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# **Improving Student Success: Researching How Students Use Electronic Library Resources**

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Ethnographic and Qualitative Methods  
on-campus class 2010  
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Research Conducted for:  
the UNT Libraries

## Executive Summary

- There is a relationship between experience and age/class level. Upper level undergraduate students and graduate students have higher perceived experience and skills for conducting online research than lower level undergraduate students.
- The majority of students feel they have adequate resources for conducting online research.
- Students prefer library instruction that is interactive and relevant to their field.
- Many students are unaware of online tutorials, but would prefer they were in video format.
- Many students are unaware of department-specific librarians and the assistance they can offer.
- The major barrier to using UNT electronic resources is complexity and not being user-friendly.
- The major strength and reason for using UNT electronic resources is providing free full text access to articles.
- A majority of students (80%), mainly undergraduate students, start their online research process with websites other than the UNT library website.
- Lack of knowledge and familiarity with the website, specifically finding different resources through different databases, are the main reasons directing students to use other websites.
- Due to the perceived complicated web design of UNT library website, users find it difficult to access research material required for their course work or research.
- After getting lost in the *maze* of UNT library's electronic resources, users expect prompt and professional help to reach the research material before disregarding it altogether.
- Library users prefer to approach instructors, peers, and librarians for course specific help.
- The UNT library website is confusing and help is hard to find.
- Library users suggest a more library user-friendly design.
- Library users suggest an improved and integrated search tool.

In 2005, The University of Rochester Libraries pioneered the use of ethnographic methods to improve library services in a groundbreaking study. Since then, similar studies have been conducted in universities throughout the United States.

Unlike other research strategies, ethnographic methods provide researchers with an in-depth look at students' knowledge, attitude and behaviors through observations, one-on-one interviews, focus groups, and other techniques such as photo surveys, mapping diaries, and design workshops. According to Susan Gibbons, who pioneered the use of ethnographic methods in libraries at the University of Rochester in 2003, "The qualitative data that RCL has collected through its three work-practice studies has proven to be tremendously powerful in ways that the quantitative data (e.g., ARL statistics) have not. Significant changes have been implemented to RCL's services, facilities, and digital presence to address deficiencies that the quantitative data could not adequately articulate" (Gibbons 2009).

The University of North Texas (UNT) Libraries has partnered with the Department of Anthropology at UNT to conduct ethnographic research of how UNT students use the electronic library services.

**Research Goal:** To investigate how students at the University of North Texas use electronic library services.

**Major Research Questions:**

1. To create a profile of the typical library user, including student career, external obligations, work style, and technology use.
2. To investigate students' knowledge of and learning about electronic library services.
3. To investigate students' behaviors regarding electronic library services.
4. To investigate students' needs regarding electronic library services.
5. To investigate students' preferences regarding electronic library services.

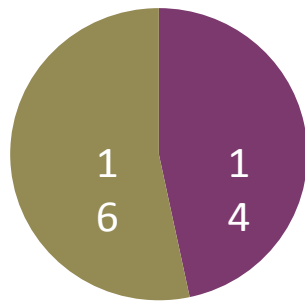
**Methodology and Sample**

The research population for this project is UNT students. We refer to this research population as *library users* (as these students are using the UNT Libraries electronic resources), *students*, and *participants* interchangeably in this report. The sample was selected using convenience sampling. Data was collected from 10 observations of students conducting online research in their natural environment, 20 semi-structured interviews, and 5 focus groups. During each of

these data collection strategies, library users were asked to comment on the UNT electronic resources, as well as discuss other online research tools/websites they might use.

The interview and observation sample population was well represented by age and gender. The sample includes 14 people who were 26 years of age or younger and 16 people who were older than 26 years. The sample also includes 18 female library users and 12 male library users.

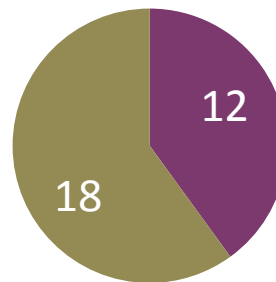
**Figure 1: Age**



number of students

■ Over 26  
■ 26 and younger

**Figure 2: Gender**

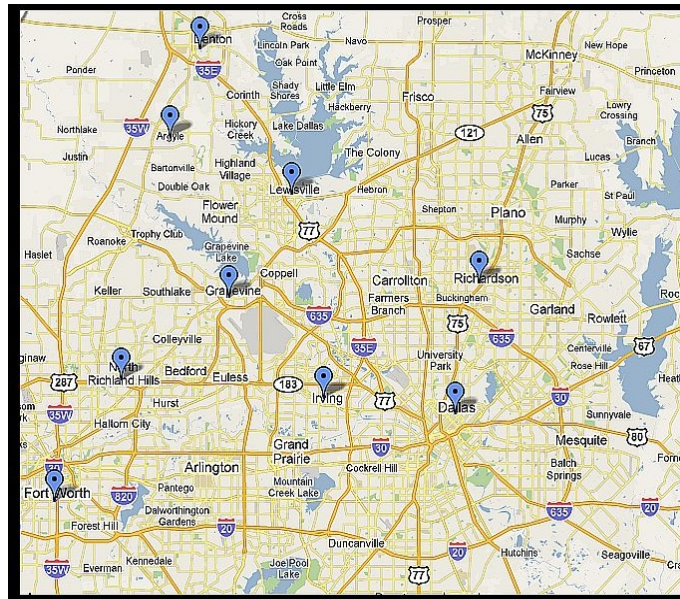


■ Male ■ Female

The sample of observations and interviews includes 12 graduate students and 18 undergraduate students. The undergraduate students were then divided into categories of upper level (junior or seniors) students (n= 15) or lower level (freshman or sophomore) students (n=3). The sample includes mostly upper level students, which is representative of UNT total student population. We also considered whether library users were taking full course loads or not. A full course load for a graduate student is 9 hours or more, while a full course load for an undergraduate student is 12 hours or more. For graduate students, 8 were fulltime and 3 were part-time. For undergraduate students, 11 were fulltime and 7 were part-time.

