Evidence Based Library and Information Practice

Research Article

University Students' Changing Library Needs and Use: A Comparison of 2016 and 2018 Student Surveys

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Received: 10 Aug. 2019 **Accepted**: 6 Jan. 2020

DOI: 10.18438/eblip29621

Abstract

Objective – This study examines differences in university students' library use and satisfaction (e.g., in-person library visits, online and print resource use, space satisfaction, and library website use) between 2016 and 2018 based on local survey data. It also discusses how these findings provided guidance for future planning and action.

Methods – The academic university library developed the surveys for undergraduate and graduate students and distributed them in Spring 2016 and 2018. Both student surveys focused on examining students' needs relative to library resources and services, although the 2018 student survey also attempted to quantify students' library visits and their use of library resources. While the surveys were not identical, the four questions that appeared in both surveys

(i.e., library visits, resource use, library space satisfaction, and library website use) were recoded, rescaled, and analyzed to measure the differences in both surveys.

Results – The survey results reveal that students' library visits and use of library resources in 2018 were higher than in 2016. In particular, undergraduate students' use of library resources in 2016 were lower than those in 2018, whereas graduate students' use of library resources remained similar in both years. Another key finding indicates that the mean score of students' library quiet study space satisfaction in 2018 was higher than in 2016. However, when compared to the 2016 survey, there was a decrease in students' ease of library website use in the 2018 survey.

Conclusion – Assessing students' behavior and satisfaction associated with their use of library physical spaces, resources, and services should be conducted on an ongoing basis. Over time, the survey findings can be used as evidence based data to communicate patterns of users' behavior and satisfaction with various stakeholders, identify areas for improvement or engagement, and demonstrate the library's impact. Survey results can also inform further strategic and assessment planning.

Introduction

Academic libraries have utilized various assessment measures to understand users' needs, improve their services, and further demonstrate the value of the library. Surveys are a popular assessment tool widely used for exploring users' needs in academic libraries (Liebst & Feinmark, 2016; Matthews, 2007). While various user surveys are conducted by academic libraries, two major types of user surveys are standardized surveys (e.g., LibQUAL+, Measuring Information Service Outcomes) and local surveys developed by individual academic libraries (e.g., Montgomery, 2014; Scoulas & De Groote, 2019). Regardless of the type of user surveys, many academic libraries attempt to use an evidence based approach by reviewing the survey findings, using those findings for making decisions, and monitoring changes over time (Dennis, Greenwood & Watson, 2013; Greenwood, Watson & Dennis, 2011; McCaffrey & Breen, 2016; McCaffrey, 2019; Montgomery, 2014; Norton, Tennant, Edwards & Pomputius, 2018; Taylor & Heath, 2012).

The University of Illinois at Chicago (UIC) Library began using surveys as a way to understand users' perceptions and needs related to the university library's spaces, services and resources. The findings have allowed for an evidence based approach to identify areas for change or improvement. The principle involved in this effort is to establish the culture of assessment within the library, "an organizational environment in which decisions are based on facts, research, and analysis, and where services are planned and delivered in ways that maximize positive outcomes and impacts for customers and stakeholders" (Lakos & Phipps, 2004, p. 352). This has been done using a standardized survey like LibQUAL+ (2002, 2006, and 2012), as well as local surveys focused on specific aspects (e.g., library website, space, services) as needed. The university library decided to discontinue use of LibQUAL+ because it was not always possible to apply the findings to decision making and because of complaints that the survey was too complicated to take. Locally focused surveys had been conducted at various times at the UIC Library to help guide changes related to space (e.g., adding furniture, remodeling spaces, installing a coffee shop). However, a major challenge was a lack of an instrument to benchmark and monitor users' perceptions of library resources, services, and space over time and to measure the impact of

students' library use on their academic success. Beginning in 2015, the Assessment Coordinator Advisory Committee (AC2) at the UIC Library developed user experience surveys for students (2016 and 2018) and faculty (2017 and 2019).

The purpose of this study is to examine any reported measurable differences in university students' experiences using the library between 2016 and 2018. The study also explores which survey findings provide actionable data for the library to use, and it also describes the actions the university library took as a result of the survey data. This paper will be a useful guide for librarians who:

- are considering developing their own instrument to capture users' needs and to track those changes over time;
- already have a locally developed instrument but are considering revising it to collect more meaningful data;
- are not sure how to take action based on their own findings from previous user surveys;
- want to strengthen the culture of assessment within their library.

Literature Review

Academic libraries have exerted great effort to establish a culture of assessment using evidence based approaches to explore what library users want and how to provide easy access to library services and resources. A survey of academic libraries in the United States (U.S.) showed that more than 70% of academic libraries used "assessment data to improve practice" (Farkas, Hinchliffe & Houk, 2015, p. 157). Most important, the goal is to improve the quality of the library's resources and services for users based on the results of the assessment efforts. Improving user services and demonstrating the value of the library to its stakeholders are among the primary missions of academic libraries. In a fast-paced academic environment, academic libraries cannot play a large role in students' efforts to accomplish their academic goals without understanding students' needs and preferences.

User Surveys at Academic Libraries and Use of Findings

Many academic libraries have implemented user surveys to understand users' behaviors, attitudes toward and satisfaction with library services and resources so as to improve current practices based on the results. One of the popular and widely used standardized user surveys used by academic libraries is LibQUAL+. LibQUAL+ is a web-based survey tool administered by the Association of Research Libraries (ARL). Since 2000, more than 1,300 academic and public libraries have used this survey tool (ARL, n.d.). LibQUAL+ is regarded as a useful tool for librarians and administrators to effectively gather users' feedback, a stable instrument to continuously track users' behavior over time, and a benchmark to help libraries gauge their success against other institutions (ARL, n.d., Hinchliffe, 2015; McCaffrey, 2019; Taylor & Heath, 2012). Several academic libraries using LibQUAL+ explored how users' perceptions of library services and resources changed over time and how the academic libraries implemented changes in response to the survey results (Dennis et al., 2013; Greenwood et al., 2011; McCaffrey, 2019; McCaffrey & Breen, 2016; Taylor & Heath, 2012). In spite of the popularity of the LibQUAL+ survey, there are reports of limitations with the tool. Challenges of using LibQUAL+ include participants having difficulty in completing the survey due to too many questions and similarity among questions (Voorbij, 2012); difficulty in understanding the fixed survey questions, such as minimum, perceived, and desired levels of service quality (Thompson, Cook, & Health, 2000); difficulties in connecting the LibQUAL+ data with locally collected statistics (e.g., gate counts); a lack of flexibility to customize questions; and difficulty reading results (Dennis et al., 2013). Dennis and colleagues (2013) suggested that alternative survey methods

besides LibQUAL+ are needed to measure changes within the library.

