Library Database Usability

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ABSTRACT

Previous research indicated that while library databases help college students, they are not always as effective as faculty would hope. To address this problem, we collected data on the usability of Capital University’s A-Z library database. Each participant was given citations and asked to find their corresponding articles by using Capital University’s library database. We recorded the students’ actions and ability to access journal articles when given the citations. Students then reported their experiences with the website’s accessibility and ease of use, which showed how well the library’s database was working for the participants. Results revealed the approaches students used to locate journal articles and highlighted changes that could be made to make searches easier. In addition, students who had prior library instruction found abstracts and full-texts quicker than those who had not had previous instruction. The findings of this study could be used to improve the current library database and show how important it is for college students to have library instruction.

INTRODUCTION

There is currently a crisis developing in undergraduate education. Students are not learning what they need to learn and are therefore not getting the complete experience college has to offer. Roska and Arum (2011) looked at college students in their first two years of undergraduate study and saw that their levels of critical thinking, analytical reasoning, and writing skills were hardly improving. Almost half of these students showed non-significant gains in their overall learning (Roska & Arum). In addition to this, the struggle for high retention and graduation rates, along with low student persistence, is now making the United States lag behind other countries in postsecondary degree attainment (Gansemer-Topf, 2013). The key to improving all of these factors in student’s academic achievement is to accurately assess what it is students need to succeed (Kim et al., 2010). Upon assessing these factors, improvements can be made to assist undergraduates in their learning experiences throughout college.

Sarrico et al. (2010) stated that the crisis of inadequate undergraduate learning needed to be addressed because stakeholders are losing their trust in higher education. These stakeholders are people like students and faculty who benefit from or pay for these institutions. Stakeholders are beginning to think that colleges are not setting their standards high enough for their students (Sarrico et al.). Assessment is essential to determine what students use to enhance their learning, and what is not working to their advantage. Sarrico et al. discussed the purpose of these evaluations and stated that they can give important information to stakeholders about certain performances. Performance evaluations can inform external stakeholders about how well the institution is meeting academic goals while quality assessments can take a deeper look into the institution’s programs and tell internal stakeholders what is working and what needs to be improved. These evaluations and assessments can keep the institutions on track with their academic goals for the students and can lead to much needed improvements (Sarrico et al.).

In assessing programs used for the enhancement of undergraduate performance, Gansemer-Topf (2013) discussed different types of assessment. Needs assessment is good for realizing student’s expectations. As society and student demographics change, new college programs are put into place to keep up with the times. Utilization assessment examines the use of services and programs. This is important because it can reveal how well students can use campus tools and services as well as what effect those tools and services have on student success. Satisfaction assessment measures how satisfied students are with a program, which is helpful because satisfaction can lead to enhanced learning. Finally, outcomes-based assessment uses data that describe how well programs are working so that changes can be made to enhance the programs’ effectiveness for promoting student learning (Gansemer-Topf). All of these assessment tools can help improve the quality of undergraduate learning by finding out what works and what needs to be changed.

Assessment is important for student learning because it gives higher education institutions the feedback about how well they are providing the education students need to be successful. Evans et al. (2003) suggested that increasing academic demands can promote student success. When more expected of them, students are likely to rise to the occasion and succeed by using deep level processing in their learning. Deep level processing occurs when students work to comprehend the material more thoroughly and thus learn more (Evans et al.). Mattick and Knight (2007) agreed that assessment can facilitate student learning. For example, by giving progress tests that have the students apply what they have learned so far, they were motivated to work consistently and became intrinsically motivated to do well on these assessments (Mattick & Knight).

The use of different types of assessments may enhance student learning. Gansemer-Topf (2013) found that a mixture of needs-, utilization-, satisfaction-, and outcomes-based assessments could do just this. Keeping track of students
and their academic success through the use of the institution’s programs can promote continuous improvements to these programs (Gansemer-Topf). Quality assessment and performance evaluations help to improve higher education institutions (Sarrico et al., 2010).

In this pursuit of using these quality assessment and performance evaluations in college, many studies have been conducted to access students’ abilities to look up information by using library databases. Zoellner et al. (2008) communicated the essentialness of library instruction for undergraduate students. Library instruction can help students find sources for research they conduct for their college courses (Zoellner et al.). By giving this instruction to students when they start college, students are better prepared for their courses and the research demands they face. Gilbert (2009) showed this in a research study on the effectiveness of library instruction on incoming first year students. Students who took multiple library instruction sessions in their first semester had high levels of confidence in using the library as a source for obtaining information (Gilbert).

