This study tested the usability of course pages designed by the Instructional Services Department at UNC Libraries. Course pages are tailored web pages developed by a UNC librarian for a specific course to highlight resources and services available through the UNC Libraries for that course. Students can access these pages from a link within Blackboard, the course management system used by UNC. The study found that course pages are more effective in allowing students to access library resources than the library home page. The results also suggested a few changes that need to be made to optimize the usability of the course pages.

Headings:

Library Instructional Design
E-learning
Usability Study
Website Evaluation
Academic Libraries
Undergraduates
E-LEARNING, ONE COURSE AT A TIME:
A USABILITY STUDY OF THE UNC LIBRARY COURSE PAGES

by
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Introduction

Academic libraries have long moved away from the model where the library is only a physical place that patrons come for information resources. Academic libraries collect a wide range of electronic resources, which can be accessed by patrons from a wide range of locations, including their home computer. As the Internet has evolved, academic institutions and academic libraries have evolved beyond the walls of campus buildings. Many classes are taught completely or partially within a dynamic, virtual classroom. Librarians interact and serve patrons within this online world. For some students the only contact they will have with their college or university library will be when they walk through the virtual doors of the library’s website. These technological advances have changed the way that librarians provide access and guidance in the information seeking process.

One downside to this new model of information access is that academic librarians may not ever see the students they serve. The idea of asking a librarian seated behind a reference desk for assistance is foreign to many in this generation of students (Martell, 2007). Moreover, losing that face-to-face interaction with students has limited the reference librarians’ ability to point out additional resources that might also be useful for their assignments and research. Another challenge posed by a predominantly online information environment is the need to reduce the complexity of the myriad of electronic
resources available to students. Just as a large research library is intimidating to students who do not know where to go, the library’s website can be equally overwhelming. Over the years, the librarians at the University of North Carolina at Chapel Hill Libraries (UNC Libraries) have tried to minimize students’ anxiety by conducting usability tests and redesigning the website numerous times. Nevertheless, the sheer number of search tools, resources, and help options only serves to confuse and confound most students. In 2007, they decided to take a different approach. They took the specialized research guides the librarians had often done for individual courses and created a template that could be used across the libraries. This template was specifically designed to fit the content frame of Blackboard, the course management system used by UNC. The Library’s systems department built a MySQL database to host the web-based course pages and worked with the Teaching and Learning Division of the University’s Information Technology Services, the group that manages Blackboard, to automatically search the library’s database for a corresponding course page. If a library course page is available for a particular course, the page is automatically pulled in to Blackboard and replaces a generic “library” link on the side navigation bar that otherwise links to the library’s main website.

The course pages themselves are often built in collaboration with the teaching faculty, so they include links to specific journals, books, websites, and other information resources recommended by the faculty member, in addition to resources recommended by the library’s subject specialist. Typically, they highlight the library’s most relevant resources and services needed for specific research assignment(s) given in a particular course. Many of the pages include instructions on how to search for information in the
subject area, as well as examples of appropriate types of sources, such as academic
books or scientific journal articles. These pages also allow librarians to highlight locally
digitized primary source materials from the various digital archive collections at UNC
when relevant or related to course assignments.

The course pages have the following perceived benefits:

1. **Constant accessibility** – These pages are embedded into the course content
management system already used in the class. Therefore, students will also be
able to find this information easily without having to keep up with a handout or
remember the address of the page.

2. **Relevancy** – These pages provide information relevant to the class. Only
resources needed for the class are included in these pages and the descriptions of
resources are tailored to reflect how and why the students would use these
resources for the class. Therefore, students can easily identify which resource to
use for which topic.

3. **Access to help** – These pages provide links to the library’s reference services and
a subject librarian assigned to assist the class. Students that have problems can
contact a librarian without leaving the page. There are also links to library help
pages and relevant tutorials relating to information literacy topics needed to
complete the assignment (e.g. how to distinguish between scholarly and popular
journals).
Current anecdotal feedback from professors and students using these course pages suggests they are beneficial. Faculty members appreciate that the pages provide access to reliable and relevant resources for their class’ research assignments while students appreciate the convenience of having the sources linked through their Blackboard page and the fact that it often takes the guesswork out of which resources are the best to use. While generally positive, this anecdotal data has not allowed UNC Libraries to empirically assess the impact and usability of the course pages. The research question that ultimately drove this study was thus: Are the customized library course pages an effective and user-friendly tool for facilitating course-related undergraduate research at UNC? By posing a research question to students and testing their success using the course pages compared to students simply using the library’s website, this study attempts to provide qualitative evidence of the strengths and weaknesses of the course pages. It is hoped that the evidence will provide the library with the data needed to assess the value of these customized e-learning tools, as well as offer ways the pages could be improved to better serve the information needs of UNC students.