Several academic libraries have developed their own local user surveys to gauge users' behaviors and needs and used the findings for improvement (e.g., Montgomery, 2014; Ojennus & Watts, 2017). Benefits of using a local survey are that academic libraries can customize their questions and response options and focus on a specific area that they intend to investigate (e.g., space). For example, Ojennus and Watts (2017) conducted an online survey in 2015 of all students at Whitworth University in order to examine how they used the library (e.g., space and technology) and identify possible areas for improvement. After comparing their findings with trends identified in the literature, the authors concluded that their findings revealed local needs and interests. As a result, the library director at Whitworth University made several changes to library space and amenities (e.g., offering free coffee and making more private rooms available during finals week) and addressing problems with wireless access in collaboration with the IT department (Ojennus & Watts, 2017). Ojennus and Watts (2017) further stated that they plan to continue surveying users to collect longitudinal data to monitor the trends and evaluate "the efficacy of our responses to them" (p. 333).

While many surveys may be one-time investigations into users' needs, other researchers have studied user needs over extended periods of time using local surveys. For instance, Montgomery (2014) at the Olin Library at Rollins College conducted surveys two years in a row using the same survey questionnaire to determine how users' perceptions of their learning behavior changed before and after library space renovations. The author commented that they were satisfied with users' feedback and were able to better understand users' learning behaviors at the library. The University of Florida Health Science Center Library used a survey developed by the University of Southern California Health Sciences Libraries staff and examined how health science users' awareness of technology (e.g., mobile apps) and their interest in using technology to access library resources and services (e.g., citation tools and library electronic resources) from their mobile devices changed from 2012 to 2016 (Norton et al., 2018). The authors stated that "the annual review of survey results has allowed librarians to identify the local users' needs and interests as they changed over time and has led to incremental changes in services offered" (p. 329).

In spite of the advantages of conducting local surveys, some drawbacks were raised in the literature: a lack of national benchmarking data and challenges related to reliable and valid survey questions (Hinchliffe, 2015). In addition, few studies addressed repeating user surveys over time to monitoring users' needs in various areas, such as space, usage of resources, or technology.

Patterns of Students' Library Experience

With the Internet and advanced technology, college students can easily access books and journals remotely using their own computer or mobile device without entering the library. The ability to remotely access e-books, journals, databases, and services has shaped users' library use patterns over 15 years. Previous studies showed that easy access to online resources and students' expectations of the library influenced students' library use pattern (De Groote, Hitchcock, & McGowan, 2007; Lee, Ritterbush, & Sivigny, 2010). In two separate studies conducted during periods of 14 years and 15 years, students' in-person library visits declined, whereas their reference questions via email and phone increased (De Groote et al., 2007; Lee et al., 2010). According to statistics from ARL, the patterns of students' library visits also confirm that among 123 member libraries the number of users accessing the library (gate counts) declined at 42% of academic institutions in the U.S. from 2015 to 2018. In addition, in a recent article, Cohen (2019) stated that the trend in students

checking out print books decreased over the past decade, whereas the availability of online articles and e-journal downloads increased.

Academic libraries efforts to meet users' needs related to library space (e.g., floor renovation, extending hours, reorganizing spaces) have shifted from being collection oriented to user focused by incorporating users' feedback. As a result, students' perceptions of library space have evolved over time; library space is becoming less traditional and more conducive to social learning. Data from 2007 to 2014 from the University of Limerick in Ireland and an international consortium of ARL and the Society of College, National and University Libraries indicated that quiet space is increasingly considered important for library users (McCaffrey & Breen, 2016). This pattern is also confirmed by a recent study done by McCaffrey (2019) showing that users' perceptions of quiet space have improved from 2007 to 2016. Other academic libraries have also observed trends related to students using library space, indicating that students used library space not only for working alone but, depending on their learning needs, also for working with their peers (Montgomery, 2014; Scoulas & De Groote, 2019). In one library, after rearranging furniture in the library spaces, the overall library space usage from 2015 to 2018 increased 15% and use of group study tables and a new group study area increased about 270% (Oberlander, Miller, Mott & Anderson, 2019).

Assessing students' needs on the library website is critical for academic libraries: "Library websites are a gateway to library resources, services, contact information, and events" (Anderson, 2016, p. 19). While previous studies show that usage of library websites has declined over time (Allen, Baker, Wilson, Creamer & Consiglio, 2013; Anderson, 2016), libraries continue to improve their websites for students' use. Mierzecka and Suminas (2017) examined which features of the library website are most important for students at the University of Warsaw in Poland and the Vilnius University in Lithuania via open-ended responses. They found that the top five important features of the library website were (ranked in order): the online library catalogue, information about the location and opening hours, login account access, the online collection, and a floor map showing reading rooms. Students' library website experiences were also examined after changes were made to the libraries' websites.

Aims

The aim of this study is to examine the patterns of students' library use and satisfaction (in-person library visits, resource use, space satisfaction, and library website use) based on responses to surveys distributed to students in 2016 and 2018. This study also describes how these results were used at evidenced based data to provide guidance for a plan of action.

Methods

Institutional Setting

UIC is a large public research university classified by the Carnegie classification as having highest research activity. More than 30,000 students are enrolled in all of its 15 colleges, and students have access to two large libraries in Chicago (an arts, humanities, sciences, social sciences, and engineering library and a health sciences library) and three smaller health sciences libraries located at UIC's regional areas (Peoria, Rockford, and Urbana).