We collected data on the library users' geographic profile to understand where they are from, as well as where they are currently living. We found that most of our participants are from Texas (n=22), 8 were international students, and 3 said they were from various states and other areas. When asked where they live now, 22 students identified as living in Denton and the other 8 students live around the Dallas/Fort Worth region.

**Figure 3: Current City**



The majority of our sample speak English as a first language (n=22). The 8 international students speak English as a second language. The primary languages of these international students include Spanish (n=3), Arabic (n=2), Romanian (n=1), South Indian Tengu (n=1), and Vietnamese (n=1).

There is a diverse sample of colleges represented in the study. We had library users from the College of Arts & Sciences (n=10), Public Affairs & Community Service (n=7), College of Business (n=6), College of Music (n=3) and one student each from the Colleges of Visual Art Design, Journalism and Information.

### **Profile of Library users**

We collected data on library users that might have an impact on their ability to conduct online research. These variables were considered in the overall analysis and are noted throughout the report when significant.

#### **Disabilities that impact the use of library services**

Among the studied population of library users only 3 out of 24 reported having disabilities that impacted their ability to conduct online research. The reported disabilities included: ADHD, Dyslexia, vision problems, and muscle soreness.

#### **Family obligations**

Library users were asked about their family obligations to understand how such obligations might impact their ability to conduct online research. Ten library users had family obligations and 17 did not have any family obligations.

### Work obligations

Library users were asked about their work obligations to understand how such obligations might impact their ability to conduct online research. Within the sample studied, 9 did not have any work obligations, 12 worked less than 20 hours a week, and 9 worked more than 20 hours a week.

### Resources for using library services

Out of 20 participants asked about having adequate resources for conducting online research, 15 reported they had adequate resources and 5 reported that they did not have adequate resources.

Laptops were the most common resource for conducting research (n=21), followed by PC desktops (n=14). Printers were common (n=17), and 2 people used Smartphones. A significant number of students use UNT's computers and printers (n=12).

### Preferred resources to conduct online research

Library users in this study preferred to use laptops (n=6), desktops (n=4), Kindles (n=2), and iPads (n=1) when conducting research through electronic resources. Other preferred devices mentioned are speakers, webcams, iMac, iPhones, iPods, and CD Burners. Electronic textbooks were also mentioned as a preferred resource.

### Browser usage

Internet Explorer was to be the most commonly used browser (n=8), followed by Firefox (n=5), Chrome (n=4) and Safari (n=3).

Library users discussed the pros of using Internet Explorer. These include Internet Explorer's long history of use, people are familiarized with its use, it is tightly integrated with windows and its programs, participants feel comfortable when using it, and it has become a standard at work and study places. The one con mentioned for this browser is that it gets stuck more than other ones. Many of the library users who use Internet Explorer mentioned that they would prefer to use a different browser when conducting research through UNT electronic resources: however, browsers like Firefox, Chrome and Safari do not seem to be compatible with UNT library website.

### Time of the day for conducting online research

Among all library users 6 preferred to conduct online research at night, 5 preferred to do it in the morning, 4 in the afternoons, 3 all day long, 2 in the evening, and only 1 at midday.

### Preferred environment for conducting online research

The most preferred environment for doing online research was home (n=11), followed by UNT's general access labs (n=7), work offices (n=7), home offices (n=4), school libraries (n=2), living rooms (n=2), dorms (n=1), public libraries (n=1), and coffee shops (n=1).

### Experience and skill conducting online research

We asked students to self-rate their level of experience and level of skill conducting online research. Out of 20 students asked, 10 reported having high experience and 10 reported having low experience. Interestingly, 16 students reported have a high level of skill and 4 reported

having a low level of skill. When looking at both experience and skills across gender, age and class level, we noted that experience and skills were equally distributed among library users. There was also a notable relationship between age, experience, and skill (the older students have more experience and skill) as well as a relationship between class level, experience, and skill (the higher level students have more experience and skill).

## **Results and Analysis**

### **Knowledge of UNT Electronic Resources**

At UNT, students have available to them a wide variety of electronic resources. However, through the course of our interviews, we learned that many students were not aware of particular resources. In our interviews, we asked 20 students if they knew about particular UNT electronic resources, including: E-Journals, E-Books, full text resources, the Interlibrary Loan System, search databases, and thesis and dissertation databases. We were also able to determine knowledge levels across a variety of demographic categories such as class level, college, age, and gender. From the data we collected, we were able to draw interesting conclusions regarding students' knowledge of UNT electronic resources. We hope that this data will be useful in determining which student populations need more information regarding the electronic resources they have access to through the UNT library.