**Literature Review**

The typical undergraduate student starting college this year was three when the Internet became available to them. These students have grown up with the instant accessibility of information that is afforded by the Internet. Recently, there has been a
wealth of studies that have looked at the characteristics of this generation of undergraduates. In general, these students are very comfortable with the Internet and they are spending more and more time online. Despite their increased use of the Internet, many of these studies suggest that these students are not able to effectively navigate the broader world to find the scholarly information that they need (Head, 2007; Holliday & Li, 2004; Lombardo & Condic, 2001; Oblinger & Oblinger, 2005; Parker-Gibson, 2001). This study has been informed by literature that assesses how students conduct library research, how current undergraduate students interact with electronic information, and how usability tests can be used to assess library web sites.

The assumption that “everything” is accessible over the internet is a major part of the world of the current undergraduate. This access is also a major part of how they understand the world and how they learn (Oblinger & Oblinger, 2005). This accessibility has changed the students’ model of the information gathering and research process (Holliday & Li, 2004), but it has not increased their overall information gathering and evaluating skills. The library is no longer the focus of their “information universe,” that is now the Internet (Oblinger & Oblinger, 2005).

Because of the amount of time that undergraduate students spend using the Internet, it is easy to assume that they should be proficient at searching and finding information on the Internet. But recent studies have indicated the opposite. Holliday and Li’s 2004 qualitative study of undergraduate students at Utah State University looked at the thoughts that first year undergraduate students had while conducting their research (Holliday & Li, 2004). Holliday and Li conducted in-depth interviews with
students about their library use and the research processes they use to complete undergraduate coursework. They found that students were going to the Web as the primary place to do research because they felt more comfortable working in that space. Paradoxically, most of the students could not successfully complete their research tasks on the Web, even though they felt they were skilled at doing these tasks.

Students turn to the Web for information, but do they know where to go to find quality information for academic work? According a recent study conducted by Alison Head, the majority of current undergraduate students rely on their course readings, the library Web site, and aggregated research resources identified by professors and librarians to start the research process (Head, 2007). Head’s study also found that students that had a professor or librarian assist them to narrow down their resources showed a higher rate of success in their research (Head, 2007).

Lombardo and Condic’s 2001 study of undergraduate periodical use looked at the same issues as Holliday and Li’s study, but instead of interviewing students about the research process, they tested undergraduate students’ research ability by asking specific knowledge questions about the library resources. Despite the different methodology, they had similar findings to Holliday and Li. They found that undergraduate students are very familiar with the Internet, but they are not able to effectively find print or electronic journal articles. They also found that students expected library databases to work the same way as Google and they tended to accept the first full text articles found in their searches as the best article instead of exploring all the available literature (Lombardo & Condic, 2001).
Kracker and Pollio’s 2003 study looked at the self-reported library experiences of undergraduate students (Kracker & Pollio, 2003). Unlike the first two studies, their study did not show the research methods of these students, but instead focused on the general feelings and perceptions that students had about libraries upon entering their undergraduate institution. Overall the researchers found that current undergraduate students using a university library often feel “lost and at odds with a system [they did] not understand” (Kracker & Pollio, 2003).

Current undergraduate students are not the only people that have misconceptions about their research abilities. McGuinness’ 2006 study of faculty perceptions of undergraduate research behavior found that faculty members believe that because students know how to use the technology of the internet, they can learn the research skills over time through independent experience with the online library resources (McGuinness, 2006).

Chen’s 2000 study of image retrieval with Art History undergraduate students looked specifically at what characteristics go into successful online information gathering for these students, specifically correlations between experience, choice and the amount of keywords used when searching (Chen, 2001). As with other studies, he found that “most participants did not know how to describe their information needs, and they did not know how to extract keywords from the topic and description” (Chen, 2001).

Parker-Gibson’s 2001 study of library assignments looked specifically at what motivations and road blocks students encounter when completing assignments that are designed to teach them information gathering skills. Her study explores the factors that
cause anxiety for students completing these assignments. She found that library assignments that are designed by faculty members to introduce students to specific tools, like article databases, often lead to library anxiety because students are trying to learn the jargon of a new discipline through the unknown jargon of the library. She goes on to suggest more effective ways of addressing the same objective without increasing anxiety in undergraduate students (Parker-Gibson, 2001).