University library databases are important to a student’s academic growth. Becker (2013) studied the redesign of a college library’s database in order to improve usability. The librarians streamlined navigation among other things in order to improve students’ overall success rate for finding journal articles (Becker). Laguardia (2011) wrote about the importance of a user-friendly library database saying that the right system needs to be designed so it focuses on the needs of its users. This means the system must be changed as times change in order to keep up with what students need and find accessible in a database (Laguardia).

Ponsford et al. (2011) examined how well students could find specific journal articles by using the library’s database. They identified the main issues and how these could be improved (Ponsford et al.). Our research study replicated and expanded these findings to another college campus. We analyzed student’s experiences in using Capital University’s library database to see how easily they navigate the A-Z list. We asked whether there were any improvements that could be made to Capital University’s online database, and whether library instruction had an effect on students’ ability to find given known citations. Matthew Cook and Anna Biszaha, librarians at Capital University, discussed with us their thoughts on the library’s database (personal communication, February 6, 2014). They want the database to have the best usability possible and would change the database layout if it would help students navigate more efficiently. Our hypothesis was that students who had previous library instruction would do better in the given tasks compared to students who did not have previous library instruction. In order to test our hypothesis, we timed students on how quickly they could find articles when given their citations. We then looked at their times and compared those who had previous library instruction to those who had no previous library instruction.

**METHOD**

**Participants**

Participants were 20 undergraduate and graduate students attending Capital University. This institution is a mid-sized, private, liberal arts college. It is located in an urban setting in the Midwest. Flyers for this study were posted around campus giving Capital University undergraduate and graduate students an equal opportunity to participate. Out of the 20 participants, 8 students had a major in the school of natural science, nursing, and health, 3 had a major in the school of social sciences and education, 2 had a major in the school of humanities, 4 had a major in business, and 3 had a major in the school of communication and conservatory of music. Eighteen participants were aged 18-24 years and 2 participants were from 25-30 years old. The 20 participants consisted of 12 first year students, 3 sophomores, 2 juniors, 2 seniors, and 1 graduate student.

**Materials**

Each participant was given asked about academic major, year in school, and age. The participants were asked how frequently they use the library’s online resources and could answer with once a day, a few times a week, a few times a month, occasionally, or never. Students reported whether or not they have had previous library instruction, and could answer with a yes or a no. If they answered yes, then they were asked to describe when, what class was associated with it, and where it took place (i.e., at Capital or another university).

The participants were asked to find the abstract and article for a citation on political science, a citation on Shakespeare, and a citation on smoking. If the full article could not be found, they were asked to fill out an inter-library loan (ILL) request without sending it. After each citation, the participants rated their experience finding the source using a scale of one to ten, with one being difficult, the being easy, and NA being used for “not applicable”. The first question asked if by using the citation provided they were able to locate the abstract of the article easily. The second question asked whether the library resources created a seamless environment for finding the full-text article associated with the citation provided. The third question asked whether when the full-text article was not readily apparent, they were able to find an alternative location for full-text resources. Finally, the fourth question asked whether the inter-library loan process was clear and easy to understand.
Procedure
A researcher first read a script to the participants containing information about the study. The researcher stated that the participants had a set of instructions in front of them that indicated what they would do. This set of instructions told participants to use the library’s A to Z list in order to find known items when given only their citations. If the full-text of an article was not found, an inter-library loan request was completed but not submitted. The participants were informed that a researcher was recording their actions as they searched the database. They then rated their experiences on the survey.

When the instructions were read, the participants were asked to begin searching for the articles given their citations. During this search, the time it took them to find the abstract, full text article, and ILL if needed was recorded. The participants were unaware of the researchers timing them so that their times were based on how they would normally find the articles, and not when they felt rushed to do so. If they did not finish the task of finding an article or ILL within ten minutes, the researchers ask them to stop, report their experiences for that citation, and move on to the next citation. During all of this, a researcher recorded their actions taken, their vocalizations, and how fluidly they navigated the library’s A to Z list. When all searches were complete and all experiences were recorded, the participants received a $15 gift card to Starbucks for volunteering in the study.

RESULTS
In all three tasks given, the 20 participants were timed on their completion of finding the abstract and the full-text or inter-library loan of given citations. Twelve out of the 20 participants had prior library instruction. In task 1, 14 participants used the citation search, 9 used journal search, 14 used database search, and nobody used another type of search. In task 2, 11 participants used the citation search, 4 used journal search, 6 used database search, and 4 used another type of search. In task 3, 11 used the citation search, 6 used the journal search, 6 used the database search, and 4 used another search. Altogether, citation searching was used the most frequently to find the given citation’s abstract and full text.

