. Whenever a participant spent more than five minutes on a task, he/she was told to stop and proceed to the next task. After half an hour on the test, participants were offered a chance for a rest.

After all 19 tasks (see Appendix G) were finished, participants were asked to fill out a post-test questionnaire (an assessment of the Web site, see appendix H). In some cases, a brief interview was conducted to get more feedback from participants.

Participants then were paid and escorted out of the computer lab. Evaluators marked all documents and put them into a folder.

Data analysis methods

Quantitative data were analyzed with descriptive statistics. Demographic information from the pre-test questionnaire was summarized. Participants' performance was assessed by the number of successes. The success rate of each task was calculated. For each task, we computed mean, standard deviation, maximum, and minimum of time and clicks. For each feature in the post-test questionnaire, an average score was calculated.

Qualitative data were analyzed according to the services involved and the nature of problems. The strengths and weaknesses of the site were discussed and possible solutions were provided.

Results

Demographics of participants

Among 20 participants, 16 are from Duke University, and 4 from the University of North Carolina. There are 9 male and 11 female participants. The academic status of all participants are shown as below:

Table 1: Participants categorized by academic status

Academic Status	Number
Freshman	2
Sophomore	2
Junior	4
Senior	2
Graduate Student	6
Faculty	4

Most participants were relatively familiar with computer and web surfing, as shown in the table below:

Table 2: Participants' Web-browsing and Computer Expertise

Skill Level:	Web (number of participants):	Computer (number of participants):
1 (novice)	0	0
2	2	6
3 (experienced)	13	7
4	3	5
5 (expert)	2	2

We also asked about participants' frequency of visits to the library and the library web site. None of the four UNC students was a frequent visitor to the library and the Web site.

Table 3: The Frequency of Visits to the Duke Library and Its Website

Frequency	Library (number of participants)	Library Web (number of participants)
1 (monthly)	6	6
2	2	4
3 (weekly)	6	3
4	5	5
5 (daily)	1	2

In the pre-test questionnaire, we also asked the participants to write down what they expected to be the URL of the library Web site. Six participants gave the correct URL "http://www.lib.duke.edu." Three participants thought it would be "http://www.library.duke.edu," and another three suggested "http://www.duke.library.edu." Even though two thirds of participants did not know exactly the URL of the library Web site, the library home page is not hard to find, because it is only two clicks away from the Duke University Web site. With its own domain name, the Perkins library Web site is easy to access by frequent visitors.

Participants' performance

One participant successfully completed all 19 tasks. The worst performance was the completion of 10 out of 19 tasks. The average number of tasks successfully completed by participants was 16.1, with standard deviation as 2.15, minimum as 10, and maximum as 19.

The completion rate for each task is shown in the figure below. It can be noticed that several tasks have quite low success rate. We will discuss these tasks in the next section.

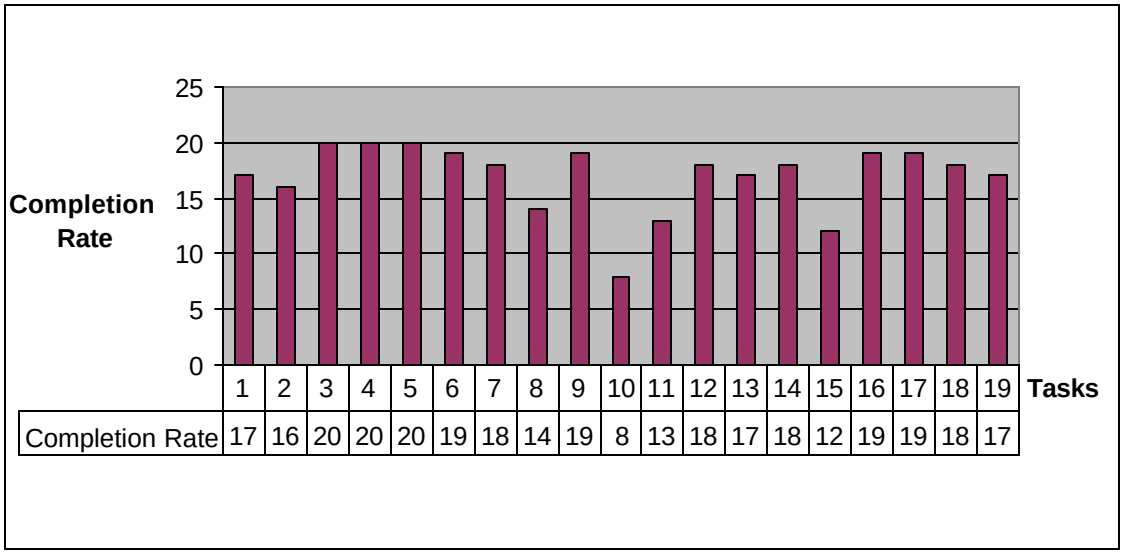

Figure 1. Completion Rate for Each Task

Table 4 records the time and mouse clicks needed to complete each task. Only the successfully completed tasks were counted. Task 3 was the quickest (completed in 40 seconds, on average) and task 10 was the slowest (completed in 126 seconds). Task 7 was completed in the fewest clicks (2.3, on average) and task 10 took the most clicks (8).

Table 4. Time and Mouse Clicks for Each Task

Task	Time				Mouse Clicks			
	Time: Mean (Seconds)	Standard Deviation	Min.	Max.	Clicks: Mean	Standard Deviation	Min.	Max.
1	76.88	13.01	17	218	6.53	4.12	3	17
2	48.69	45.39	24	213	3.69	3.65	2	17
3	40.35	37.63	13	185	2.70	1.66	2	9
4	63.90	35.10	14	146	3.70	1.87	2	9
5	48.00	19.37	15	92	3.50	1.28	2	7
6	84.42	49.28	15	217	4.58	2.89	2	14
7	48.39	27.24	22	139	2.28	1.36	1	5
8	114.50	31.71	64	189	5.07	2.50	2	10
9	58.53	43.59	13	222	4.32	4.75	2	23
10	125.88	107.89	29	358	8.13	9.37	2	30
11	92.23	73.04	20	285	3.38	2.14	1	8
12	51.61	40.34	10	144	4.33	3.68	1	14
13	91.59	84.03	13	300	3.71	3.06	1	10
14	58.33	40.94	15	146	3.72	1.71	2	7
15	63.33	71.07	22	284	4.75	5.14	3	21
16	43.26	31.50	14	143	3.37	1.83	1	8
17	79.05	48.18	28	208	4.95	3.12	2	13
18	49.72	45.14	20	216	3.89	2.03	2	11
19	64.35	29.78	20	150	3.06	1.14	2	6

User evaluation of the Web site

In the post-questionnaire, participants evaluated some major features of the web site, and the result is shown in Table 5:

Table 5. User evaluation of the Web site

	Mean	Standard Deviation	Minimum	Maximum
Overall	3.80	0.83	2	5
Text	4.25	0.85	2	5
Page Layout	3.95	0.94	2	5
Link Predictability	3.45	1.00	1	5
Search Function	3.60	1.23	1	5
Download Speed	4.05	1.32	1	5

Participants' comments on the Web site, as recorded on the post-test questionnaire, are listed in Appendix I. Transcripts of the important points from the participants' comments during the test and evaluation's notes are included in Appendix J.

Discussion

A close review of the data collected in the test shows that some online services of the Web site, such as databases, e-journals and e-reserve services, are quite easy to use, while other content, such as the online catalog, research guide and individual library home pages, have some design flaws. The Web site excels in its appearance, page layout, search engine and speed, but needs improvement in categorization, consistency, linking, and page length.

Task Analysis

The 19 tasks (Appendix G) can be classified into several categories of services provided by the Web site: the online catalog, databases, e-journals, e-reserve service, library information, research guides, and branch libraries' home pages. Each of these categories is discussed below.

Online Catalog

Tasks 1 and 15 involved searches in the online catalog. According to the Web site activity log, it is the most frequently used service of the library Web site. However, the task completion rate was not as high as expected. There were three participants who failed to complete task 1, and eight failed to complete task 15.