We have constructed the following table summarizing our data regarding students' knowledge:

**Figure 4: Knowledge of Online Electronic Resources**

			Online Electronic Resources					
			E-Books	E-Journals	Full Text	ILL	Search Databases	Thesis and Dissertation Databases
<b>% of Students Aware of the Resource</b>	<b>Class Level</b>	<b>All</b>	75	85	75	65	65	30
		<b>Undergrad</b>	77	77	69	46	54	8
		<b>Lower Level Undergrad</b>	33	33	67	67	33	0
		<b>Upper Level Undergrad</b>	90	90	60	50	60	20
		<b>Graduate</b>	71	100	86	100	86	71
		<b>Masters</b>	50	100	100	100	100	50
		<b>Doctorate</b>	80	100	80	100	80	80

	<b>College</b>	<b>CAS</b>	57	86	57	57	71	29
		<b>PACS</b>	80	100	60	80	60	20
		<b>COB</b>	75	100	75	100	75	100
		<b>COI</b>	100	100	100	100	100	100
		<b>SOJ</b>	100	100	0	0	0	0
		<b>COM</b>	100	50	100	50	50	0
	<b>Age</b>	<b>26 and Under</b>	88	88	75	38	63	13
		<b>Over 26</b>	67	83	75	83	67	42
	<b>Gender</b>	<b>Male</b>	71	86	57	86	80	57
		<b>Female</b>	77	85	85	54	54	15

Students' knowledge of particular UNT electronic resources varies widely across demographic categories. As might be expected, graduate students' knowledge of particular resources was generally higher than the knowledge of undergraduate students. This is particularly evident when considering UNT electronic resources such as the interlibrary loan system, search databases, and thesis and dissertation databases. While thesis and dissertation databases may not be particularly vital in an undergraduate student's research process, it is clear from our study that the use of search databases and the interlibrary loan system has been helpful to library users of all class levels.

We also found that many students who said that they did not know about full text resources confirmed that they did in fact use these resources when responding to questions regarding their research process. This leads us to conclude that students' knowledge of full text resources may be higher than reported, though they do not identify them as such.

Regarding E-Journals, we found that only 33% of lower level undergraduate students (freshmen and sophomores) knew about this resource, compared with 90% of upper level undergraduate students (juniors and seniors). This leads us to conclude that students are likely learning about these resources in upper level classes not generally taken in the first two years of college and/or that lower level classes do not require their use as frequently as upper level classes.

In comparing the knowledge of students over 26 years of age with the knowledge of students under 26, we found that the older students were significantly more likely (83%) to know about the interlibrary loan system than the younger students (38%).

While the data we collected through our interviews indicates that male students are much more likely to know about thesis and dissertation databases than female students, this is likely due to over half of the male students interviewed being graduate students, compared to under a third of the female students interviewed. Due to the low number of students interviewed from some



colleges, data regarding their knowledge of UNT electronic resources may not be representative of the entire college population.

### **Sources of Library Instruction**

The UNT library resources, both electronic and physical, are incredibly vast and complex. Throughout this study it should become clear that many students are intimidated by the library and have trouble figuring out where to begin when embarking in research. Therefore it is vital to this project to determine the instruction they have received regarding UNT resources, how the students evaluate this instruction, and to shed light on any ways to improve the effectiveness of this instruction. Although this research project was intended to gather information to improve the UNT electronic resources, much of the data collected regarding library instruction that our research participants received pertains to the physical library as well. What follows is an analysis of library instruction the students received from librarians and professors, as well as online tutorials and workshops.

In all of the twenty interviews conducted for this project, interviewers asked if the students had any on-campus library instruction from a librarian. Included in the category of library instruction from a librarian was:

- A librarian coming to the classroom and teaching students
- The professor taking the class to the library and a librarian teaching the class
- Students seeking out instruction from a librarian on their own
- Library instruction during an orientation

We found that 63% of the students answered “yes”, and 37% responded “no” to receiving instruction from a librarian. When asking the students who answered “yes” to evaluate this instruction, 73% responded that it was helpful. These percentages come from interviews only, and although this topic was also covered in focus groups, only the data gathered from the interviews is appropriate to quantify. When coupled with the data from the interviews, the focus groups helped clarify why only 73% of the students who had received library instruction from a librarian did find it helpful.

The three main reasons instruction from a librarian was not 100% helpful were timing, relevance, and information overload. One of the biggest problems in almost all cases of instruction from a librarian was that it was too soon. This was largely the issue of library instruction during new student orientation. Many students simply did not retain this knowledge, and this ties into the problem of information overload. During orientation new students are bombarded with new information, and the library instruction is simply not an immediate priority to them. Library instruction at orientation is also not given in a way that relates to the student’s field of study. Throughout this project we found that students retain this knowledge much better when it is presented to them with a focus specific to their field. This is avoided when a librarian comes to a specific class and gives a presentation relevant to that field of study, but even in this situation students often said it was too early in the semester. Many simply did not yet know the nature of their research project and therefore they did not know what questions to ask. This may be a tough problem to correct, because although the research instruction may be given early in the

semester when the research assignment is given, it is no secret that many students wait until close to the due date to even begin their research.

Our interviews also asked students if they have received any library instruction from their professors, to which 55% responded “yes” and 45% responded “no.” Most who responded “yes” described it as a quick instruction on where to begin their research, such as showing them how to find relevant databases or e-journals that will help them with their research. Also in our interviews with these same students we asked how many were aware of the online instructions for electronic resources, such as tutorials or workshops. The results show that 37% of students knew this existed and only one person from that group had actually utilized it and found it helpful.