Survey Development

The AC2, which consisted of library faculty representing various units (research and instruction, collections, website, administration, assessment and scholarly communications) in the university library, developed the surveys for undergraduate and graduate students. The first locally developed survey, consisting of 19 questions, was distributed to the institution's students in 2016 (see Appendix A). Prior to distribution, the surveys were piloted with 6 to 8

students who read the questions and shared their thoughts aloud to allow the research team to observe if there were any issues with interpreting the questions. At the time of the data analysis, it was determined that effectively analyzing all of the data was not possible and that changes to the survey would be needed. For the 2018 student survey, the AC2 reviewed the 2016 student survey questions and findings and revised some scales (e.g., converting dichotomous to interval scales for frequency of in-person or online library visits and library resource use), wording, and format of the survey (see Appendix B). For further details of how the 2018 student experience survey was revised, refer to Aksu Dunya and De Groote's article (2019). As a result of these changes, the surveys were not identical and comparisons with all data points were not possible. However, several questions did remain in both surveys and comparisons of the results to these questions were conducted and reported in this paper.

Measures

Student Library Visits in Person and Use of Library Resources

The response scales in the 2016 survey regarding students' in-person library visits and use of library resources were different from those used in the 2018 survey. For example, in the 2016 survey *In the past year, have you visited the library at your campus site for study or research?* and *In the past year, have you used [library resources]?* had a nominal scale of *yes* (1) and *no* (0), whereas in the 2018 survey *Last semester, how often did you visit the university library?* and *Last semester, how often did you use [library resources]?* had an ordinal scale of *Never* (0) to *Daily* (4). These items were recorded, as follows: any responses from (1) to (4) in the 2018 survey data were coded as *yes* (1) and the rest as *no* (0) to match those used in the 2016 data.

Student Library Space Satisfaction

The scales for the questions related to student library space satisfaction (i.e., quiet study space and collaborative/group space) in the 2016 survey were coded *Very satisfied* (1), *Satisfied* (2), *Neutral* (3), *Dissatisfied* (4), *Very dissatisfied* (5), and *I do not use [this space]* (6). On the other hand, the same questions in the 2018 survey were coded from *I don't use this space in the library* (0), *Very dissatisfied* (1), *Dissatisfied* (2), *Satisfied* (3), and *Very satisfied* (4). Given that the scales in the 2016 survey were reverse coded in comparison to the 2018 survey scale, the 2016 data was recoded so that, for example, *Very satisfied* (1) becomes *Very satisfied* (5) and *I do not use [this space]* (6) to *I do not use [this space]* (0) to match with the 2018 data. Prior to rescaling, the frequency of *I do not use this space* (0) response in the 2016 and 2018 surveys was analyzed. Afterwards, the *I do not use this space* (0) response was dropped from both the 2016 and 2018 survey results because this response affects the calculation of the mean scores. Because the 2016 survey used the 6-point Likert scale format including *Neutral* (3) and the 2018 survey was a 5-point Likert scale format, it was not possible to directly compare the mean scores. Therefore, the data was rescaled by using the formula developed by Preston and Colman (2000): (rating – 1) / (number of categories – 1) x 100. This method is used as a way to compare survey results when the surveys used different scales.

To rescale the results of the survey, the 5-point Likert scale data (1, 2, 3, 4, 5) in the 2016 survey was converted to a continuous one (0, 25, 50, 75, 100), and the 4-point Likert scale data (1, 2, 3, 4) in the 2018 survey was converted to a continuous one (0, 33.33, 66.67, 100). Another adjustment was made for the library space satisfaction questions. The space satisfaction questions in the 2016 survey included quiet study space and collaborative/group space, but the 2018 survey questions included quiet study space, collaborative space, and group study room, separately. To compare the library space satisfaction in both surveys, the responses of collaborative and group space in the 2018 survey were calculated as a mean score.

Student Use of Library Website

The scales for the question related to how easy it was to use features of the library website (e.g., finding a book, searching for journal articles) were originally coded as a 6-point Likert scale, from *Very difficult* (1) to *I have not used this* (6) in the 2016 survey. However, these scales were coded as a 5-point Likert scale in the 2018 survey from *I don't use this service* (0) to *Very easy* (4). For the procedure of recoding and rescaling data for students' library website usage, the authors followed the same methods as described for library space satisfaction.

Preferred Location for Studying

Students were also asked why they studied in places other than the library by selecting all of the responses that apply. While the options were not the same for both years, several options were relatively similar: more study space, quieter study space, food/drink availability, and equipment or software that I need are available.

How to Spend Funding

Students were also asked how they would spend funding to improve the library. They could select two options in the 2016 survey and three options in the 2018 survey. Not all of the options were the same in both surveys, but the options from both surveys included more computers, more quiet study spaces, and more electric outlets. However, more food and drink options was included only in the 2018 survey.

Participants

The total number of respondents in 2016 was 1,087 (response rate of 4%), whereas the number of respondents in 2018 was 2,277 (response rate of 8%). This reflects a 109% increase over the response rate of the 2016 survey. Both surveys contained key demographics, including gender, age, class level (e.g., undergraduate and graduate), first generation status, and commuter status. As shown in Table 1, it appears that the ratio of respondents from the 2016 and 2018 surveys was similar to the ratio of the 2018 university population (a difference of less than 5%) in all of the demographic variables, except for two categories: female respondents and graduate students were overrepresented in both surveys. As such, on the whole, the survey respondents were representative of the university's population.

There are slight differences between the 2016 survey and 2018 survey respondents' demographics. The percentage of student respondents in the age group between 16 and 25 increased almost 10% from 2016 (59.52%) to 2018 (69.43%), whereas the rest of the age groups slightly decreased. The percentage of undergraduate respondents increased about 9% from 2016 (48.30%) to 2018 (56.96%), and the first generation respondents increased more than 2% from 2016 (10.86%) to 2018 (13.22%). Some of the respondents' demographics were similar in both surveys. For example, in both surveys, female students (61.64% in 2016 and 63.68% in 2018) were more likely to participate in the survey than male students (38.36% in 2016 and 36.14% in 2018). In additional, the majority of the respondents in both surveys (85.19% in 2016 and 85.68% in 2018) were commuters, meaning they did not live on campus.