It is noticeable that participants did not take time to read the instructions. Though they were instructed on the Web pages that the last name of an author should be put first, several participants still typed the name in the wrong order. A number of participants

did not follow the instruction to omit the initial article "the" when searching by book title, and consequently did not get correct results. Those instructions are listed in a yellow-background table cell, which is close to the right edge and is easily overlooked by users.

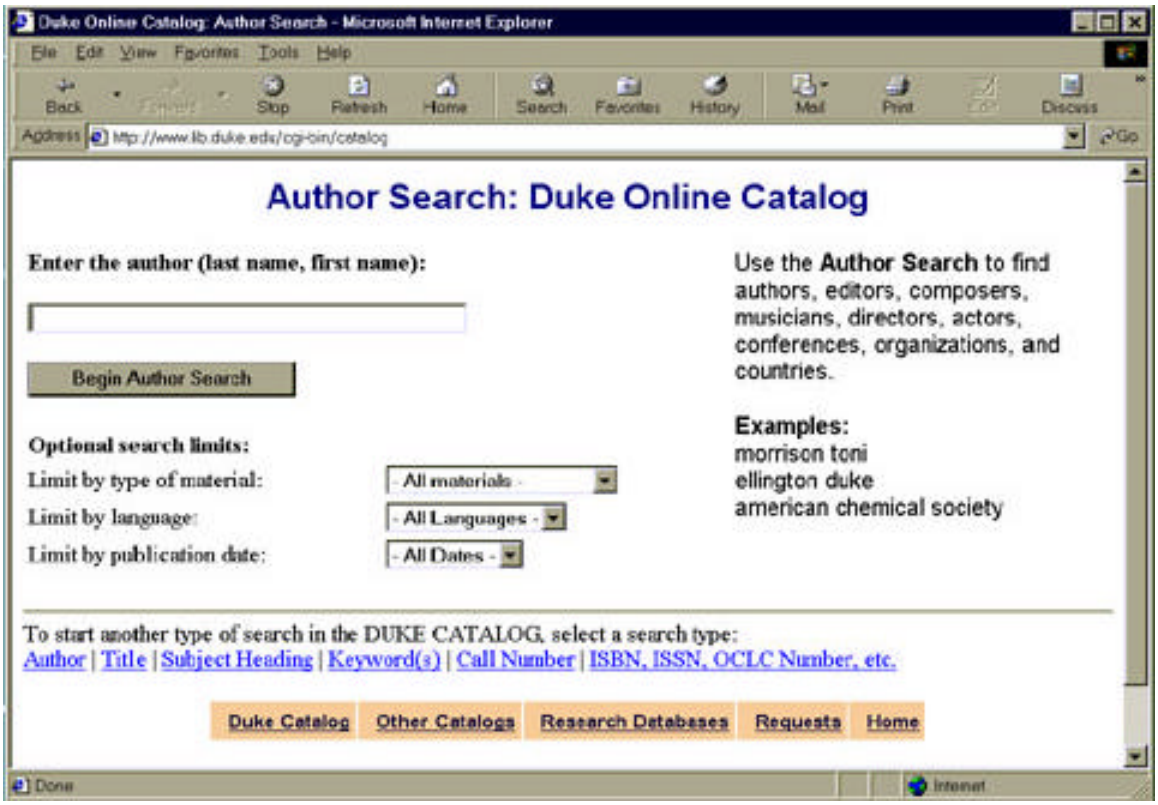

Figure 2. Online Catalog

Task 15 is hard because it is not stated clearly in the task what the "*Catalogue of Printed Music in the British Library*" is. Some participants took it as a database or even a specific library. The confusion led to the low completion rate.

Databases

The Web site provides a collection of useful links to online research databases (see Figure 3). Database-related tasks 6, 16 and 17 were successfully completed by all participants. The alphabetical lists and subject lists on the Web pages are well-designed and easy to use. All databases are briefly annotated on the list pages, and have a

dedicated page with a full introduction. There is a search engine for identifying relevant databases, which returns highly relevant results.

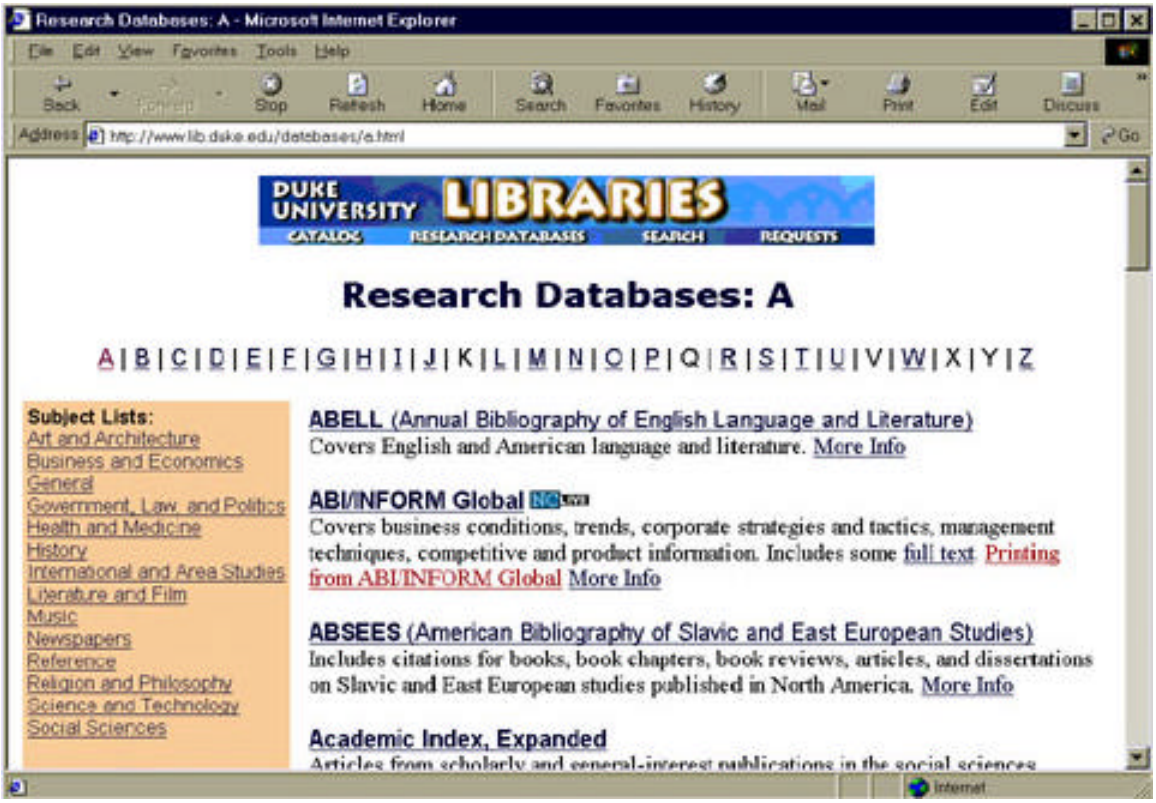

Figure 3. Research databases

E-journals

The e-journal section is only one click away from the home page. The position of the link "E-journals" is prominent on the home page. Journals are listed by title, subject, and project/publisher, and there is also a list of medical journals (see Figure 4). These lists help users pinpoint the specific journals quickly.