The students in both interviews and focus groups were also asked how they would prefer to learn about UNT electronic resources. The information gathered from this question was extremely beneficial in understanding why the instruction from librarians was not 100% helpful. Some of this data may seem to contradict itself, but it does lead to a clearer picture of how students would most effectively learn about UNT electronic resources. More than anything else, students want to learn about these resources by personal, interactive, course-specific instruction. Many students, probably those who are aware of their habitual procrastination, mentioned the need for an instructional tool to refer to later. In addition, many of our participants complained that they do not want to take the time to read a “boring tutorial.” Many students suggested that they would much more quickly utilize a tutorial that is in video format specific to certain issues or topics. Many other students mentioned a good way to learn of UNT electronic resources would be through a separate orientation devoted specifically to the library, and preferably field-specific. To summarize, students seem to learn best from course specific library instruction from an actual person (a librarian), but they also want an easy, visual way, to go back and refresh themselves when they decide to begin their research.

Related to the topic on students’ preferences of library instruction is how they prefer to get news and updates from the library. Throughout the interviews we found that students overwhelmingly preferred to get this information through e-mail, but there was also mention of using Blackboard. Once again, though, they often mentioned that they rather it be information that is relevant to their field of study. Something that was not addressed by our research that would be helpful to know is the level of student awareness of department-specific librarians. As found on the UNT library website, each department on campus lists names and phone numbers of the librarian(s) specifically qualified to help that department. In order to deliver department-specific library news, these librarians could have access to the e-mail list serve from the department and create newsletters to send the students. It seems that overall awareness of these librarians and their ability to help with field-specific library issues needs to be raised, and developing a better relationship between these librarians and the students will be very beneficial.

## **General Research Process**

In order to better understand the process library users go through for conducting online research, we asked them to describe the process step by step. Although several different approaches, with

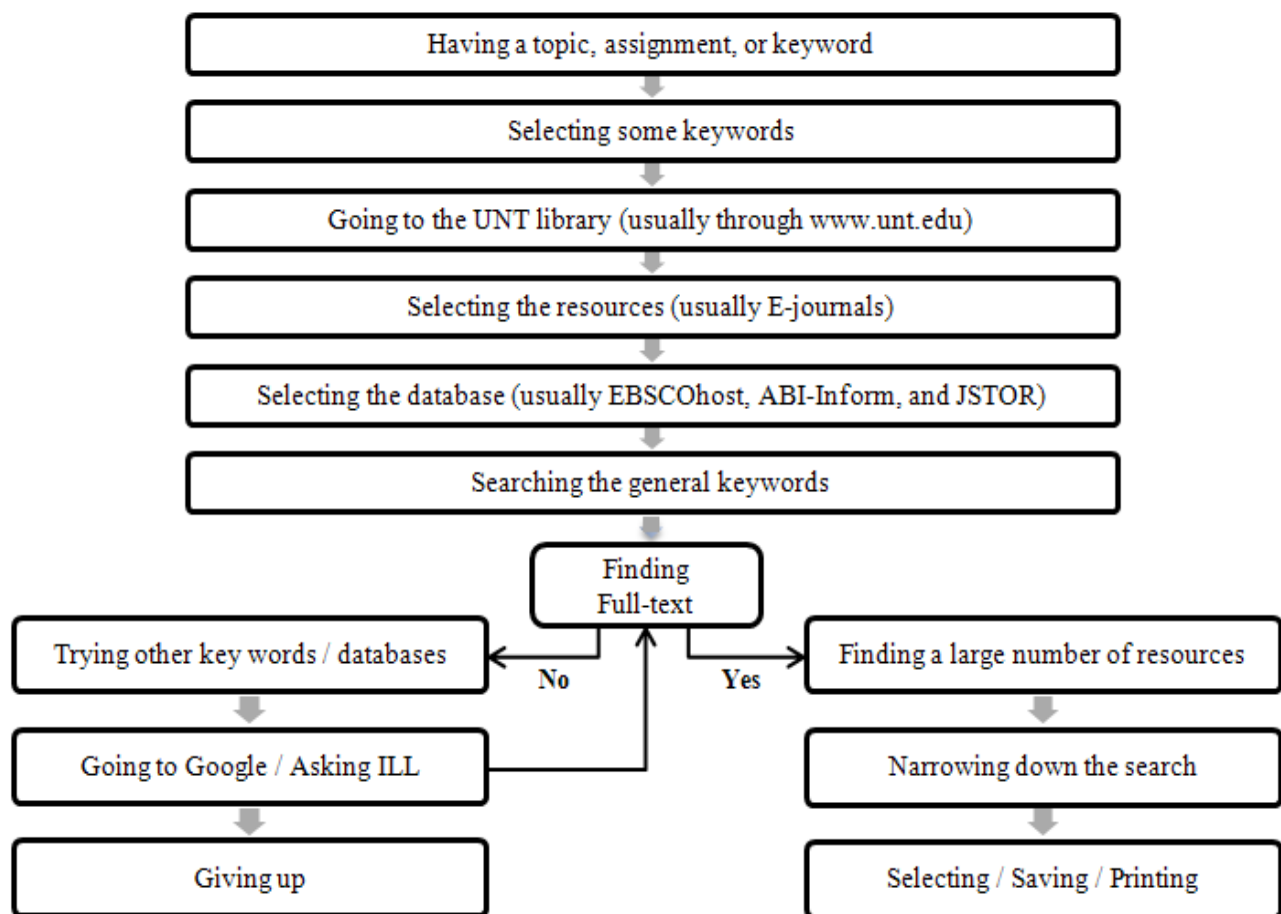
different steps, and in different orders have been found, we categorize the research process in two broad categories:

**1. When library users start the process with the UNT library website**

As shown in Figure 5, a small portion of library users (4 out of 20 interviewees; 20%) start their research process with the UNT library website. This group, mainly graduate students, starts with a specific topic or key word. These library users are typically more knowledgeable about the library website and are more experienced in conducting online research.