Data Collection

Students' demographic information was obtained from the Office of Institutional Research (OIR) with the participating students' consent for both the 2016 and 2018 surveys. The demographic information requested for both surveys included gender, age, class level, first generation status, and commuter/resident/online status (see Table 1). The OIR uploaded a "panel" in Qualtrics that contained all students' email addresses and demographic information. Students were sent an email from Qualtrics requesting their participation in the survey. The procedures for collecting survey responses remained the same for both surveys and are outlined in detail in the study of Scoulas and De

Table 1
Comparison of Students' Demographic Information: 2016 and 2018

	Sample		**Total 2018 Student Population (*N* = 28,725)**
	2016 (*n* = 1,087)	**2018 (*n* = 2,277)**	
Gender, n (%)			
Female	670 (61.64%)	1,450 (63.68%)	15,201 (52.92%)
Male	417 (38.36%)	823 (36.14%)	13,408 (46.68%)
Unknown	-	4 (0.18%)	116 (0.40%)
Age Group, n (%)			
16-25	647 (59.52%)	1,581 (69.43%)	20,598 (71.71%)
26-35	297 (27.32%)	509 (22.35%)	6,206 (21.60%)
Above 35	143 (13.16%)	187 (8.21%)	1,921 (6.69%)
Class, n (%)			
Undergraduate	525 (48.30%)	1,297 (56.96%)	18,886 (65.75%)
Graduate	536 (49.31%)	980 (43.04%)	9,839 (34.25%)
First Generation, n (%)	118 (10.86%)	301 (13.22%)	4,801 (16.71%)
Transfer, n (%)	211 (19.41%)	463 (20.33%)	6,890 (23.99%)
Residency, n (%)			
Commuters	926 (85.19%)	1,951 (85.68%)	24,584 (85.58%)
Resident	109 (10.03%)	276 (12.12%)	3,114 (10.84%)
Online	52 (4.78%)	50 (2.20%)	1,027 (3.58%)

Groote (2019). As an incentive, all survey respondents were able to enter a drawing for one of three iPads in the 2018 survey. No incentives were offered with the 2016 survey.

Data Analysis

All data was analyzed using SPSS 25. Descriptive statistics were used in response to Q1, student library visits and resource use. To test whether a statistically significant difference in student library space satisfaction and use of the library website existed in the 2016 and 2018 survey data, an independent sample t-test was used. Before conducting any statistical tests, the requirements of the assumptions of each test were checked. The 2016 response and 2018 response distributions were sufficiently normal for the purposes of conducting a t-test (e.g., skew < |2.0| and kurtosis < |9.0|; Schmider, Ziegler, Danay, Beyer & Bühner, 2010). In addition, the assumption that homogeneity of variances in spread scores is equal in different groups of cases was tested and was not met via Levene's *F* test. Therefore, adjusted degrees of freedom were used.

Results

Comparison of Student In-Person Library Visits and Resource Use

Table 2 shows the student library visit and library resource use in the 2016 and 2018 survey data. With respect to their frequency of library visits, the results indicate that student library visits slightly increased from 2016 to 2018. In additional, the frequency of student library resource use (journal articles, books, and databases) moderately increased from 2016 to 2018.

Students' in-person library visits and library resource use were further organized by class level (undergraduate students and graduate students) in order to show whether or not there were differences in their library use between surveys. Figure 1 shows that overall undergraduate students visited the library more than graduate students in both years. Undergraduate students' in-person library visits in 2018 (51.30%) were higher than in 2016 (46.00%), whereas graduate students' in-person library visits in 2018 (35.31%) were slightly lower than in 2016 (38.91%).

Table 2
Comparison of Student In-Person Library Visits and Use in Both Surveys

	2016 (*n* = 1,087)		**2018 (*n* = 2,277)**	
	n	**%**	***n***	**%**
In-person visits	923	84.91	1,972	86.61
Use of library resources	850	78.20	1,946	85.46

Regarding students' use of library resources, as shown in Figure 2, the patterns by class level across the two surveys were different. For example, undergraduate students' use of library resources in 2016 (37.63%) was lower than that in 2018 (44.62%), whereas graduate students' use of library resources remained similar in both years (40.57% in 2016 and 40.84% in 2018). Undergraduate students' use of library resources (37.63%) was lower than graduate students' (40.57%) in 2016, but in 2018 undergraduate students' use of library resources (44.62%) was higher than graduate students' use (40.84%).

Library Space Usage and Satisfaction

Prior to analyzing the comparison of students' library space satisfaction, the percentages of the respondents answering that they did not use a space were analyzed (see Figure 3). This information allowed us to see whether or not the patterns of students' library space usage have

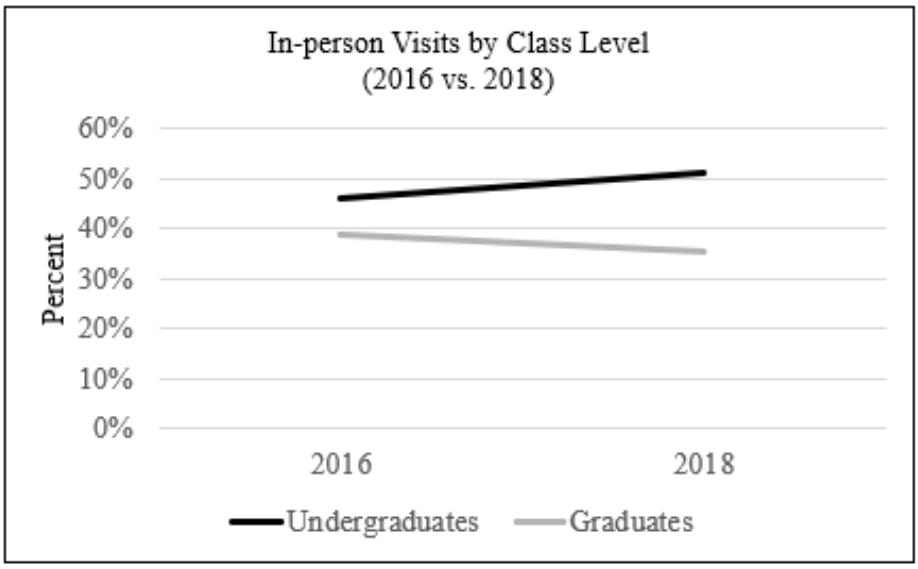

Figure 1
Students' in-person library visits by class level.