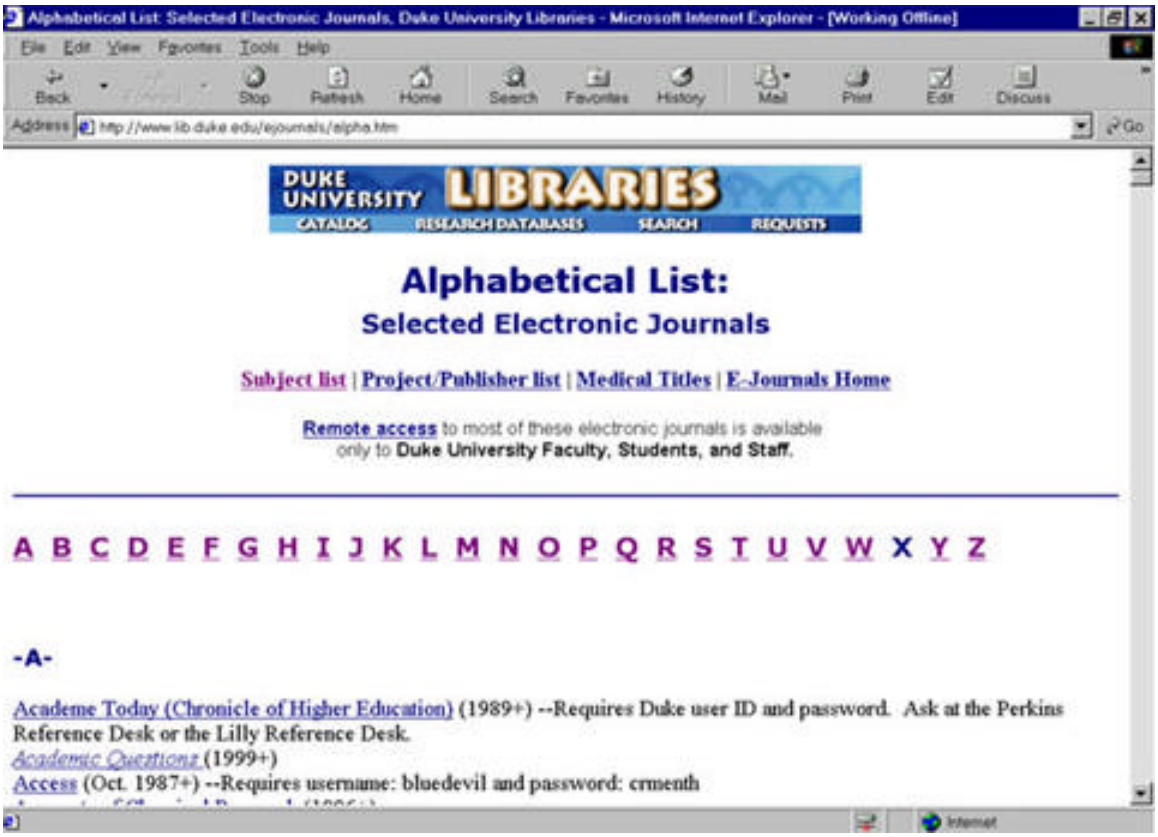

Figure 4. E-journals

In tasks 2 and 18, participants were given the titles of two e-journals and were asked to find the link. Four participants failed to complete task 2, and only one failed to complete task 18. One person tried the online catalog instead, and failed because he typed the wrong title, otherwise he could have succeeded. But another one who used the search feature failed to get any hits. Support by a search engine should be considered by the designers in the future.

The e-journal section lacks annotative information to individual e-journal titles. The pages with all the e-journal titles together might be troublesome to scroll down and up, but with lists of alphabet and subject at the top of respective pages, the navigation becomes easier.

E-reserve services

This is a typical service for an academic library Web site. On this site, e-reserve documents can be searched by professor's name or course number (see Figure 5). Search results are listed in a table, with hyperlinks to reserve titles. The design is simple and efficient. As the result, 100 percent of participants completed task 3.

Figure 5. E-reserve services

Library information

Service hours, directions, contact information, and request forms have always been a basic part of a library Web site. On the Perkins Library home page (see Appendix A), there are graphic links to hours and directions in the header area, and text-based links in the footer. Each individual library also includes the hours and directions links on its

own home pages. All participants easily completed tasks 4 and 5 and answered the questions about library hours and directions.

However, task 13, to identify a women's studies specialist in the library, did cause some problems among some participants. The "Specialist" link in the navigation bar can directly lead to the answer, but three participants failed to complete the task and the maximum time and clicks used to find the information (for those who were successful) were 5 minutes and 10 clicks, respectively. The causes of these problems could be that participants were not clear where to find relevant information, that the categorization of the navigation bar items is confusing, and that the position of the "Specialist" link on the navigation bar is too obscure.

Forms can increase the interactivity of a Web site. There are various forms on this site, including interlibrary loan, reference questions, and feedback on the site. These forms are scattered through the Web site, and quite easy to find. Most participants had no problem finding the interlibrary loan request form. One participant missed the link to the form because she was not familiar with the interlibrary loan service, and misunderstood the explanation under the link.

Research guides

The size of the subject collections and research guides is huge, but the position on the navigation bar does not reflect the magnitude of the collections. To make things worse, most participants did not realize the existence of those collections and guides (see Figure 6). Task 10, on research guides, was "mission impossible" for 60 percent of the participants, because there is no direct link to the research guide on "How a bill becomes a law." It was not easy for those who finally found the information, either. One

participant made 30 mouse clicks before walking her way through the maze. One exception is a participant who used the search engine to find the guide in only two clicks.

The success rate for Task 19, another research guide task, was significantly higher. It turns out that more participants intentionally looked for the research guide, and the other participants, who used the search engine for the keyword "Shakespeare" received highly relevant results.

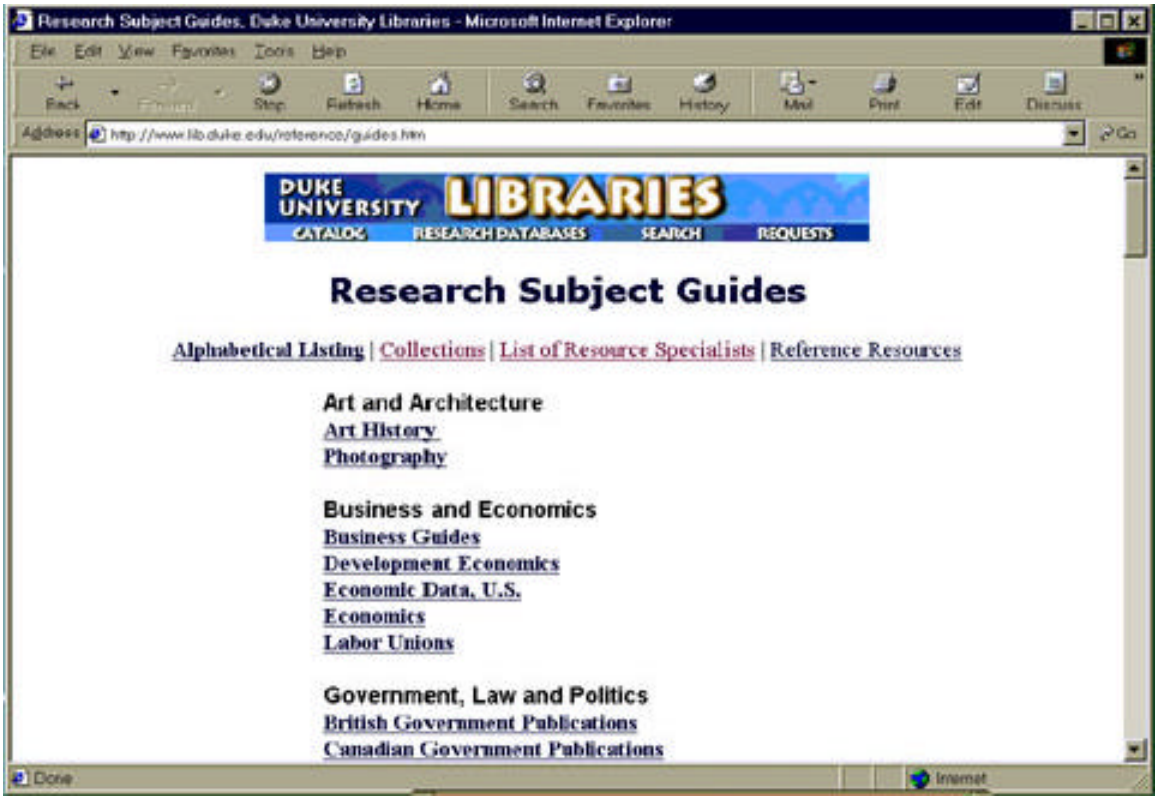

Figure 6. Research guide

Individual library home pages

Perkins Library Web home page is also a gateway to other branch library home pages. Tasks 11 and 14 were thought to be easy, but there were still some failures. Seven participants could not find a collection of Internet resources on the Music library

Web site, because the link on the Music library home page was in the form of an ad banner that was ignored by many participants.