The other literature that informed this study was the literature on usability testing. This technique of assessing undergraduate students’ ability to access resources was chosen because this study was designed to test a specific library product. The ultimate goal of usability testing, according to Jeffrey Rubin, is to determine if products are easy to learn and use and are satisfying for their users (Rubin, 1994). Academic libraries have a strong tradition of incorporating usability testing into the development of various online resources, from entire library web sites (Battleson, Booth, & Weintrop, 2001; George, 2005; Turnbow, Kasianovitz, Snyder, Gilbert, & Yamamoto, 2005; VandeCreek, 2005) to online library tutorials (Bury & Oud, 2005). Usability tests provide specific data about the usability of a library page or tool and are frequently credited with identifying unexpected problems for users. Usability testing is an essential part of a user-centered design of online resources and the development process in academic libraries. Research also indicates that usability testing of e-learning tools in the early stages of development is essential, as unexpected usability problems can ultimately interfere with the instructional effectiveness of these tools (Crowther, Keller, & Waddoups, 2004). The literature confirms the effectiveness and importance of usability testing in academic libraries and for a variety of Web-based resources.
Course Page Design

The course pages have been designed to provide information and links to suggested resources and links to library tools and resources in one concise page that does not stretch for more than the size of two screens. The course pages have a three column design. The center column, which is the widest of the three columns, has suggested library resources for the course. These resources can include article databases, the library catalog, links to selected subject searches, links to relevant web sites, links to information about print resources, and any other resource that they librarian considers important for the students to use for this course. Because of the size of the page, the librarian must be discriminating about the amount resources included in this section. This resource list is not meant to be an exhaustive list of all the possible available resources that could be used in the class, but more of a general starting point. These resources include links back to the library web site for those students that need more additional information sources.

The left-hand column provides librarian contact information, including contact information for subject specialists and links to live library help, links to citation tools at the library, and, if necessary for the course, borrowing information (Interlibrary Loan services, stack guides, etc.). The right-hand column provides links to help pages designed by UNC Libraries to assist students with specific information literacy needs. This column also includes links to other library and campus resources that the students might like to access while researching for the class. Some examples of these links are the UNC Writing Center, general subject guides, and relevant professional organizations.
Because the course pages are course specific, there was not one page that could be used for the usability study. Instead, a test page (see Figure 1), that could be used for a class doing the assignment in the usability study, was used. Like the selection of resources for the course pages, the selection of resources was based on the objectives of the assignment in the usability study.

Figure 1. Course Page used for usability study. Available at http://www.lib.unc.edu/coursepages/test/S08_engl102.html
Methodology

Course pages currently being used in UNC courses are designed primarily for undergraduates students enrolled in specific courses from a variety of different disciplines. To study the effectiveness and usability of the pages for a population not enrolled in a particular course or department, a course was selected that did not require prior subject knowledge of the participants. At UNC, all undergraduate students take or place out of, based on their SAT scores, a series of writing courses offered through the English Department. These courses follow a “writing across the curriculum” format and are designed to give all students a solid introduction to different composition styles. Since many of the participants in the study could have these courses, one of these courses, English 102, was chosen as the course the usability test course page would be based on.

The English 102 writing class focuses on writing in different academic disciplines and the first unit of this course is writing in the sciences. A typical assignment for this unit involves research on a medical topic or a medical condition. Although the subject area is health science, the content of the assignment does not require any prior knowledge of health science to complete. After the course and assignment were defined, the test course page was created in the same way the course pages for actual courses are created. The resources, library support services, and external links needed for this course and the course assignment were identified and added to the page. Descriptions of each resource were written so they told the user what
the sources was and how it could be used for this course and assignment. Links out from
the course page linked in the same way as the current English 102 course page – links
opened in a new window that was smaller than the window with the course page. That
window was used again when another link was clicked on. The only diversion from a
real course page was the live link to the reference desk was changed to direct the
participants to a test site instead of the live chat service.

Once the student agreed to participate in the test, they were told they should
approach the research as if they were completing the science unit in an English 102
course. Their assignment for the science unit was to write an annotated bibliography of
articles about Mononucleosis. For the participants that did not complete English 102
because they placed out of the English writing program, the overall goals of the English
102 course were explained so they understood the context of this assignment. The five
tasks that they had to complete during the test were taken from common tasks needed to
complete the assignment.

Once participants were recruited, they set up an interview time to come into
room 246 in Davis Library, the main library of UNC Libraries, to complete the usability
test. This room has a computer equipped with Morae, the usability software used in this
study. This software recorded the screen activity and audio commentary of the
participants while they completed the test.