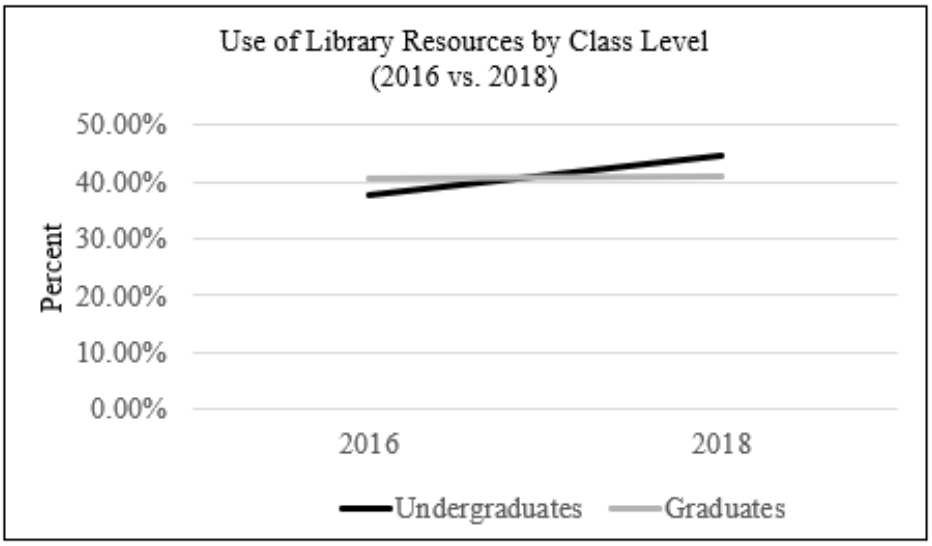

Figure 2
Students' use of library resources by class level.

changed over time. As shown in Figure 3, the respondents who indicated not using the space for both quiet study space and collaborative/group space (11.32% and 19.69%) in 2016 were higher than those in 2018 (9.00% and 17.13%). The findings suggest that the respondents in 2018 were more likely to use the quiet study space and collaborative/group space than respondents in 2016.

An independent sample t-test was conducted to compare further students' library space satisfaction in 2016 and in 2018. As shown in Table 3, the results show that there was a

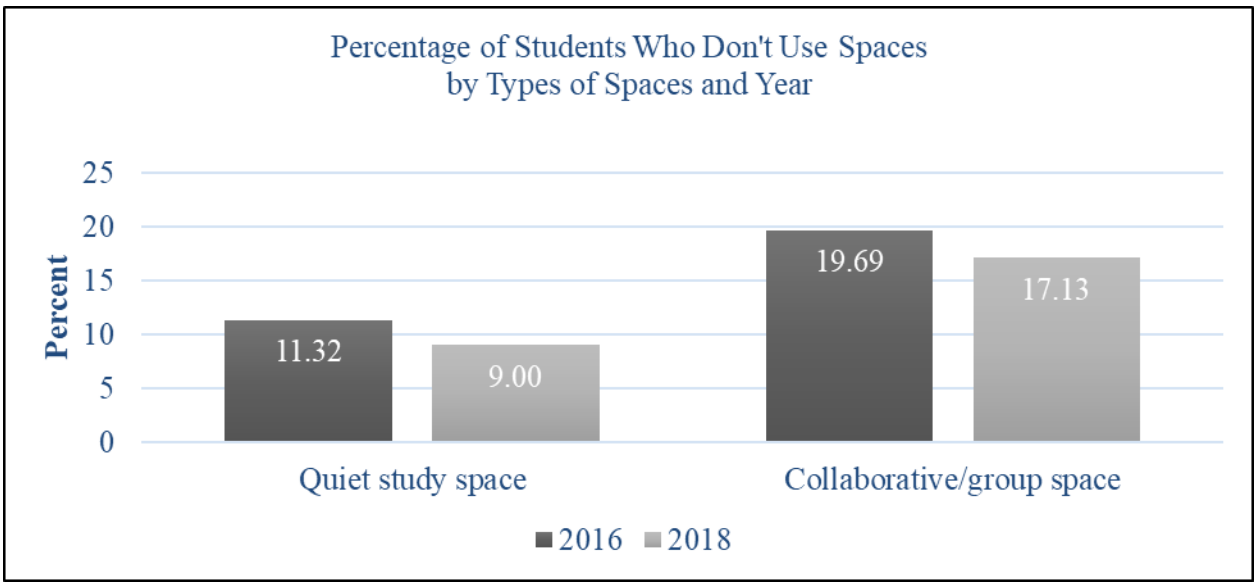

Figure 3
Percentage of students responding that they do not use quiet study space or collaborative/group space in 2016 and 2018.

statistically significant difference in the scores of quiet study space for the 2016 surveys (M = 67.47, SD = 26.65) and 2018 surveys (M = 73.84, SD = 24.15); $t(1356) = -5.72$, $p < .001$, $d = 0.25$. This result suggests that the average student satisfaction in the quiet study space in the 2018 survey was higher than in the 2016 survey. However, there was no significant difference in the mean scores of collaborative/group study space for 2016 (M = 65.93, SD = 25.46) and 2018 (M = 68.25, SD = 23.47); $t(1322) = -1.97$, $p = .05$, d = 0.09.

Library Website Use and Ease of Use

To see the pattern of students' library website use in 2016 and 2018, the responses indicating that students did not use a service were compared. The findings show that the percentages of respondents who did not use services such as asking a librarian for assistance on IM/Chat; finding films, videos, or online images; and booking a group study room in 2016 were higher than those in 2018, meaning that students in 2018 tended to use those services more than students in 2016 (see Figure 4). On the other hand, the percentages of respondents who did not use services such as finding a print book, requesting a print book, logging into my account, and subject and course guides in 2016 were lower than those in 2018, suggesting that students in 2016 were more likely to use those services than students in 2018.

Next, an independent sample t-test was conducted to investigate whether there were differences in students' ease of using the library website between the 2016 and 2018 surveys. As shown previously in Table 3, the results of the t-test indicate that there were statistically significant survey differences in the ease of library website use, except for the finding media and booking a group study room features, when comparing the 2016 survey with the 2018 survey at the level of $p < .05$.