They go to the library website and through the “Find Journal Articles” link, select an appropriate database and search within the database. Depending on the search results, they select one of the two directions shown in Figure 1. If they find a large number of articles or other resources, they try to narrow down their search terms and/or limit the search results through the “Advanced Search” option. Otherwise, they try other key words and/or other databases. If the result still is not satisfactory, or the full-text is not available, they go to other websites (e.g., Google) or order the article through the Interlibrary Loan (ILL) service (see Figure 1).

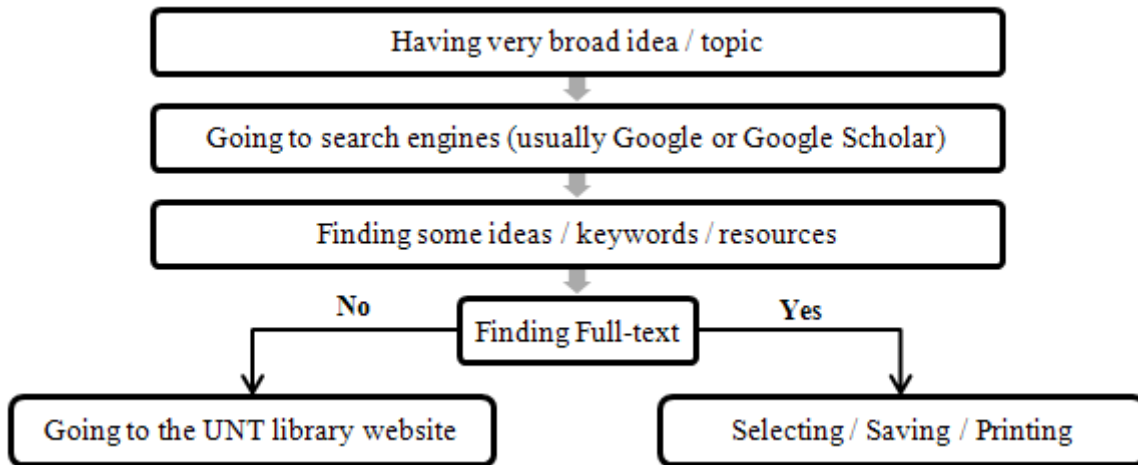
**Figure 5: General Research Process When Start with UNT Website**



## 2. When library users start the process with other websites

In contrast to the first group, a majority of students (16 out of 20 interviewees; 80%) start their research process with other websites – particularly Google and Google Scholar (see Figure 6). This group, mainly undergraduate students with less knowledge and experience compared to the first group, do not have a specified topic or key word for starting the search. In addition, they are not familiar enough with the resources available in the library. Therefore, they go to some general search engines and try to find some ideas, key words, or hopefully some useful resources. If they find some specific search terms, or some resources which are not available in full-text, then they go to the library website to start the search process and access the full-text. At this step, the process within the library website is fairly similar to the process discussed above.

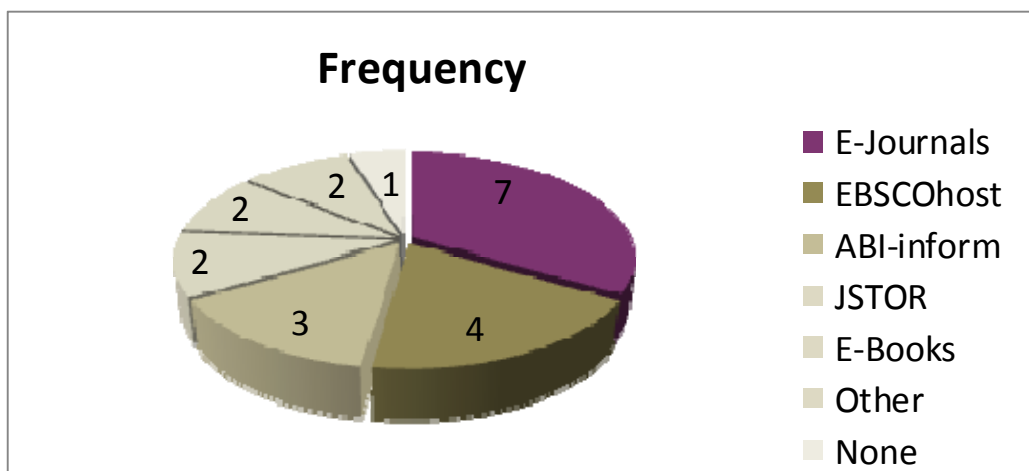
**Figure 6: General Research Process When Start with Other Websites**



## Use and Preference of UNT Electronic Resources

We asked library users what are their preferred and their most often used UNT electronic resources in two separate questions. There was a complete overlap between library users' responses to these two questions. The following chart illustrates the distribution:

**Figure 7: Use of UNT Electronic Resources**



Although library users were asked specifically about UNT electronic resources, three library users mentioned that they start with Google and then go to UNT library website. One of the library users mentioned: *“I don’t always think of the library first.”*