Two participants failed to find the Biology Library Web site. One reason might be that participants were not familiar with the libraries at Duke University. In fact, the Biology Library is a part of Duke University Perkins System Science and Engineering Libraries (see Figure 7). Its link cannot be found directly on Perkins Library home page. Unfortunately, even on the Libraries of Science and Engineering Web site, the link to the Biology Library is still not in a prominent position.

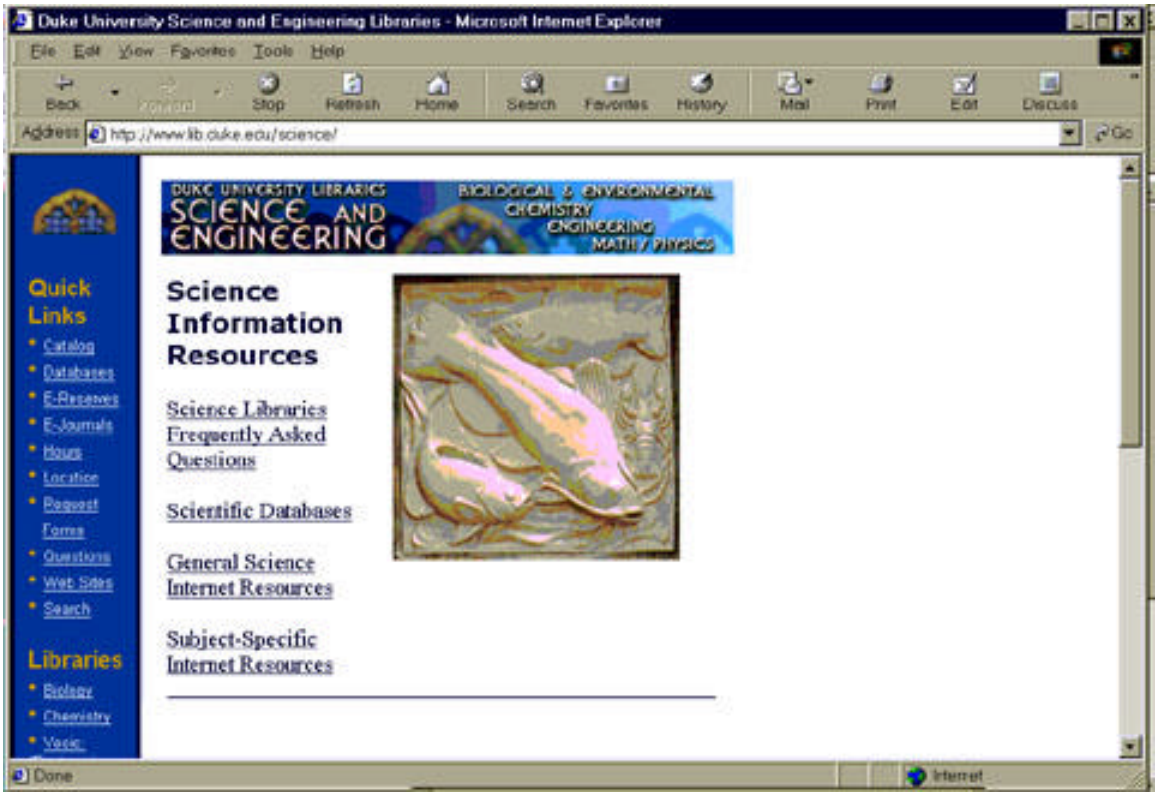

Figure 7. The Science and Engineering Libraries home page

Strengths of the Web site

According to participants' responses during the test and on the post-test questionnaire, the Web site has many positive features. They are described below.

Appearance

The average score of 4.25 for font, size, and color of the text on the Web pages shows that participants are quite satisfied with the unassuming appearance of the Web site.

Layout

Almost all the participants evaluated positively the vertical navigation bar on the home page. The menu covers the most important contents of the site, and is extremely helpful for users to locate the needed information. As a participant commented, "Almost every possible task is arranged in your site menu." As a matter of fact, the major functions of an academic library are incorporated in the menu, such as catalog, journal, reservation, database, etc. (see appendix A).

Search

Though only part of the participants made use of the "search this site" feature (see Figure 8), it can be concluded that the tool is very useful and the search results are highly accurate. The only participant who achieved 100% success completed most of the tasks by searching the site, convinced of the effectiveness of the feature. One participant pointed out that, "Unlike many search features, this one seems to give useful results with a good description."

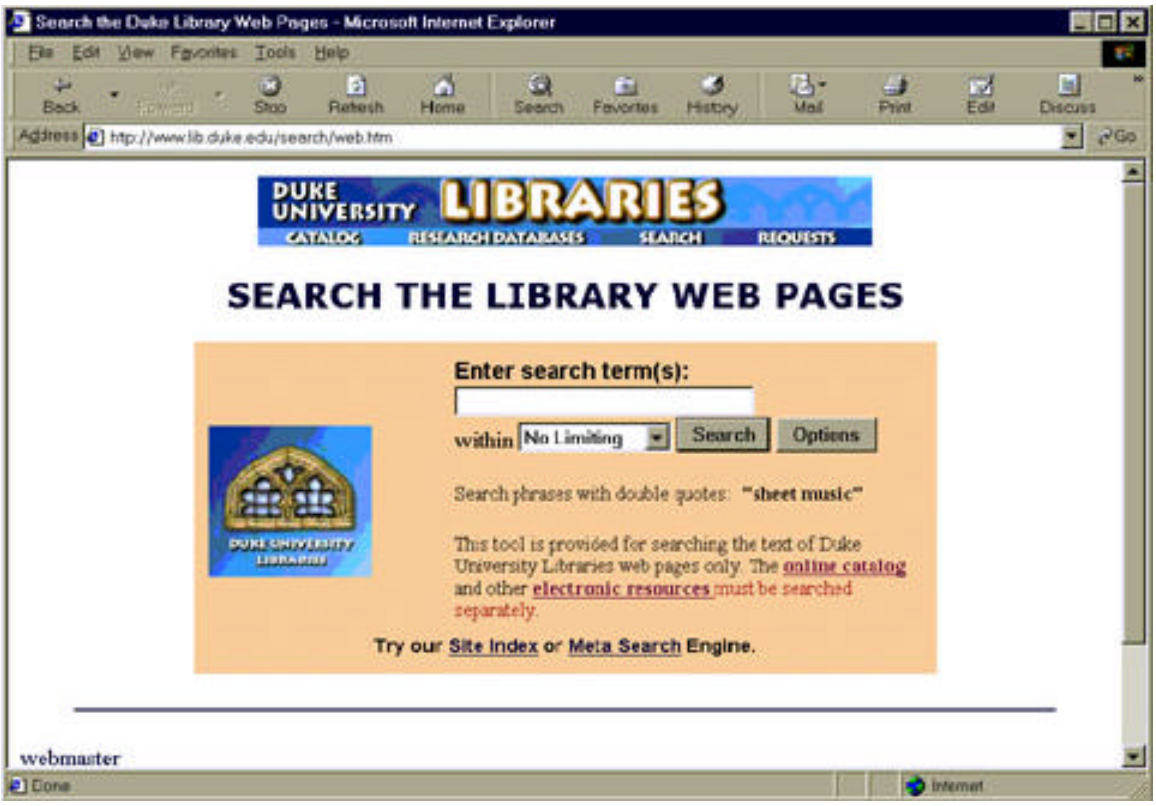

Figure 8. Site search form

Speed

Most participants evaluated positively the download speed of the library Web pages. The minimalist design of the site guarantees the high-speed downloading. However, we still cannot tell how fast pages can be downloaded for narrowband users, because all participants were using the high-speed campus network.

Weaknesses of the Web site

Many usability problems were found in the design of the site and individual Web pages. These problems are grouped by their nature and discussed below.

Categorization and naming

Some categories are quite confusing on this Web site. For example, the "Perkins Service Points" includes services of different natures, such as "current periodicals," which is a library collection, and "Interlibrary Loan," which is a library service. "Service Points" is not a familiar term to most participants. As reported by a participant, people tend to look at the menu headings first, so chances are they will miss the part they are seeking if the heading does not appear so relevant. Participants were also confused by the "periodicals" and "newspapers" in this category.