In 2016, the top reasons for studying in places other than the library included more study space (42.41%), quieter study space (37.72%), and food/drink availability (32.84%). However, in the 2018 survey, quieter study space was not in the top three responses. Instead, *I can find a seat* was the top selection (46.90%), an option that was not available in the 2016 survey. Studying

Table 3
Comparison of Average Student Library Space Satisfaction and Library Website Ease of Use in Both Surveys

	2016 (2018)[a]								
	n	***M***	***SD***	***t***	***df***	***p***	**95% Confidence Interval (Lower vs. Higher)**		**Cohen's *d***[b]
Student Library Space Satisfaction									
Quiet study space	777 (1,799)	67.47 (73.84)	26.65 (24.25)	-5.72	1356	***	-8.55	-4.18	0.25
Collaborative/group space	686 (1,231)	65.93 (68.25)	25.46 (23.47)	-1.97	1322		-4.64	-.01	0.09
Ease of Use of Library Website Features									
Searching for journal articles	748 (1,813)	79.08 (72.79)	23.32 (22.53)	6.27	1350	***	4.32	8.26	0.27
Finding a print book	601 (1,391)	74.63 (68.18)	25.47 (25.42)	5.19	1136	***	4.01	8.89	0.13
Requesting a print book	460 (1,114)	78.37 (66.76)	26.08 (26.26)	8.02	862	***	8.77	14.46	0.44
Logging into my library account	477 (1,027)	81.13 (70.66)	24.04 (25.83)	7.68	991	***	7.80	13.15	0.18
Asking a librarian for assistance on IM/Chat	281 (1,038)	80.61 (76.56)	22.99 (23.84)	2.60	456	*	.98	7.11	0.17

Using library subject and course guides	515 (1,051)	75.78 (69.84)	24.94 (23.24)	4.53	960	***	3.36	8.51	0.24
Finding films, videos, or online images	202 (845)	66.46 (67.26)	28.40 (25.62)	-.37	284		-5.10	3.50	0.03
Booking a group study room	282 (950)	71.37 (69.61)	26.97 (26.34)	.96	452		-1.82	5.33	0.07

[a]Results from the 2018 survey are provided in parentheses.

[b]Cohen's *d*: 0.2= small effect, 0.5= moderate effect, 0.8= large effect.

[*] $p < .05$.

[***] $p < .001$.

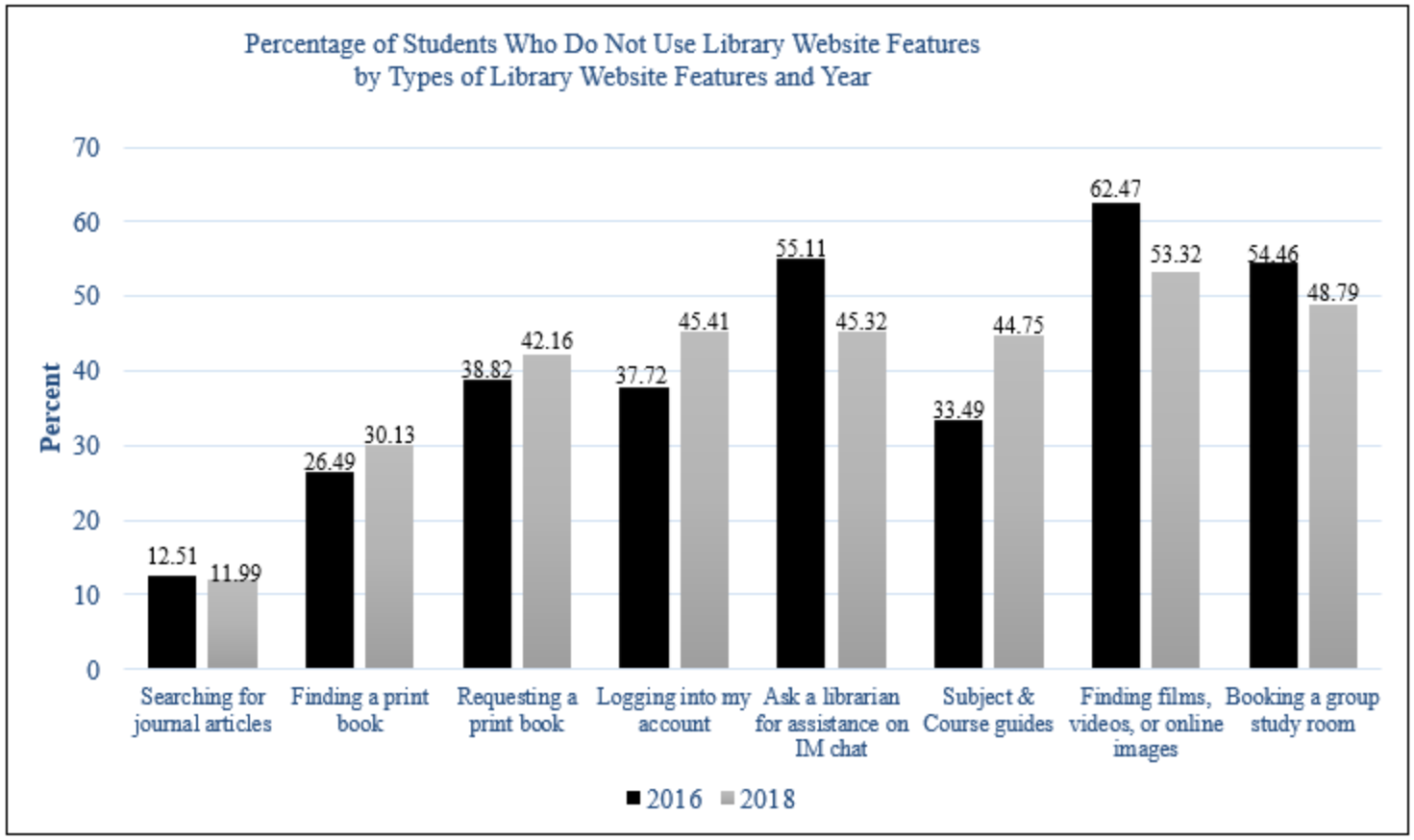

Figure 4
Percentage of students responding that they do not use a website feature in 2016 and 2018.

in other places because of the availability of food and drink increased (44.80%) and studying in other places with more study space decreased (33.90%). In 2016, students indicated they would spend funding on more online resources (24.38%), more computers (21.25%), and more quiet study spaces (21.16%). In 2018, students indicated they would spend funding on more food and drink options (32.37%), an option which was not available in the 2016 survey. They also indicated the desire for more quiet study space (31.14%) and more electric outlets (30.52%); compared to the previous survey, both of these preferences increased compared to the previous survey.