At the time of the individual appointment, each participant met with the principal
investigator and was provided with a consent form which he or she was asked to read
carefully. After the participants signed the consent form confirming their consent to be
in the study, the principal investigator provided the participant with a demographic questionnaire that asked them their major, their year in their undergraduate degree, what English writing courses they had taken, whether they had taken a research methods class as part of their degree, and the frequency that they used the library home page to complete their assignments. These questions were asked to gauge the library research knowledge participants began the usability test with and the amount of experience the participant already had with using online library resources. The demographic questionnaires were coded with a number that was used to refer to all data collected about that participant.

After the demographic questionnaire had been completed, the principal investigator opened the library web page randomly assigned to the participant to complete the usability test. Half the participants (six) completed the usability test using the library home page, the web page that students would have access to in Blackboard if they were enrolled in a class at UNC that does not have a course page. The other half of the participants (six) completed the usability test with the course page created for the assignment in the usability test. After the page was opened, the principal investigator started the screen and audio recording and turned the computer over to the participant. She then gave the participant a sheet with the five tasks to complete as part of the usability study.

The tasks for the two groups were the same, but the members of the group looking at the library home page were given a list of the suggested resources found on the usability test course page. The principal investigator explained to participants that
they needed to complete this assignment as they would in an English 102 class. She went on to explain the course and the assignment, so that participants would be able to understand their objectives for the usability test. The participants were able to ask the principal investigator questions to clarify the topic, but were instructed not to ask questions about what library resources they could use or where they should go to find the resources. Participants were also encouraged to verbalize why they searched or clicked on certain links to complete the assignment. Participants spent between ten and twenty minutes completing the usability test depending on their familiarity with current library resources and library research.

The tasks in the usability test were as follows:

Task 1 – Finding Background Information

For students starting research in an area that they are unfamiliar with librarians typically point them to background resources where they can find more information about their topic, find key terms about their topic, and find key issues within their topic. These sources should cover topics broadly, highlight important terms and issues within the topic, and link or refer to sources that can be used for further research. Two information resources, MedlinePlus and Merck Online Manuals, were identified as good background research tools, but participants were not discouraged from using other library resources.

The usability test course page linked to the two background research resources, MedlinePlus and Merck Online Manuals; the participants using the library home page
were given the name of the two background information resources. MedlinePlus is a publicly available website listed in the library’s electronic research tools. Merck Online Manuals are e-books available through the UNC Libraries.

Participants that successfully completed this task found an information source that provided general information about mononucleosis. Participants that successfully completed this task using the suggested resources, found information on mononucleosis in MedlinePlus or Merck Online Manuals. The intended way of accessing these resources from the course pages is through the link on the usability test course page and then through the library resource description page. The intended way of accessing these resources from the library home page is through the library catalog (Merck Online Manuals) or through the list of online library research tools (MedlinePlus).

**Task 2 – Find an article**

Once students have a good understanding of their topic and the important issues and terms within their topic, they moved onto finding more in-depth information sources. These sources might include books, articles, and data. These resources can be found through the library catalog or a variety of indexes and databases. This task tests each participant’s ability to use the library web page assigned to them to find a scholarly article. For this task, three article databases, Academic Search Premier, Health Source, and PsycInfo were suggested as good resources to use. Participants were instructed that they needed to find one article that they could use for this assignment to complete this task.
To successfully complete this task, participants needed to find one article about mononucleosis. To complete this task with the suggested resources, participants needed to find this article in Academic Search Premier, Health Source, or PsycInfo. To complete this task by the intended methods, participants using the usability test course page needed to click on and the follow the links to one of the suggested article databases and search that database for articles on “mononucleosis” and participants using the library home page needed to go into the list of library e-research tools then navigate to the suggested article database and search for “mononucleosis” in the database.

**Task 3 – Help distinguishing whether an article is scholarly**

When undergraduate students are finding information sources for assignments, they need to evaluate the quality of the information they are receiving and the appropriateness of the information for the research they are conducting. This task focused on the participant finding help pages on the library website that indicate the scholarly nature of the article that they found. Participants that successfully completed this task would find a library help page or a library tutorial about distinguishing between different types of journals.

To successfully complete this task, participants had to follow a link to one of the library’s help pages that explain the difference between scholarly articles and popular articles or tips on distinguishing between different types of journals. Participants completing the test with the course page could click on the link called “distinguish different types of journals” or “conduct library research.” Participants using the library home page could click on “how do I …?” then when they get to the “how do I … ?”
page, click on “distinguish different types of journals.” They could also follow the link “tutorials” on the library home page and then follow the link to either the “Introduction to library research” tutorial or “Evaluating Information” tutorial.