"Tutorial Center" is featured on the homepage, and "provides access to the Guide to Library Research, virtual library tours, guides to using the online catalog and research databases, maps of book locations, and more." But it overlaps Reference Resources, Virtual Reference Desk, and Research Guide. One participant was totally lost after completing task 8 with lots of hops, and she had to redo it to find her location in the site.

In Task 14, participants could not find a link to the Biology Library directly. They had to click the link to the Science and Engineering Libraries Web site first and surf to Biology Library from there. The two-level categorization relies too much on participants' knowledge of libraries at Duke.

Most of the participants failed to complete task 10, which is to search for a research guide. In the menu, "Research Guide" appears under the heading of "Subject Collections," which does not best reflect the nature of the guides. The position of the link is near the bottom of the home page, and the font size of the menu item is small. Many participants overlooked the menu item. In addition, the specific topic neither appears in

the Law School Library's research guides, nor in the main Web site's "Reference Resources" part, but instead is included in the "Government Documents" part of the main Web site.

As discussed above, some sections of the Web site overlap or share similar headings. It is preferable to make some changes to these parts. For example, the "Reference Resources" link on the home page leads to the "Virtual Reference Desk," which is actually mainly about research databases. This link distracts users from the Reference page under the "Perkins Service Points" heading in the navigation bar. In the future, the site designer should also redesign the grouping of links in the "Perkins Service Points," "Contact Us," and "Subject Collections" sections.

Consistency

The main Web site is linked to other branch library sites at Duke. The design style of those sites, as noticed by some participants, is different from that of the main Web site. All individual library Web sites have their own design styles. There are "quick links" on these sites bringing participants back to the main site's services. However, participants were not always sure of their current position and got confused. For example, the Science and Engineering Libraries site (see Figure 7) uses a side navigation bar ("Quick Link") from the Perkins Library homepage, which was understood as a local navigation bar by some participants.

The graphic links under the library title banner are not the same on all the pages. On the home page, horizontal links below the title banner are "Site Index – Collection – Events – Hours – Directions – Accessibility," but on other pages, links are "Catalog –

Research Database – Search – Requests" (see Figures 9 and 10). Participants usually expected to see the same links on the top horizontal navigation bar.

Figure 9. Top navigation bar on the home page

Figure 10. Top navigation bar on the other pages

Since the Web site is built by a team whose members are from different libraries and departments, it is necessary for all the members to agree on the same Web design style, especially some important details concerning the navigation bar, page layout, text formats, etc. Consistency is desired throughout the Web site.

Links

In most cases, participants could guess correctly where a specific link would lead them, especially the major services of the library. But it did not work all the time for all of the participants. One participant pointed out, "Sometimes it takes too many clicks to figure out that I've gone to the wrong link." The average user rating for link predictability is just 3.45 out of 5, the lowest of all the features under evaluation.

It seems necessary to make all the text links explicit and self-explanatory to avoid confusion. For example, task 7, "Where do you ask a reference question online?" was challenging. It seems that menu items in the left navigation bar, "Reference Resources," "Circulation", "Reference," and "Reference Questions" all can lead one to the answer. However, unless a participant noticed the "Reference Questions" link first, which is

located near the bottom of the navigation bar, he or she had to spend some time exploring the web site before finding the correct answer.

The visibility of links also seems to be an issue. Sometimes, the location of links is too obscure. Some links are near the bottom of a quite long page. For example, in task 8, the link, "How do I cite a Web page, book…" is not on the first screen, but hidden near the bottom of the "Tutorial Center" page, and participants had to scroll down to find the link. Meanwhile, some other links are hidden in long paragraphs which are not easy to scan, such as the links in the paragraphs at the right side of the home page (see Figure 11).

Figure 11. Part of the home page

Most participants showed the "banner-blindness" which is quite common among Web users. Unfortunately, some links on this web site resemble banners. For example,

in task 11, most participants overlooked the banner-like link on the Music Library home page (see Figure 12)

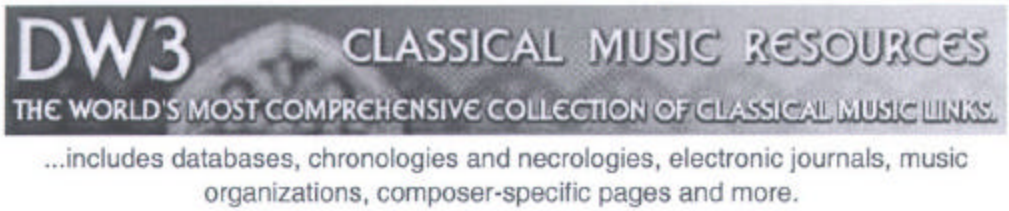

Figure 12. An ad-like banner on the home page of the Music Library

In task 14, it took participants some time to find the link to the Biology Library, which is embedded in the top title banner of the Science and Engineering Libraries home page (see Figure 13).

Figure 13. The banner on the home page of the Science and Engineering Libraries

Some participants also pointed out in the post-test interview that the top navigation bar in light color is too close to the Web site title banner and almost becomes a part of it. Consequently, the bar "disappears" before the participants' eyes (Figures 9 and 10). In task 4, only a few participants clicked the "hours" link in the top navigation bar, while most people chose the Special Collection Library link in the side navigation bar to find its hours.

Page and Text length

Participants almost always scanned the Web pages, and had no patience to peruse them more thoroughly. When they opened a page with long paragraphs, more often than not they would immediately click the "back" button on the browser. However, in the

Perkins Library Web site, there are still many pages filled with too much information or text not easy to scan. For example, to complete task 13, participants had to scroll down the long specialist list continuously to find the needed information. An alphabet list (for jumping within the page) is desired on the top of the page.

While the left-hand navigation bar on the home page is extremely important, the only shortcoming of the bar is that it is too long. As several participants indicated, the paragraphs on the right side of the homepage are not so crucial. It is possible to design a minimalist home page with only important and well-organized links on it. In that way, users will not have to scroll down to find those important links, and all the links could be displayed in larger fonts and in more prominent positions.

Search

The search engine of the Web site is very powerful and accurate. But, surprisingly, only a few participants made good use of it. One reason could be that users usually do not trust a site's search engine. One participant with a lot of Web surfing experience said that he did not use the search tool because he found most search engines return a lot of irrelevant results and he preferred a site index. But, as we know, this is not the case on this Web site.

Another reason might be the search tool is not put in the most prominent position of the home page. There is only a text link for "Search this Site" in the navigation bar, below the other four links (see Appendix A). Participants had to click the text to reach the search page and fill in the search form. In fact, the "search this site" form could be placed directly on the home page, where it could attract more users.

Research Guides

Research guides are a featured part of the Perkins Library Web site. However, many participants did not know these guides are available. The link to research guides is placed near the bottom of the long navigation bar on the home page, or embedded in a long body of text on other pages. Besides, the research guides are scattered among the different libraries and departments. It is also noteworthy that many participants' first reaction to a research-related task is that they can ask a librarian in person or search some well-known resources such as Encyclopedia Britannica or Lexis-Nexis.

Therefore, a challenge is how to compete with the well-recognized and esteemed resources. If the library intends to use research guides as an important tool for instruction, then it is necessary to raise the awareness of these guides among faculty and students. To attract more traffic to the guides, the library can advertise them by asking faculty members to put the links in their course syllabi.

Conclusion

Our usability test achieved the preset goals and revealed some significant usability problems of the Perkins Library Web site. With the findings of the test, we can improve the design of the site, and make it easier to visit by the faculty and students.

Duke University is a typical research university in the U.S., and its library is a member of Association of Research Libraries. We believe that the Perkins Library Web site represents the current status of most academic library sites. Most of their services are also provided in other library sites; but, on the other hand, many problems of this site might also be found elsewhere. We hope this case study can help other librarian Web designers find out some similar usability problems of their sites, such as:

- Poor categorization of site content
- Inconsistency in design style
- Ambiguous text links
- Poorly positioned links
- Graphic links similar to ad banners.
- Lengthy pages
- Unscannable paragraphs

We also want to emphasize the promotion of Web services. After a library has invested heavily in a new service on its Web site, it is important to raise patrons' awareness of the new service. Special care in designing the navigation tools can help patrons find the service quickly.