### **Strengths of UNT Electronic Resources**

We asked library users about the strengths of UNT electronic resources as well as the reasons for using these resources. Major findings are mentioned below:

- **UNT electronic resources provide access to a lot of resources.**  
Library users mentioned that they can access full text articles for free via UNT electronic resources.
- **UNT electronic resources provide access to resources other than journals, such as financial databases, music databases, books/e-books, and dissertations.** They also referred to Inter Library Loan (ILL) service as one of the reasons for using UNT electronic resources.
- **UNT electronic resources provide more credible and relevant search results compared to Google search.** Library users indicated that their research process will lead to more reliable and credible results if they find the resources in UNT electronic resources.
- **UNT electronic resources provide the option of using electronic folders and personal accounts while doing online research** and the possibility to resume search within a database with the same keyword. This reason was mainly mentioned by graduate students.
- **Instructions by professors that ask students to use UNT electronic resources** and provide the link to specific UNT electronic resources with instructions about how use them, recommend some resources, and/or put the links to the electronic resources on Blackboard.

### **Barriers to Using UNT Electronic Resources**

We asked library users what are the barriers to using UNT electronic resources as well as the challenges they have faced while using these resources and found three major reasons:

- **Search difficulties**  
These barriers include all the difficulties and challenges library users have faced while doing research in UNT electronic resources. These difficulties are as follows:
  - **Complex and not library user friendly:** 45% of library users referred to this problem. One library user said:  
*“It's very stratified. Everything's embedded and it's just like a little family tree in there, you have to keep going down different folders and it's a pain. I think it's a little unorganized, or not very well organized.”*

Another library user mentioned:

*“It was like a maze getting to it, but I remember when I finally found my article, I was so tired of searching for it. I didn’t want to read the article because it took me so long to find the one that I needed.”*

- **Not having an umbrella or comprehensive search engine:** Many library users mentioned that finding the resources they are looking for is difficult since there is not an integrated and comprehensive search engine in the UNT electronic resources to facilitate the search. For instance, one of the library users mentioned:  
*“I just think the server needs to be consolidated into a single search rather than having you know, the exact engine you’re looking through.”*
- **Lack of consistency in advanced search options of different data bases:** One library user said:  
*“I think sometimes for me it’s the inconsistency of the advanced search parameters because they are different across all of the databases, so sometimes one will have a format you want, like you can search by topic and you want these words in the headline and these lines in the body of the text and then others won’t let you have that option.”*
- **Limited access to full text**  
The limited access included subscription to limited journals, limited coverage of journal issues (limited range of time) specifically the most recent issues, and thus, not being updated. One library user referred to this problem and stated:  
*“Sometimes when you are looking for an article, it’s not there or they don’t have the subscription to this publication so you can’t access it. So that leads me to go to Google and try to find a free version of that because sometimes Google scholar has it for free.”*
- **Technology related problems**  
Another challenge in using UNT electronic resources was related to technology. Problems such as server problems, low speed, etc. One library user mentioned:  
*“Sometimes there is something wrong with the server...it doesn’t work... just freeze...”*

## **Library Users and Other Websites**

Another major question was about the reasons that lead library users to use other websites (and not UNT electronic resources). The major findings are:

- **Accessing articles available in UNT electronic resources through Google and Google Scholar.** Library users referred to this approach as a short cut to make the search process easier and to avoid the complexities of the UNT electronic resources website.
- **Checking citation counts in Google Scholar**
- **Accessing full text journal articles when they are not available via UNT electronic resources**
- **Using Google and Google scholar for very broad search or exploratory research** (i.e., just having the general topic or idea) without using specific keyword
- **Using Google and Google scholar is very easy** since there is only one box for typing the keywords and starting the search process.

## Road Blocks in the Way of Student's Academic Research

In order to understand the process that students go through when they get stuck during their academic research, we interviewed 20 students and asked a two-pronged question. Before we go any further with this discussion, it is pertinent to mention here that although it was a question pertaining to general online research, 15 out of the 20 library users referred specifically to UNT website. Two parts of the question asked were:

- What do they do when they feel stuck during research?
- Have they ever disregarded a source when they felt stuck during the research?

In response to the first part we found more than what was asked. We found that 19 out of 20 library users do get stuck, which is a clear indication that the majority of the students get stuck during their research project.

At the same time when we probed 20 library users with the second part of the question, 17 out of 20 said, "yes", they have disregarded a source in the past due to the difficulty in retrieving it. A considerable number of library users also reported to disregard a source after getting frustrated with accessing the required research material, whereas some reported the reason of disregard to be lack of knowledge about the resources. One library user specifically referred to the poor customer service by student workers as one the reasons to disregard a source.

Since only one library user specifically complained about the student workers at the library help desk, this reason might seem insignificant. However, looking at the nature of the complaint and the fact that the majority of library users in the later part of our research also wished to be helped by the librarians, this voice may be quite significant.

*"I don't know it's a cultural thing or what... but in my experience every time I ask something from somebody about something like, "Hey, do you know where can I get this?" if it's a student working there, they will be sitting there reading their book, or talking to their friends and everything, and you come to them to ask something, they act like, they have an attitude with you...like " argh...I got to help you now?" kind of thing.... they just blow you off like whatever...and that's what turns me off for going there too. The service, and the access."*

However this library user also mentioned that her experience with the librarians was very rich and useful.