**Task 4 – Citing articles**

For undergraduate students, an important part of the research process is to make sure that they are acknowledging their information sources. Like professional researchers, they do this by citing the information source using citing standards set forth from various organizations. This task tests the participant’s ability to find information that would let them cite a scholarly article in a particular citation style.

To successfully complete this task, participants needed to find the citing information tutorial, the citing information help page, or the citation builder. Participants completing the task with the usability test course page could click on the link to the citation help page, the link to citation tutorial, or the link to the citation builder. Participants completing this task with the library home page could click on the link to the citation builder from the library homepage or they could click on the “How do I … ?” link to the help pages and then click on “cite resources,” or they could click on the “tutorials” link and then the “citing information” tutorial.

**Task 5 – Contacting a librarian**

For students coming into the library, it is relatively easy to see that there are librarians and library staff members available to help them with finding resources and conducting research. In the online library, librarians have a virtual presence through
virtual chat services and contact information. This task measured the ability of participants to contact a librarian using the assigned library web page.

To successfully complete the task participants needed to click on a link that would allow them to contact a librarian. For participants completing the test using the usability test course page, they could click on the “Chat with us now” button, click on the link to email one of the librarians, or click on the “ask a librarian” link in the footer of the page. For participants completing the test using the library home page could click on the “need help?” or “ask a librarian” links.

When the test was complete, the participants were asked to complete a short follow up questionnaire to explain their impressions and reactions to the pages they used for the usability test. This questionnaire consists of six questions meant to elicit qualitative data about the test they just completed.

After participants completed their involvement with the study, the principle investigator reviewed and analyzed each recording and follow-up questionnaire to analyze whether participants were able to complete the assigned task and what specific problems they encountered in the completion of these tasks. In this analysis successful completion of the tasks was measured. Each task was coded as 0=could not successfully complete tasks, 1=succesfully completed task as intended, 2=succesfully completed task, not as intended, but using suggested resources, or 3=succesfully completed task, not as intended, not using suggested resources. Tasks that were coded as “0” were tasks where the participant had said that he or she could not complete it. Tasks coded as “1,” were tasks where the participant used the available tools in the library website and found
the correct information source to complete the task successfully and as the task was intended to be completed using that page. Tasks coded as “2” were ones that were successfully used the suggested information tools, but found them through library tools that are not designed to take the student to that resource and could not be relied on to work in the future. Tasks coded as “3” were tasks that were successfully completed, but the participants completing the tasks didn’t use the suggested resources to complete the tasks.

General findings

Each of the participants had varying levels of experience using the online library: 25% had used the library home page a couple of times, 50% had used the library home page for some of their assignments, and 25% had used the library home page for most of their assignments. The twelve participants came from a variety of fields, including business administration, public policy & political science, public policy analysis, economics, English education – middle grades, biochemistry, political science, chemistry, business, biology, psychology & Spanish, and international studies. There was also one participant who had not yet declared a major. Participants were also at different points in their undergraduate programs (four were first years, three were sophomores, three were juniors, and two were seniors). There was also a range of experience with classes where the participants would most likely receive formal library instruction, the classes in the English writing series (English 100, 101, and 102) and
subject specific research methods courses. Three of the participants had completed a class in research methods, five of the participants had completed English 101, and seven of the participants had completed or were enrolled in English 102. None of the participants had used a course page in a class prior to this test.

In the usability test, most participants were able to complete all the assigned tasks using their assigned library page. Participants using the usability test course page had a higher rate of success than participants using the library home page. Of the twelve participants, five participants of the six using the usability course page were able to complete all the tasks and three participants of the six participants using the library home page were able to complete all the tasks. Of the remaining participants, there was one participant using the usability course page who completed four of the five tasks, one participant using the library home page completed three of the five tasks, and two participants using the library home page that completed four of the five tasks (see figure 2 below).

![Successful Task Completion](image)

*Figure 2. Number of participants and the number of successfully completed tasks using their assigned library webpage.*
Participants that completed the study using the course pages also had a higher level of success in completing the tasks using the intended resources (task completion coded as 1 or 2). Of the participants using the course pages, two participants completed all the tasks using the suggested resources, three completed four of the five tasks using the suggested resources, and one participant completed three of the tasks using the suggested resources. Of the participants using the library home page, only one participant was able to complete all the tasks with the suggested resources, one participant completed four of the tasks using suggested resources, and four of the six participants completed three of the five tasks using the suggested resources.