This usability test was conducted after the completion of the latest version of Perkins Library Web site. One lesson we learned from the experience is that we should have conducted the test earlier during the construction of the site. But it is better to find

usability problems and remedy them late than never. Because of the ephemeral nature of many Web pages on a library site, it would be good practice to conduct usability tests regularly.

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Appendix A: Perkins library Web site home page (April 2000)

DUKE UNIVERSITY LIBRARIES

SITE INDEX | COLLECTIONS | EVENTS | HOURS | DIRECTIONS | ACCESSIBILITY

Basic Services
Catalog
E-Reserves
E-Journals
Request Forms
Search this Site
Search the Web

Research Databases
Databases lists
Reference Resources

Search for a Database

Popular Databases
Academic Index
LEXIS-NEXIS
ProQuest
Web of Science
WorldCat
Encyclopedia /Dictionary

Libraries @ Duke
Fuqua Business
Divinity
Law
Library Service Center
Lilly
Marine
Medical Center
Music
Perkins
Rare Book, Manuscript & Special Collections
Science & Engineering
More...

Perkins Service Points
Circulation
Current Periodicals
East Asian Collection
Interlibrary Loan
Int'l & Area Studies
Newspapers & Microforms
Public Docs & Maps
Reference
Reserves
More...

Libraries not @ Duke
NC Central Library
NC State Library
UNC Library
More...

Subject Collections
By Subject
Research Guides
Specialists

Contact Us
Reference Questions
Requests
Suggestions
Feedback on this Site
Phone Numbers

WHAT'S NEW

Ad*Access: A unique image database of over 7,000 advertisements printed in the U.S. and Canadian newspapers and magazines between 1911 and 1955.

New Books in African-American Studies in the Duke University Libraries: A service that provides a monthly e-mail list of newly-catalogued African-American Studies materials.

William Gedney Photographs and Writings: A collection of nearly five thousand photographs and hundreds of pages of text by the photographer. Included here are selections from Gedney's finished prints, work prints, contact sheets, notes, notebooks, handmade photographic books, book dummies, and correspondence.

TUTORIAL CENTER

The place to go for help using the library and conducting research. The Tutorial Center provides access to the Guide to Library Research, virtual library tours, guides to using the online catalog and research databases, maps of book locations, and more.

COLLECTIONS & RESEARCH CENTERS

Michael Francis Blake Papers
From "Mammy" to "Jezebel," from "Sambo" to the "Bad Nigger," derogatory concepts about blacks dominated American popular culture in the early twentieth century. The work of **Michael Francis Blake**, a black photographer from Charleston, South Carolina, contested those stereotypes and provided ample testimony to the rich texture of **African-American life** in the **Jim Crow South**. One hundred and seventeen of his photo postcards of black Charlestonians are housed in the Rare Book, Manuscript, and Special Collections Library.

LIBRARY INFORMATION

Find Information about the library and library policies. Here you will find information about **tours and classes,** the **calendar of events, hours, directions**, circulation services, copy cards, jobs, phone lists, and more...

FEEDBACK

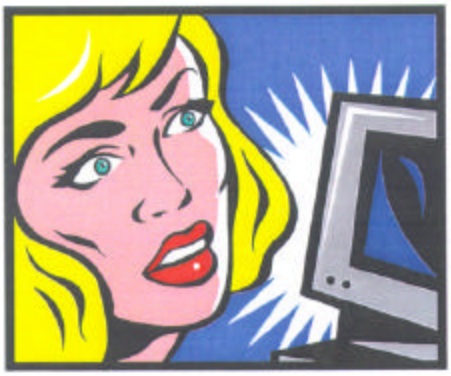
The library looks forward to your comments, thoughts, and questions. To that end we have several forums for your feedback. We encourage you to send **reference questions**, send **comments** to the Library Council, or provide **suggestions** for our collections. If you know of a book, video, journal, etc. which the the library doesn't have but should, please suggest we purchase it. Your suggestion will be forwarded to the appropriate person or department.

Perkins Library - Duke University - Durham, NC USA -- 27708
Phone: (919) 660-5880 - FAX: (919) 684-2855
Departmental Phone Numbers
Hearing Impairments & Deafness Access: (919) 684-6183

Site Index | Collections | Events | Hours | Directions | Accessibility

Appendix B: Recruitment Poster

FREE COFFEE AND FOOD AT THE PERK!



She stared at the screen, trying to ignore the urge for sleep that kept enticing her body and mind.

"Must...stay...awake... If only I had enough money for some coffee and one of those chocolate muffins from the Perk! I shouldn't have spent the last bit of cash on that tattoo over Spring Break!"

You could avert a similar tragedy, and receive a **$10 gift certificate to the Perk** and a coffee mug, simply by participating for only **1 hour** in the

Duke University Libraries Web Site Usability Study.

WHAT: The Library is currently evaluating its web site, and wants to get some data on actual use by students. We'll be asking participants a few questions that will require navigating the site.

WHO: Any and all Duke students are invited and needed! (No library employees, please!)

WHEN: The test will be given at Perkins Library during the weeks of March 27 – March 31 *AND* April 3 – April 7.

HOW: To sign up, please contact John Little M-F 8-5 at 660-5932 or john.little@duke.edu.

Hurry. Space is limited!

Appendix C: Test Procedure

Preparation:

1. Open Internet Explorer
    - Open menu item "tools-> Internet options…-> General"
        - Set www.lib.duke.edu as homepage
        - Choose "Delete Files…" in Temporary Internet Files section.
        - Choose "Clear History" in History section.
2. Power up video/audio equipments. (see steps 6-9 of Test Procedure).
    - Load tape. Check sound and video.
    - Manual focus camera
    - Set camera angle (over participant's right/left shoulder, facing monitor screen).

Briefing:

1. Lead participant to the lab.
2. Play participant orientation video on the little TV
3. Ask participant to read and sign the consent document. (Participant is allowed to change his mind after orientation.)
4. Ask participant to complete pretest questionnaire
5. Train participant to think out loud using http://weather.yahoo.com/

Test:

1. Start video recording
2. Click "Home" button on Internet Explorer to start logging
3. Give participant the yellow spiral bound task list.
4. Observe, take notes, encourage participant to talk.
5. Log participant activities.
6. Stop participant when running out of time or going offsite.
7. Next task. (take a short break after 30 minutes)
8. Stop video recording after finishing all tasks

Debriefing

1. Give participant post-test questionnaire
2. Go over the participant's answer. Get more feedback if possible.
3. Pay participant and escort out
4. Complete log sheet:
    - Edit notes, user comments, check video tape to complement the notes.
5. Put all participant materials in folder.

Cleanup

1. Stop the tape recording
2. If this is the second recording on the video tape: Eject Tape
3. Turn camera off at **both power switches**
4. Log off of both workstations
5. Put all the paperwork into the file folder in the white cabinet

Appendix D: Transcript of the Orientation Video

Welcome and thank you for participating in the Duke University Libraries web study. The focus of this test is the library web site. Neither you as a participant or your personal ability to complete the tasks will be evaluated during our analysis.

Follow the pre-test questionnaire one of the proctors will hand you a spiral bound booklet with 20 questions. As you begin and throughout this process of completing the tasks we ask that you speak out loud explaining your thought process when solving the task at hand. Please remember that if you enter text from the keyboard to speak clearly and indicate what you are typing. You may use any or all library web site features to complete the task.

After the proctors have set up the test and begun the video and audio recordings you will receive a question booklet. Please wait for the proctor to indicate that you can begin and follow the following procedure:

1. At the beginning of each question start from the library homepage.
2. Turn to the first unanswered question. To signal the beginning of the task please read the question out loud.
3. Begin completing the task. Remember to speak out loud during the entire process.
4. To signal that you have completed the task please simply say “done”.
5. Return to the homepage and wait for the proctor to advance you to the next question.