The abstract and full-text or inter-library loan times were averaged and recorded in Table 1, along with the number of participants who did not complete the tasks. The abstract times and full-text or inter-library loan times were always lower for the participants who have had previous library instruction than the participants who have had no library instruction. Figure 1 shows this comparison. Those with library instruction were consistently faster at every task in finding abstracts and full-texts than those with no library instruction.

<table>
<thead>
<tr>
<th>Task</th>
<th>Library Instruction</th>
<th>No Library Instruction</th>
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<tbody>
<tr>
<td>Task 1: Political Science</td>
<td></td>
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<tr>
<td>Abstract</td>
<td>3:50</td>
<td>4:50</td>
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<tr>
<td>Full Text</td>
<td>4:16</td>
<td>5:25</td>
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<td>Task 2: Shakespeare</td>
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<tr>
<td>Abstract</td>
<td>1:57</td>
<td>3:36</td>
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<tr>
<td>Full Text</td>
<td>2:13</td>
<td>3:58</td>
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<tr>
<td>Task 3: Smoking</td>
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<tr>
<td>Abstract</td>
<td>1:25</td>
<td>1:51</td>
</tr>
<tr>
<td>Full Text</td>
<td>2:20</td>
<td>3:09</td>
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We conducted independent sample t-tests to compare students who had previous library instruction to those who did not for their ratings of their experiences. In doing this, the participants completed the 12 item questionnaires that rated their experiences finding the abstracts and full-texts or inter-library loans. We found that the only significant difference between those with library instruction and those without was question number 3 in the Shakespeare item, which asked whether the full-text was readily available. Those with previous library instruction had a mean rating of 9.24 (0.90), while those without library instruction had a mean rating of 7.50 (1.52). On average, all of the participants rated question number 3 in the Shakespeare item as the easiest to find with a mean rating of 8.38 (1.45), and question number 3 in the political science item as the most difficult to find with a mean rating of 4.88 (3.60).
DISCUSSION

In this study, we focused on the usability of Capital University’s online database by examining the differences between students who have had previous library instruction and those who have had no previous library instruction. This extended the previous study done by Gilbert (2009) who demonstrated the importance of library instruction for incoming first year college students. Gilbert found that the students’ levels of confidence in using the library’s database improved after having instruction, and that they were better able to use this database when searching for information. Our results were consistent with this in that the times for students with previous library instruction were faster than the times of those without instruction.

Laguardia (2011) argued for the necessity of an easy to understand library database that conforms to the needs of its users. Databases should be updated when necessary in order to continue giving students what they need (Laguardia). We expanded on this by recording errors commonly made by students while they navigated the library’s database, and we used this information to create suggestions on how to improve Capital University’s library database. Some of the errors we found involved the citation search. In the text box where the author’s name is supposed to be typed, some students wrote the author’s first name and then last name. This led to no results because the box stated that the author’s last name needed to be entered before the first name. In order to improve this part of the citation search, the words indicating how the author’s name needs to be entered could be in a color that stands out. Another place in the citation search that should be highlighted is where the start page is entered. Students commonly wrote the page range instead of the start page, which yielded no search results. If the start page was emphasized, they may not have made this mistake.

We found that when the participants used the citation search for the third task that did not have a full-text available, they were unable to see the abstract and were instead immediately asked to fill out an inter-library loan. The students who used other search methods, such as the journal search, could find the abstract before completing an inter-library loan request. The citation search could be improved by providing students with the abstract when the full-text is not available. In a real world situation, this would allow the students to be able to read the abstract and decide whether they would want fill out an inter-library loan request.

A limitation to this study involved our use of personal computers (PC). We heard from some of the participants that PC navigation was different than Mac navigation, which is what they were more comfortable using. This led to issues scrolling through pages and performing other navigation tasks. Internet connection became a problem with this study. Some participant’s results could have been more accurate if their Internet connections were stronger. A few instances occurred where participants clicked on the correct link, but navigated away from that screen because it would not load. They would then try a different search to reach the full-text. Another limitation to our study was the knowledge some students had about library databases from high school experiences. Although they may not have indicated that they had library instruction in college, their high school skills in navigating online databases helped them in finding the given articles.

Capital University’s online library database appears to be an easy to understand tool for students. Almost every participant, whether or not they have had library instruction, completed all three tasks. In addition to this, their average completion times decreased after every task. This shows that the library database is user-friendly. Even if a student has not had previous library instruction, the database is designed in a way that helps students figure out how it works as they use it. Library instruction was found to be important though, as students who have had library instruction completed every task quicker and showed fewer mistakes in navigation. With these data, we suggest that all incoming first year college students receive library instruction in a university core class. This instruction will help them in college level course work by giving them the capability to navigate the library’s online database with ease.

REFERENCES