Figure 3. Number of participants and the number of successfully completed tasks using suggested resources.
Findings for each task

Task 1 – Finding background information

Finding background information using the suggested resources proved to be the most difficult task for the participants to complete with both the library home page and the course pages, but for different reasons. Of the participants completing the study using the usability course page, all but one were able to eventually get into one of the suggested resources for this task, MedlinePlus and Merck Online Manuals, but only two of the participants linked to the resources through the intended path. Of the participants completing the test with the library homepage, only five were able to complete the task and only two were able to complete the task with the suggested resources. None of the participants using the library home page were able to complete the task through the intended path.

For the group completing the test with the usability test course page, some common patterns emerged. First, the participants scanned the course page to get an idea of what was on the page. None of these participants had used a course page in a class before, so they were not familiar with the layout. After scanning the page, four of the participants saw the two links for MedlinePlus and Merck Online and clicked on one of these resources. These links directed the participants to the description of the resources within the UNC libraries homepage. Upon reaching this page, most of the participants were unsure about what do next. The description page includes a link into the resource itself, subject headings for the resource, and links back to the list of e-research tools available at the library. Two of the participants clicked on one of the subject headings
for the resource, and then clicked on the resource on that page to go into it; two of the participants clicked on the general links to the e-research tools and then navigated through them to get back to the resource. When participants were asked to explain their process, they expressed confusion about why they could not get into the resource when they clicked on the link from the course page.

The two participants that did not click on the links to the background information sources scanned the page, saw the library catalog search box at the bottom of the screen, and did a search for “mononucleosis.” Both said they choose to do this because they were looking for a search box on the course page. The first participant found some books that he could use for background research, but not anything that he could use online. Since he did not have success with the catalog, he went back to the course page to see what else was available. At this point he saw the background resource links and clicked on MedlinePlus. When he got to the library description page, he saw there was a search box in the header. He typed mononucleosis in this box and searched the library catalog again. When he realized this, he went back to the database description again and clicked on the link to go into MedlinePlus and entered the database. Like the other participants that did not know where to click when they got the resource description page. This participant thought that once he clicked on the link to the resource from the course page, he was in the resource and assumed that the search box on the resource description page should search the described resource.

The next participant that used the library search box searched for “mononucleosis.” He found a book that he said he could use, but he continued looking
because he wanted to find a book that was more specific to a particular aspect of mononucleosis. When he was not successful in finding more specific resources, he went back to the course page and read over the descriptions for the background information sources suggested on the course page. He thought both of them would work, but he said he would keep searching the catalog because he wanted to have a print resource to use for background information.

The participants using the library home page did not seem to know where to go on the library home page to find the suggested background information sources. Even though all the participants had used the library home page for library research before, each participant spent time at the beginning of the test clicking around different links on the homepage trying to find some place to go to find their background information. Most participants searched for the suggested resources and for “mononucleosis” until they hit on one that worked for them. Many of the participants had similar techniques, but went about it in a slightly different order.

Three of the six participants began their search by trying to use the search boxes on the library home page to search for the suggested resources. Of these three participants, two started by looking for the two suggested background information resources in the library’s e-journal finder. The e-journal finder does not index either of these resources because they are not journals, so these searches failed. At this point in their searching, one of the participants abandoned finding the suggested resources and did a search in the library catalog for “mononucleosis.” He found a few books that he thought he could use to get background information on mononucleosis. When asked
why he was searching the catalog, he said that he usually found background information through the UNC libraries online catalog.

The other participant that began by looking for the suggested background information resources in the e-journal finder also went to the catalog after the e-journal search failed. This participant decided to look for MedlinePlus in the catalog and successfully found the library catalog record for MedlinePlus. She was then able to link into the resource and find the background information that MedlinePlus has on mononucleosis. While this method worked for MedlinePlus, not all online research tools have a record in the catalog, so it cannot be relied on as the only method to find electronic research tools.

The third participant that started her search by searching for the suggested resources first went to the UNC Health Science Library home page. When she could not find a link to MedlinePlus from their home page, she went back to the main library home page and used the “site search” feature of the library home page. She put “MedlinePlus” into this search and was able to link to the resource.

The other three participants took some time clicking around the library home page before using the various search engines to search for their topic. Mostly they did not try to for search the suggested resources at all. The first participant started his search by searching for “mononucleosis” in the library catalog. He found some books that he thought would work for this topic and ended his search there. When asked why he did not use the suggested background information sources, he said he usually uses the
information sources in the catalog, even if there are suggested sources from the instructor for research.

The next participant also did try to find the suggested information sources. She clicked on several links on the home page including the list of the library’s electronic research tools, but did not find anything that she thought would lead her to the suggested resources. After thirty-seven seconds, she abandoned trying to find the suggested sources and searched the library catalog for “mononucleosis.” She found one that she thought would work and finished the task.