### Preferred Help Strategy

We asked library users about the preferred help strategies they use or would like to use in the event that they feel stuck in their online research process. Library user responses brought us to two broad categories:

#### Course Specific Help:

We received an overwhelming response in favor of "course specific help." Eighteen out of

twenty students preferred help when they were actually working on a project, or assignment. Of these, 6 library users preferred instructors and peers to help them, 8 preferred librarians and other experts at library help desk (both physical and phone), and 4 did not want any help and preferred other course specific external websites.

### General Help:

A negligible number of library users were interested in general help regarding the use of the library. Those interested preferred getting this help from librarians, the help desk, and peers.

## **How to Get Help**

Since course specific help seemed to be a synonymously preferred strategy to get help, we analyzed how they wanted this help to reach them. Interestingly, we discovered that students expected this help from two sources:

### Instructors and Peers

A considerable number of library users preferred their instructors and/or peers to be their source for help when they were stuck doing online research. They expected the help from these sources primarily by way of making the instructions part of the syllabus for ready reference, instructions on Blackboard, direct email correspondence, demos by instructors in the class, chats and blogs, invitation to librarian by course instructors, tours to library for “hands on” experience of both online, and physical library research experience.

### Library Instructors

Students equally preferred the librarians for imparting knowledge about how to conduct online research. Some preferred ways to get this help are: chat or instant messaging, help desk manned by librarians and other experts, video chat with librarians, remote access of library users computers by librarians or other experts, fun and short “how to” videos for each library resource, and if possible direct email correspondence with librarians, “pop up” instructions on each step, and “hands on” tutorials in class or in the library by librarians.

Interestingly in our observations, none of the library users actually resorted to any of these preferred sources when they got stuck doing research.

## **Librarians**

In addition to understanding how students preferred to get help during research, we also wanted to know about their knowledge and experience with librarians and the services they provide. Overall, students knew librarians dealt with library and research, circulation, and were sometimes an expert or liaison connected with a specific department. The majority of the participants (12 out of 20) discussed librarians’ knowledge of how to locate resources and having information, such as hours of operation. Circulation was discussed by 4 out of 20 library users, each mentioning that librarians know how to check out books, process fines, check the availability of a book, or reserve and request books through Interlibrary Loan. Also discussed, by 3 out of 20 users, was that librarians were sometimes either experts of a subject or liaisons working with a specific departments.



In relation to what students know about librarians and the services that they provide, we also wanted to know how users actually utilize these services by asking about their experiences with librarians. Overall, experiences with librarians consisted of being related to resources, instructions, or information. Out of 20 responses, 2 library users said that they had never had any experiences with librarians. Out of the 18 library users that responded with experiences, 16 discussed resources. These experiences included asking librarians to help them find a specific source that they needed but could not locate, asking for help to find resources based on a research topic, and needing librarians to check out or reserve books.

The majority of the experiences were overall positive. Some positive examples of users' experiences involved librarians who helped them find resources. Specifically one library user explained that a book she was looking for was already checked out from UNT library, so the librarian checked the surrounding libraries and was able to tell her of a nearby library that had the book. Two other library users responded with regards to needing help finding resources for their specific topic. The students went into the library and spoke to librarians, after being helped the students returned; later in the day/week the students received emails with additional resources that the librarian had found pertaining to their research.

Another main theme was instructional experiences, which 13 students responded about. This included having experiences in which the librarians came to class to teach them about library resources, librarians that presented at orientation, and users who approached librarians to specifically ask for instructions. The final main theme was information, which 11 library users mentioned. Out of all library user experiences, the majority of the experiences, 16 out of 20, took place within the library. The four students who contacted the librarians outside of the library did so by phone (n=3) and chat (n=1). During observations only one out of ten observations included an experience with the librarian. This low number could have been due to the fact that their research was being observed, the stage they were in during their research, or the limited amount of time they were observed.

We also looked at experiences with regards to the physical library. All twenty students responded that they had gone to the library. Some of the reasons listed for going to the library included to use equipment such as, computers, printer or renting laptops, as well as to check out books, articles, music, and films. Other reasons listed were to study, the quiet atmosphere, finding a book and then searching the surrounding stacks to find additional sources, and to ask librarians questions. During observations, four out of ten mentioned the physical library. Reasons listed included the atmosphere, the quietness and comfortable chairs, to use the physical materials, and get librarian-help when needed.

With regards to roadblocks and what library users know of librarians, overall library users know that they can assess librarian-help by going into the library, but often they need immediate help when they are off-campus. Because of this they would like to receive their help through an instructor-librarian collaboration that would involve more instructions in the syllabus and online, as well as short tutorials and pop-up instructions, chat sessions, and blogs.

## **Managing Information and the Search Process**

Part of our analysis focused on how library users manage the information they find during their research and how they resume the research process if they are interrupted. We found that there was an almost even split between the two different major strategies of managing information but there was more variation among library users about how they resume the search process. The analysis on managing information was carried out on the 20 interviewees and 10 observations. The analysis on resuming the search process was carried out on the 20 interviewees.

### **How Library users Manage the Information They Find**

Library users utilized very similar strategies in managing the information they discover while researching. Any differences were based on whether they preferred electronically managing information or keeping hard copies of sources or notes, though many used a combination of both.