The proctors understand that you may not be able to complete a task. This is an acceptable response. Please simply state that you have decided to stop work on the question. It is also acceptable that the proctor may stop your work on a given task. This is not a reflection on your abilities but rather an indication that we have received the information we need. Please simply return to the homepage and wait to be advanced to the next question.

Thank you, again, for your willingness to participate in our study.

Appendix E: Participant Consent Form

Dear Usability Test Participant,

Thank you for your participation in our "Usability Test on Duke University Library Web Site." This project will test how easily the users can use the chosen Web site to get needed information.

About 20 participants will take the test individually in the computer lab at Perkins Library, Duke University, or School of Information & Library Science, UNC-Chapel Hill. Each participant will be asked to complete a pre-test questionnaire and a post-test one. During the test, you will conduct 19 tasks, such as searching the online catalog for a book. Meanwhile, you are encouraged to speak aloud your thoughts, describing and explaining your every move. Your activities will be closely observed by the investigator, and might be videotaped. The whole test will take about an hour.

All your personal information will be kept highly confidential, and be used for research purpose only. The tapes that record your activities will be erased upon the completion of the study,

With your participation, we can improve the usability of the library Web sites, making information more accessible to users. Thanks again for your cooperation.

Jian-Qing Wu
Tel. (919)942-7896

Prof. Barbara Wildemuth
Tel. (919)962-8072

You may contact the UNC-CH Academic Affairs Institutional Review Board at the following addresses or telephone number at any time during this study if you have questions or concerns about your rights as a research subject.

Academic Affairs Institutional Review Board

David A. Eckerman, Chair
CB# 4100, 201 Bynum Hall
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599-4100
(919) 962-7761
email: aa-irb@unc.edu

After you have read the above description of our usability test, if you still agree to participate in the test, please sign below:

Participant: _____ Date: _____

Appendix F: Pre-test Questionnaire

Thanks for your participation in our usability test. Please provide us with some basic information about yourself:

Participant ID: _____

1. Gender: ___ Male ___ Female

2. Academic Status:
___ freshman ____ sophomore ___junior ___senior
___ graduate student _____ faculty

3. Web surfing experience:

1	2	3	4	5
(novice)		(experienced)		(expert)

4. Computer expertise:

1	2	3	4	5
(novice)		(experienced)		(expert)

5. How often do you visit any **Duke University library**?

1	2	3	4	5
(Once a month or less)	(2-3 times a month)	(Once a week)	(2-3 times a week)	(Almost everyday)

6. How often do you visit Duke University library **Web site** (including while visiting the libraries)?

1	2	3	4	5
(Once a month or less)	(2-3 times a month)	(Once a week)	(2-3 times a week)	(Almost everyday)

7. What would you expect the Duke libraries homepage to be?

http://_____

Thank you!

Appendix G: Task List

1. Find *The Sound and the Fury* by William Faulkner.
2. Find the online version of American Diplomacy magazine.
3. Find articles on reserve for Professor Abel's history class.
4. Pretend you need a diary in the Special Collections library but it's already 10 pm. Is it available at this time?
5. You don't know how to get to the Lilly Library. Can you find the directions and map on the library web site?
6. As a member of the Model United Nations you need to research United Nations documents. Locate the database that indexes UN documents.
7. Where on the library's web site do you ask reference questions online?
8. In your research paper you are going to quote an article on the Web. Which library web page explains how to cite an online article?
9. Find information about foreign newspapers received by Perkins Library.
10. You have to do research on how a bill becomes law. Using the Library Web site, locate a guide supporting this task.
11. Duke Music Library Web site hosts the most comprehensive collection of classic music links. Where is the collection?
12. The book Information Architects is not available at Duke. From the Duke Library web pages where would you request a copy of the book?
13. Who in the library is a specialist for Women's Studies?
14. Find the Biology Library homepage.
15. Find the *Catalogue of Printed Music in the British Library*.
16. Find a psychology database.
17. Find a database containing full text of complete works of philosophers, such as Aristotle.
18. Find the online version of the Journal of Natural Products.
19. Find a guide on the Duke Library web pages that helps identify information about Shakespeare.

Appendix H: Post-test Questionnaire

Participant ID: _____

Please circle the numbers which most appropriately reflect your impressions about using this Web site:

1. What is your overall impression of this Web site? Is it easy to use?

   (difficult) 1 2 3 4 5 (easy)

2. Are you feeling comfortable with font, size and color of the page text?

   (uncomfortable) 1 2 3 4 5 (comfortable)

3. Is page layout helpful for you to search for information?

   (unhelpful) 1 2 3 4 5 (helpful)

4. Can you predict where a link will lead you?

   (unpredictable) 1 2 3 4 5 (predictable)

5. How do you like the help on using the site and the "more info…" feature?

   (unhelpful) 1 2 3 4 5 (helpful)

6. How do you like the speed a page is displayed after you click a link?

   (too slow) 1 2 3 4 5 (very fast)

In your opinion, what is the best feature or worst design of the Web?

_____

_____

_____

_____

_____

Thanks for your participation!

Appendix I: Participants' Comments on the Web Site (the written part of the post-test questionnaire)

I like the side bar options – seem to be well tailored for high use sites. On classical music question – icon for database looks too much like an ad, causing me to slip it at first.

Best: almost every possible task is arranged in your site menu. Worst: certain sub-pages seem to be programmed by a different hand so that features I would expect, (having seen them elsewhere), aren't present.

I really liked the search feature of the web page. It helped me out a lot while searching for information. I did not find anything that I dislike: overall, the site is excellent. However, I would like to see a link to the Duke homepage, and perhaps a list of the science libraries.

Website has improved steadily. Display of info can still be improved. Some headings are uninformative. WorldCat link could be more informative.

Best feature: e-reserve system. Easy and painless. Worst feature: when given a topic (for a research paper, etc.) it is hard to know what Journals to search for info because the "search" key is not of good use in this case.

Unlike many search features, this one seems to give useful results with a good description. I feel like the main page has too many places to click. If it could be a little more branched. It could be easier.

I would like to able to restrict a search in the on-line catalog. For instance, search for an author only among Math/Physics, which is crucial if this name is a common one. Also, I would like to see author/subject/date restrictions in a more obvious place.

Best: online full text of journals -- often hard to find which journal (… illegible). Need to fully integrate UNC-Duke-NCSU catalogs in a single search, as was available before 1990. Use LANIC (www.lanic.utexas.edu) as a model for easy access to complex data.

Best feature: list on the left side with most important links. But it could be displayed more prominently (in the middle), because it is so important, I never look at the "What's New" section.

Best: easiness to use + find links readily. Worst: not much – in the catalog searching for journals (titles) – there should be a reminder to search/limit by "serial."

Better than most sites I have to use.

The best feature is the list on the left hand side of the home page with links to different libraries, search engines, etc. The worst feature is the center of the page -- I never read what is listed there because generally it's unimportant to me. So if anything important was listed, I wouldn't see it.

The layout that you have in the left column is very helpful.

Based on the tasks I was asked to perform, the information on the left hand column proved to be very useful and well organized. The "search this site" function was very helpful for especially questions about the site's content. It may be confuing, however, for some to differentiate between the catalog function and "search this site" (I initially chose to "search this site" when I really want the catalog.). I don't have any suggestions for better wording, though. Finally, I found the info on the middle of the page What's New/Tutorial Center, etc. to be a little too varied and voluminous to be helpful.

Large blocks of text tend to hide information. Having links on or as banners really aren't very helpful. I did really like the e-journals, though. They were very easy to access and could be very helpful.

It is fairly easy to navigate. It has a vast amount of information but the researcher doesn't have to be a detective to find it.

Sometimes it takes too many clicks to figure out that I've gone to the wrong link. However, the basic services links were all very well done for quick searching.

You need a much better dictionary than is currently linked to the web. The Encyclopedia Britannica is a decent source for quick information, but the online dictionary has far too limited a vocabulary to be helpful.

(Follow-up email message)
Subject: Website test – further reflections
Body: I was terribly bothered by the fact that I could not find William Faulkner's **The Sound and the Fury** in the library catalogue. Granted that I mistyped the title on the first try, the second time I typed in the author's name, and could find no listing for that novel.