The last participant dove right into trying to find resources about mononucleosis. First, he tried to find a journal called “mononucleosis.” When asked why he was searching for this, he said if he could find a journal called “mononucleosis” it would have a lot of information on the topic. He was not able to find a journal, so he went back to the library home page and searched the catalog and found some books that would work, but said he wanted to keep searching so he could find something online. He went to the articles search on the library home page and searched for “mononucleosis” and found some articles, but he thought they were too specific. He then tried to find the suggested resources. Like two of the other participants, he tried to search for “MedlinePlus” and “Merck Online Manuals” in the e-journal finder and did not find a link to these resources. After not finding the suggested resources, he went back to the library home page. He then used the e-books search on the library home page to find an online book that he could use for background research.
Task 2 – Find an article

Finding articles proved easier for participants in both groups. Several of the participants remarked that this was what they were usually looking for when they came to the library web site. All participants were able to successfully find one article on mononucleosis that could be used for an English 102 assignment. Four of the six participants that used the usability test course page were able to complete the task using the suggested resources in the intended manner. All of the participants using the library home page were able to find articles using the suggested resources, but only one of the participants was able to find these resources by the intended methods.

Five of the six participants completing this task with the usability course page were able to find the links to the article databases in the center of the usability course page. After clicking on the link for one of the databases, these participants had the same problems with where to click on the database description page that they had with the first task. Four of the participants were able to navigate back to the database they were trying to link to, but one ended up in a different database which was not as appropriate for finding scholarly articles as the suggested article databases.

The one participant who used the usability course page and did not click on the links for the article databases used the link to MedlinePlus. He thought that would be a good place to get articles because when he read the description of the resource he noticed that MedlinePlus was connected to the National Institute of Health. Since MedlinePlus links to some journal articles, he was able to find a scholarly article through this resource. While this method worked for this task, MedlinePlus is not intended to be
a scholarly article database and if this participant was looking for multiple articles, he would have had to use another method.

All the participants using the library home page were able to complete this task, but only two were able to complete the task by going to the list of e-research tools and selecting the database. The other participants had a variety of ways of accessing the databases. One participant clicked on the article search on the library home page and put in “mononucleosis.” She was able to find articles within the suggested resources because these databases searched in the UNC article search are included in this search, but she did not know that she was searching these databases when she searched for these articles.

The other three participants tried to find the article databases through the e-journal finder. One of these participants clicked on the e-journal finder and searched for the “PsycInfo.” When the search failed, she went back to the e-journal page and noticed the link to PsycInfo in our quick article search and clicked on that. The other two participants that went to e-journal finder to “find the list of databases,” also saw the quick article search link box and clicked on Academic Search Premier in that box to link into the database and begin her search. These two participants were only able to link into the databases this way because these databases are commonly used by undergraduates and appear in the libraries quick links menus. If less common databases were recommended for them to use, they would not be able to find them in this way and they may have similar problems to the problems they were having with task one.
**Task 3 through 5 – Finding help**

The rest of the tasks all related to getting help from the library in various ways and for different reasons. Task three, determining whether an article was scholarly proved easier for the participants using the course page than the participants using the library home page. Five of the six participants using the course page were able to successfully link to a library help page that gave them information about determining whether an article was scholarly. The one participant that was not able to link to the help pages wanted to see a link on the course page that used the word “scholar” or “scholarly.”

From the group completing the test with the library home page, only three of the participants were able to link to a help page that gave them information about distinguishing a scholarly article. Of the three participants that were able to find the help pages relating to distinguishing scholarly articles from popular article only two of them were able to find a link on the library home page that lead to this information. They both clicked on “how do I …?” and then found the appropriate page. The other participant found the help page by using the library site search. She used this search because she had no idea where on the library home page she could search for this information. The three participants that could not find this information expressed they did not even know where to start to find this information of this kind.

With task four, finding citation information, all participants successfully completed the task. Several of the participants commented that this was something that they have used the library home page to do before and they knew what they were
looking for. Of the course page group, five of the six participants found the help links to the citation tools at UNC on the course page and linked directly into the tool. The one participant that did not complete the task that way chose to contact the librarian directly to help him through the citation process. He indicated that he would do this because he found citations confusing and he knew the librarians would be there to help with citations. Of the group completing the test with the library home page, five of the six participants using the library home page clicked on the help pages for citing resources. The one participant that did not click on the citing help pages found the same page by going to another library page that she was more familiar with and linked to the resource in that way.