#### Electronic Management Techniques

Thirteen library users mentioned keeping some sort of electronic files, which included saving PDF documents and bookmarking pages in their web browsers. Some library users also kept electronic notes of their research. Twelve library users copy and paste information into a Word document or other word processor program as they find information throughout their search. Only two library users mentioned using some sort of citation manager software. One used RefWorks and one used EndNote.

#### Paper Management Techniques

We found that most people preferred to print out the articles they find so that they could read them. Library users mentioned a variety of reasons for doing this, including that doing this allows them highlight or make notes on the document and prevents them from staring at a computer screen for several hours. However, only six library users either mentioned that they take notes on paper or were observed taking notes on paper.

### **Resuming the Process after Interruptions**

Seventeen library users simply continue where they left off after they are interrupted during the search process and only five ever choose to just start over. We found that undergraduates were more likely to start over. Two library users mention that they do both, depending on what type of interruption they experienced.

#### Library users have several different approaches to continuing where they left off.

To resume their searches without starting over, library users mentioned the following approaches:

- Making checklists of what they have and what they need
- Keeping notes about which keywords were used
- Keeping lists of links or other notes
- Keeping pages open in their web browsers
- Relying on their memory

Almost half of the library users interviewed kept some type of notes to help them remember where they left off. Older students were more likely to rely on notes about where they were in the process.

## **Website and Suggestions**

Through the interviews, observational sessions, and focus group meetings, we received many comments on UNT's electronic resources, most specifically the UNT Libraries website. Often following library user's comments on the site were their suggestions for ways the site could be improved. These comments and suggestions constructed a cohesive picture of library users' feelings on the site and their ideas for improvement.

When analyzing the collected data, we examined it through a number of lenses, sampling library user types comparing older and younger students (under 26, or 26 and older), library users who considered their experience doing online academic research was high versus low, library users who felt they had adequate resources for conducting research versus those who felt they did not, and library users who had and did not have disabilities. Our findings revealed that the comments and suggestions we recorded were evenly distributed across all groups.

## **Comments on the UNT Libraries Website**

Library users made a variety of comments on the current site, grouped into distinct areas:

### Library users access the site in a variety of ways.

Most library users reach the site from the UNT home page. Two had the UNT Libraries site bookmarked, and a third of library users used Google to find the site. Several library users reached the site via links in Blackboard, myUNT, or their college websites.

### Library users prefer search queries in searching for information.

Almost all library users use search boxes, but several found category or menu-based search helpful when they did not know what words to use or were attempting to discover information about an unfamiliar topic.

### The UNT Libraries site is confusing.

Nearly all library users voiced that they felt the site was confusing in some way. Some comments we discovered included:

- Too many layers/clicks to get to online journals
- Hard to find library services like renewing books through the site
- Unaware of existing services like dissertations/theses or the TexShare program because the information was hard to find
- Databases displayed incorrect year/span of sources
- Databases not well organized, some have different names but are the same
- Difficult to tell if a database had full text available and the date information of the source

### Finding help on the UNT Libraries site is difficult.

When library users needed help on the site, they had a difficult time finding it.

- One library user had to contact a librarian on the phone because the site was too hard to use
- Library users were unaware of tutorials that were available on the site

### **Suggestions for Improving the UNT Libraries Website**

When asked what suggestions library users had for improving the site, they presented a variety of ideas, also grouped into main categories:

#### Create a more library user-friendly design.

Library users offered suggestions on how to make the site easier to use.

- Interface that resembles existing sites like Google, Facebook, or Wikipedia
- A design that does not feel academic, but is like other daily-use sites
- Fewer options and more direct navigation
- Simplified Search
- Help and tutorials easier to find
- Database descriptions that are easier to understand

#### Improve search accuracy and clarity.

Searching for data was a prime focus of library user suggestions.

- Multiple, simultaneous database searching
- Images of sources in search results to aid in differentiation
- Improved accuracy of results after a search
- Information on related items in search results
- "People who searched for this also searched for..." in search results
- Extensive tagging of sources for extended searching

#### Improve tutorials and help on the site.

Library users shared ways they would prefer to receive assistance.

- Video chat for assistance
- Late hours online assistance with the site
- Video-based tutorials

#### Consider non-traditional components and devices to extend usefulness.

Library users had suggestions that would extend the site capabilities significantly.

- Mobile version of the site for smartphone access
- Updated information on what sources are currently being searched for most
- Personal library page for library users to customize how they search the site by choosing modular items like in iGoogle and My Yahoo
- College-specific pages with resources that apply to those areas

Overall, library users cited that the site is difficult and confusing to use, though they trust the information on the site and value its resources. By improving its interface, the site may become a more effective tool for research that will be accessible to a more diverse group of library users.

## **Recommendations**

In the previous section we discussed many suggestions that library users have given for improving their experience using the UNT Libraries website. In this section, we provide a more tailored list of recommendations in consideration of the entire research project.

- **Improve user experience with the UNT Libraries website.** We recommend working with the design department to simplify the website design and create an integrated search tool, much like Google Scholar.
- **Improve library instruction.** We recommend further collaborations between the library and professors. Students need instruction on how to use the library electronic resources closer to the time their research assignment is introduced. They need tailored and specific information on which databases are best for their discipline. They are not reading the content that currently exists on the website. We recommend also making video tutorials that are quick and interesting.
- **Improve Communication.** Even though many resources for instruction are available to students on the UNT Libraries website, students do not know about them. We recommend writing e-newsletters with library updates. We also recommend highlighting the department librarians so that students know they are a resource for research.

## References

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