I went back to this evening to the Perkins website catalogue and tried searching for the title again, this time being more careful of my typing. We do, in fact, own several copies of **The Sound and the Fury**, yet none are (apparently) linked to the author's name in such a way that they may be searched under "Faulkner, William." I regard this as a fault of the website catalogue, and a grave one: often researchers don't have the titles of works exactly correct (as I showed this afternoon!), but they're much less likely to be misinformed as to the author's name.

Clearly, more work needs to be done to make **all** the works shelved in Perkins, in the branch libraries and in their collateral storage facilities searchable by author as well as by title.

Appendix J: Transcript of Participants' Comments & Evaluators' Notes during the Usability Test.

Task	Covered Area(s)	Participants' Comments	Evaluators' Notes
1	Catalog	"Ok, I'm going to catalog." "catalog, author, last name first, so [type name]. It seems too many [results] over there. So try title search. Without 'the.'"	-- No result if searching with the initial article "the," or with the wrong order of author name. Careful users will notice the instructions on the order of names, and omission of articles. But it's necessary to emphasize the rules. -- Lots of browsing for the result of author search. -- Should add a link to online catalog under "searches" on the circulation page.
2	E-journal	"I never check that, journals I guess?" "Never searched online magazine through catalog before." "I don't know if there are more magazines with the same name"	-- A participant tried "catalog" first, which could also lead to the correct answer. Failed because typed an extra "magazine" in title search. -- A participant used "search this site" but failed to find the journal. -- Some users might be confused by the delicate difference of journal and magazine. -- Most participants chose alphabetical order to find the e-journal, when they already knew the title. -- The list pages of e-journals are too long to scroll. Should be broken into shorter ones.
3	E-reserve	"Done this a lot of times" "I like this new format." "You must include a course number, which is annoying."	Easiest task. Participants had no problem to complete it.
4	Hours	"The horizontal bar across the top [of the homepage] seems to disappear."	-- Navigation bar on top of homepage is blended into the library banner, and becomes oblivious to users.
5	Directions and Map	"directions: goes to Lily."	-- Some participants often ignored navigation bar at top of homepage -- Participants either went to library first for direction or the direction part in the navigation bar.
6	Database	"Start at database list. Don't know how it works, but will start with subject first." "Alphabetical order hard to use - should have more detail in subjects. Would probably call" "search a database. Leave everything (all search options) as is."	-- The alphabetical list is not so useful. The subject list is not exhaustive enough. -- The participant had to check all likely answers, if he chose "search for a database." A lot of time was spent on reading search results.
7	Reference desk	"Didn't know you can do that. " "Virtual Ref. Desk is where you ask a question." "I'm not sure what a reference question	-- "Reference Resources", for some reason, is located under the "research database" menu. It links to "virtual reference desk" page, which focuses

		is." "This is it, no need to ask a human." “I've never done that - always call.” “I am not sure about that. I guess the feedback section.”	mainly on research databases. The contents and page title are confusing. -- A link “ask a reference question” is at the bottom of left menu bar on "virtual reference" page. Another link is hidden in the text. Hard to find. -- Participants took different ways to find the answer. Many were distracted by the “Reference Resource” menu item, which was near the top of left navigation bar. A detour, though.
8	Reference Desk, Tutorial,	"I would normally use http://www.mla.org". (confused) “How did I get there?” (Study guide useful) "That is great" Said to be patient because of test, otherwise would visit http://www.yahoo.com “Maybe reference?”	-- Quite difficult to find the correct answer. A typical path: homepage> Service Points: reference page> tutorial center > guide to lib research > citing resources. -- Many participants chose “search this site” to find the answer. -- “Library Tutorial Center” is not listed in the left navigation bar, and is consistently overlooked. -- “Service Points: Reference” and “Research Database: Reference Resources” have similar confusing names, but are different services. -- “Reference” should be listed in a more obvious place, with larger font.
9	Newspaper	“Periodicals?” “I’ll be lazy and use ‘search this Web site.’” “Oh wow- they have a lot of newspapers”	Easy to answer. But someone was confused by the difference between “current periodicals” and “newspapers & microfilms” menu items.
10	Research Guide, Tutorial	-- “Assume it will be in the Law Library Web site.” -- “Would use an encyclopedia for public policy” -- “Wouldn't want to cite this. Would prefer a book.”	-- The completion rate is the lowest. -- Participants didn’t know that there were research guides. -- Participants overlooked the link in navigation bar, which was in small font and near the bottom. -- Using “Search this site” could help one find the answer quickly. But few participants tried the search function. -- The specific guide is not collected in Law Library’s research guides, but in the Public Documents and Maps Department.
11	Music Library	-- “I don't know there is a music library website. Looking for directions. Oh here I am.” -- “To read all this?” (the introduction page with big chunk of text.) -- “It’s in front of my eyes!” (after 4’45’’) -- "I tend to ignore the flashy stuff" when shown the link on Music's page.	-- Again very low completion rate because of the banner-style link. -- Participants tended to be blind to banners. -- Left navigational bar is not for Music Library only, but for the whole site. Confusing. -- Participants had no patience to read long paragraphs. Make them

			scannable.
12	Interlibrary loan, reference desk	-- “I will go ‘requests.’ Guess I can fill the form and submit it. There may be a better way to do it. But this is easier.” -- “Assume request form is it.”	-- No forwarding page for information on what to do if book not found in the catalog. -- -- Many participants are not familiar with interlibrary loan. -- One participant was confused at library names in parenthesis after the Inter-Library Loan heading, taking it as on-campus interlibrary loan.
13	Specialist, reference, staff	-- “Always a quick look [at sidebar]. The search doesn't look great, but it works pretty well. There must be an easy way to do it.” -- “Not fully clear where to go. Maybe circulation. Guide to women from Research Guide. Would go and ask physically.” -- Used the homepage link to the Specialists page. Said "This is a pain. this page needs an alphabetical list for topics." (The page is too long to scroll). -- “Check ‘who to call for what’.”	-- Long page of specialists needs an alphabetical list or an index. -- The “Perkins Service Points” heading confused a participant. Categorization is not clear here. Should re-group the menu items under “Service Points,” “Contact Us,” and “Subject Collections.”
14	Biology Library, Science and Engineering Libraries	"Don’t' want to read all that (chunk of text)." “I thought it was a library at Duke. However, (it is not listed in ‘libraries@Duke’). I think I can try ‘search this site.’”	-- "More…" under “Libraries @ Duke” is not helpful. -- Better list all four science and engineering libraries in the navigation bar on the homepage. -- The links embedded in banner are hard to find.
15	Catalog, database	-- “I will just go to catalog. Title search. Not sure whether it is a title or not.” -- Confidence in “search”. Don’t want to waste time, looking for this. -- "Is that a specific library"? -- “This seems to be taking a long time all of a sudden”	-- The design of the task is faulty. Therefore completion rate is rather low. Participants were not clear what they were searching for. In real life, it won’t happen.
16	Database	-- “Not sure what “via Ovid” means.” -- “Choose ‘health’ [in subject list]. -- “Is psych a science or a social science? Top of page should explain criterion for that subject page”	-- Explanation not available for “Ovid” -- Participants always checked subject first. -- Alphabetical lists are hard to use to find a certain database. Some participants chose “search for a database.”
17	Database	-- "I'd not go to Perkins homepage, I'd go to Yahoo first" -- "I think I will try the "search for a database" again." -- “Notice the "Popular Database" menu item before.”	-- Some participants went through the list of full text databases, which is quite long. -- Most participants went to subject list first, or used search function.

18	E-journal	-- Try to find a box to type in [journal title] -- Slow download [of long list of e-journals]	-- No search tool for online journals. Only lists available.
19	Research guide	-- “Heard ‘guide’ before (task 10), but for specific information, use ‘search’.” -- “I’d go to Britannica first.” -- “Database, go by subject, literature maybe?” -- “I guess it is the research guide… I think it's a quickie thing.”	-- Participants didn’t embrace the idea of research guide. Preferred Britannica or MLA. -- “Research Guide” is listed near the bottom of the navigation bar on the homepage, and its font is too small.

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