Discussion

Patterns of Students' Library Use

Using the 2016 and 2018 survey results, the current study examined if there were differences in students' library use in four areas: library visits, resources, library space, and the website. The findings of this study illustrate that, even within a short period of time between surveys (in this case, 2 years), there were differences in users' library use. From 2016 to 2018, there was an increase in students' library visits, resource use, and satisfaction, and there was a decrease in the ease of library website use. Finding an increase in library visits is different from the decrease in students' library visits indicated in the literature (ARL [statistics from 2016 to 2018]; De Groote et al., 2007; Lee et al., 2010). However, students' resource use was similar to what has been shown in the literature with an increase in students' online resource use such as e-journals (ARL [statistics from 2016 to 2018]; Cohen, 2019). Continued efforts to provide space for students may have contributed to the increase in undergraduate use of the library. The findings about the increased use of library resources may be associated with libraries providing a higher number of resources. In fact, according to ARL Statistics, from 2016 to 2018 the volumes and e-books in the university's library collection have increased 37.16% and 60.44%, respectively. Use of the library decreased between the survey period for graduate students. It could be that the heavy presence of undergraduate students was a deterrent to graduate student use.

From Analyzing Findings to Taking Action

The second goal of this paper is to discuss how the findings from the survey were used to take further action. The findings from the surveys and comparative data were presented to the AC2, to the steering committee, and to all library staff to share the overall patterns of students' library experiences in various areas and demonstrate how the library is doing. The findings were also shared with external stakeholders like the Faculty Advisory Committee at the UIC to demonstrate the role and investment of the library in efforts to support students' academic success and to seek further insight and feedback into the findings. The results of both surveys and their comparisons were also used as evidence based data to further shape the strategic plan and the university library's assessment plan.

The quantitative results regarding increases in certain areas (library visits, resource use, and space satisfaction) did not lead to new decisions or actions but rather acknowledgement that there were areas where the library was doing well. On the other hand, declining satisfaction results related to services were indicators that further information should be sought and potential action taken. Discussion of some of these findings and the actions taken by the library follow.

Independent of findings from the 2016 survey, the library's website had undergone a redesign. Unfortunately, the respondents to the 2016 student survey found using the library website to be easier than the respondents to the 2018 student survey. This pattern of library website user satisfaction was very important. Anecdotal evidence from librarians suggested that users were encountering some difficulties when navigating the library website. The responses to

the 2018 survey provided clearer evidence that additional changes are needed. It is possible that students who participated in the 2016 survey used the library website before the re-design, so they found the old library website easier to use. However, even newer students reported challenges with the website. No immediate actions were taken to revise the webpage, but longer-term planning includes further redesign of the webpage.

According to Lakos and Phipps (2004), one example of whether a culture of assessment exists in a library is that the organization has "relevant data and [that] user feedback are routinely collected, analyzed, and used to set priorities, allocate resources, and make decisions" (p. 353). Incorporating users' feedback into the decision-making process and making improvements based on the evidence are part of the effort to strengthen a culture of assessment within the library. Some of the key findings from the 2016 survey suggested that students were not satisfied with quiet study space, access to computers, and electrical outlets. To address these concerns, additional outlets were installed in several areas in the library. To increase students' quiet study space, in Spring 2017 the main library of UIC increased the availability of designated quiet study space from one floor to two floors in addition to providing more single study furniture. Further, and again independent of 2016 survey results, a complete renovation was done at the Library of the Health Sciences between 2017 and 2018, which provided additional study space, more electrical outlets, a coffee shop, additional computers, additional seating, extended hours, and—for a short period of time—microwaves.

It would appear that as a result of the space renovations, overall satisfaction with the library spaces increased. However, access to space remained a challenge. This is likely due in part to a 5% increase in undergraduate enrollment and because space issues were already a problem in 2016. Without increasing the actual square footage of the library, the overcrowding issue remains a challenge to solve. There are also not many more places to add additional outlets. Findings related to the increase in students' quiet space satisfaction are similar to the patterns observed in other studies. For example, in spite of the issue of insufficient space, other academic libraries that continued to exert efforts to improve their space by reorganizing study areas and dealing with noise problems based on users' feedback did find that students' perceptions of quiet space improved over time (McCaffrey, 2019; McCaffrey & Breen, 2016).

Comparing two surveys to understand the patterns of users' library experiences was useful; however, it is not always possible to understand why an increased or decreased result occurred. McCaffrey (2019) argues that "detailed comparisons between two surveys can be problematic, particularly when analyzed at a question, user group or dimension level, as scores can increase or decrease for reasons that may be unknown or difficult to explain" (p. 72). However, comparisons between two surveys provide a valuable lesson. Libraries must keep asking core questions and monitoring users' responses regularly to monitor their experiences and satisfaction with resources and measure the impact of the library on students' academic success over time. In order to capture students' responses and more accurately measure the library's impact on students' success, the AC2 decided to revise the response scales, wording, and content (Aksu Dunya & De Groote, 2019). However, this revision was a very important step in repeating user surveys over time that provide more meaningful evidence to the university library staff. In addition, "the effectiveness of the revision" was supported by the significant increase in the response rate (Aksu Dunya & De Groote, 2019, p. 54). Although the revisions of both surveys resulted in adjustments to the scales within those surveys to accurately compare them, the results provide reliable, informative, and meaningful evidence. This is important because libraries are expected to follow the steps of the methods rigorously

tested and used by researchers (e.g., Holmes, & Mergen, 2013; Preston & Colman, 2000).

While the adjustments to the coding and scaling that were made to compare both surveys were not the primary focus of this paper, it is important to mention that adjustments to surveys may be needed in subsequent years to collect the most useful data. This paper demonstrates that institutions should be prepared from the beginning and be open to adjusting their tools as needed in order to develop the ideal benchmarking tools that can be used consistently over time. If a library has data from slightly different surveys (e.g., different scales and wording) that requires minor adjustments such as rescaling, this process should be done carefully by following the methods used by researchers (e.g., Holmes, & Mergen, 2013; Preston & Colman, 2000) to make the findings reliable and accurate. The authors also want to highlight that developing a tool for benchmarking does not mean that questions need to be identical in each survey. A certain number of questions can be used for assessing users' needs related to new services or how to address different needs based on changes in technology, student enrollment, or other influences.

This study is unique compared to other studies reported in the literature because few of those studies have examined how libraries track and report their impact over time by using local user experience surveys. By monitoring user trends over time, this study expands current research on academic libraries' efforts to use evidence based data for improvements, decision-making, and future library assessments. Those practices include reviewing the assessment tool, revising it as needed, and taking action based on the findings; these are integral to reinforcing a culture of assessment. These practices provide valuable and meaningful information that guide librarians who plan to use local surveys to monitor users' experiences over time and determine what to address in their next assessment plan.