With task five, all participants successfully completed the task. Participants in both groups saw the contact information for the librarians and the link to chat with a librarian. The decision about which link to click on (email link or chat link) was determined based on the preferred contact method of the participant. For example, two of the participants (one who completed the test with the course page and one who completed the test with the library home page) said they would prefer to go to the library reference desk instead of chatting or emailing a librarian. The only usability issues that arose were that three of the participants said they would email the librarian instead of chatting because they did not want to load any chat software onto their computer. Since the chat service used by UNC does not install or require any software download, participants without chat software would still be able to chat with a librarian, but this was not clear to these participants.
Discussion

These findings clearly show that the course specific library pages provide better access to library resources than the library home page for students doing research in a specific class. Students using the course pages benefitted from the course pages, especially when it came to finding specific suggested resources and finding specific help pages for a topic that the participants had not looked for before. Having specific resources linked from the course page proved easier for students to access then having to navigate through the library home page to find these resources. However, there were some specific usability issues that did arise with the course pages that need to be addressed.

The largest problem that arose for participants completing the test using the course pages was how the course pages link to library resources. All the resources linked from the course page take the student to the library description page, and then the student has to click again from this page to go into the actual library resource. The reason the course pages are designed in this way is so that if a URL location for the database changes, the students on the course page will not have a broken link. This linking technique was a major stumbling block for the participants using the course page. Since the completion of these tests, the library has changed this practice and now when a student clicks on a link to a library resource database they are forward directly into the database unless there are special instructions for the database. The database description screen is also being updated to clearly indicate that the student is not in the
database when they are in this screen and they have to click the “go to” link to get into the actual resource.

Another usability issue that arose concerned the search boxes on the usability test course page and the library home page. Participants used the search boxes on the page without evaluating what they were searching and whether the search box would be appropriate for their topic. When librarians are creating course pages they should be aware of this practice and ensure that only search boxes that are necessary for the course are included on the page. Since students completing this assignment did not need to search the library catalog to find background information or scholarly articles, the search box should have been taken off this page. If the designer still wanted to link to the library catalog, but did not want the student to search it first, he or she should create a link to the library catalog instead of putting the search box in this page.

While contacting a librarian was clear to the participants using the course pages, some of the participants expressed concern about not being able to use the chat service because they did not have a chat program on their computer. This issue can be addressed in a couple of ways. Some disclaimer about not having to download software or get an ID could be added under the chat widget so students that do not have a chat provider know they can use this service. Another solution might be to put the chat window within the course page itself so the students do not have to go to another page to start using it.

Finally, designers need to be conscious of all the text used on the course page. Several participants commented on the amount of text on the course page. One
commented that he thought there was a lot of text, but he did not think we should cut any out because it was all seemed important to know. Designers need to find a good balance between too much and too little information for the different resources. Designers should be including just enough to describe the resource and how the resource could be used for the class. Keeping descriptions short and relevant ensures that students can quickly read the descriptions and make a decision about which resource to use.

In addition to keeping descriptions short, designers need to make sure they are choosing terminology that matches the research terminology used in the classroom. A few participants were not able to recognize that the link “distinguishing between different types of journals” would give them information about determining whether an article was scholarly. The link should be changed to on the course pages to reflect that it leads to a place that can help students answer that question.

**Conclusion**

The purpose of this study was to test the effectiveness and the usability of the UNC library course pages compared to the UNC library home page. This study found that the course pages are generally useable and that they give students easy access to specific resources needed for a particular course. Participants liked the design and layout of the pages and several expressed that they wanted to have a course page for the
classes they were currently enrolled in. They thought it was easier to find resources using the course page than the library home page.

Despite the overall benefits of the course pages, some minor changes need to be implemented into the future design. First, links that connects to a library resource need to link directly to that resource whenever possible. If that is not possible, the intermediary page needs to make it clear that the user is not in the resource and make it clear how the user can get into the library resource from the intermediary page. Second, course page creators need to be cautious of what search boxes they add to the page because students gravitate to these search boxes without evaluating what they are searching. Lastly, text used for the help links on the page need to match the terminology that students are using in their class. Using the same terminology will allow students to easily recognize which link will provide the resources to complete their assignment.

This study marks an important first step in the evaluation of the effectiveness of the UNC course pages. This study focused primarily on the usability of the course pages in accessing the library resources and showed that students can access library resources through course pages in a more effective way than they can through the library home page. But, this is only one aspect of the usability of the course page that needs to be studied. These course pages are designed to facilitate better overall research for specific courses at UNC, so the next step is to study the effectiveness and usability of the course pages within an actual course.
References