Conclusion

Assessing users' behaviors and satisfaction associated with their use of library physical spaces, resources, and services should be conducted on an ongoing basis in order to observe and respond to evolving trends. Determining how often this type of survey will be conducted and monitored to explore these trends over time will vary based on the availability of data at libraries and how the libraries will use the data. The UIC Library plans to conduct student surveys every other year. A specific set of questions that be asked each time so that the library can better understand and react to changes in user needs and interests.

Equally important to conducting assessment is what academic libraries do in response to the assessment findings. Over time the findings from surveys can be used as evidence based data to communicate with various stakeholders for indicating the patterns of users' behavior, identify areas for improvement, demonstrate the library's impact, and develop a deeper understanding of users. Findings can also be used when developing strategic plans and a library assessment plan. To accomplish this, the findings from the surveys need to be carefully reviewed and, when feasible, used as the basis of responding to users' needs in order to improve the library spaces, resources, and services. Not only that, it is critical to re-assess users' experiences by comparing present and future survey results with the findings of previous assessments. This cycle of assessment will be critical for customizing and targeting services that are useful for the diverse student body served by an academic library. Establishing a culture of assessment in academic libraries begins with assessing how users perceive the services and resources provided by the library and improving users' experiences based on these findings.

Acknowledgements

We greatly appreciate the support of our colleagues of the University of Illinois at Chicago's AC2, who contributed their expertise to the assessment. We also thank Carl Lehnen and Mary Shultz for reviewing the manuscript.

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Appendix A
2016 Student Survey

I have read the "Agreement to Participate" document and agree to participate in this research.

- ☐ Yes
- ☐ No

In the past year, have you visited the library at your campus site for study or research?

- ☐ Yes
- ☐ No
- ☐ I am an online student only

How satisfied are you with the quiet study space at your library?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very dissatisfied
- ☐ I do not use quiet space in the library

How satisfied are you with the collaborative/group space at your library?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very dissatisfied
- ☐ I do not use group space in the library

How satisfied are you with the computers available at your library?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very dissatisfied
- ☐ I do not use the computers in the library

If you study in places other than your library, what do you like about those spaces? [Check all that apply.]

- ☐ More study space
- ☐ Quieter
- ☐ Food/drinks are sold here
- ☐ Equipment or software that I need are available
- ☐ Other (please specify):_____
- ☐ I do not study in spaces other than my library

In the past year, have you used the library books, e-books, databases, journal articles, or other library resources?

- ☐ Yes
- ☐ No

How satisfied are you with the library resources you have used in the past year?

	Have not used this	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Textbooks on reserve in the Library	☐	☐	☐	☐	☐	☐
Books (other than required textbooks)	☐	☐	☐	☐	☐	☐
E-books (other than required textbooks)	☐	☐	☐	☐	☐	☐
E-journals	☐	☐	☐	☐	☐	☐
Databases	☐	☐	☐	☐	☐	☐
Streaming videos	☐	☐	☐	☐	☐	☐
Online patient care tools	☐	☐	☐	☐	☐	☐
DVDs on reserve	☐	☐	☐	☐	☐	☐
Other, please specify	☐	☐	☐	☐	☐	☐

What two specific library resources have you used the most in the past year?

Please rank up to 3 resources you use most often for research projects, 1 being the most important (where you go first)

- ☐ Search box on the library website
- ☐ Library subject/research guides
- ☐ Library of the Health Sciences website (Chicago, Peoria, Rockford, or Urbana)
- ☐ The Health Sciences Gateway
- ☐ Database A-Z list
- ☐ Google or some other search engine (Bing, Yahoo, etc.)
- ☐ Wikipedia
- ☐ Academic search engine such as Google Scholar
- ☐ Blackboard
- ☐ Other (Please specify):_____

Think about your satisfaction with the library services you have used in the past year. How satisfied were you with each service?

	Have not used this	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
A class session where a librarian taught research skills for a specific assignment	☐	☐	☐	☐	☐	☐
A library workshop that teaches how to use online resources	☐	☐	☐	☐	☐	☐
Assistance from staff in the library	☐	☐	☐	☐	☐	☐
Ask a librarian by IM/chat, phone, or email	☐	☐	☐	☐	☐	☐
A research consultation with a librarian (scheduled appointment)	☐	☐	☐	☐	☐	☐
Request a book or article from another library	☐	☐	☐	☐	☐	☐
Specialized research assistance from the subject librarian for my department/college	☐	☐	☐	☐	☐	☐
Group study rooms in the library	☐	☐	☐	☐	☐	☐

Think about how you used the library website in the past year. How easy was it to use each feature below?

	Have not used this	Very easy	Easy	Neutral	Difficult	Very difficult
Find a book at the University	☐	☐	☐	☐	☐	☐
Login to my account to renew a library book or check the status of a request	☐	☐	☐	☐	☐	☐
Search for journal articles on my topic	☐	☐	☐	☐	☐	☐
User a library subject/research guide to find material by subject	☐	☐	☐	☐	☐	☐
Find films, videos, or online images at the university	☐	☐	☐	☐	☐	☐
Request a book or article from another library	☐	☐	☐	☐	☐	☐
Ask a librarian for assistance by email or IM chat	☐	☐	☐	☐	☐	☐
Make an appointment for research help	☐	☐	☐	☐	☐	☐
Book a group study room online	☐	☐	☐	☐	☐	☐
Some other activity (please specify): [ ]	☐	☐	☐	☐	☐	☐

As part of your online course(s), have you used the university library e-books, databases, journal articles or other library resources or services for assignments or other course-related activities?

- ☐ Yes
- ☐ No

In the past year, have you used the library website to find e-books, databases, e-journals, or other library resources?

- ☐ Yes
- ☐ No

Think about the library services you used in the past year in your online program. How satisfied are you with each service?

	Have not used this	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
Requesting an article from the university library or another library	☐	☐	☐	☐	☐	☐
Online access to full-test articles and e-books	☐	☐	☐	☐	☐	☐
Online IM/chat research help	☐	☐	☐	☐	☐	☐
Telephone research help	☐	☐	☐	☐	☐	☐
Virtual consultation with a librarian	☐	☐	☐	☐	☐	☐
Online workshops about library research (e.g., finding books, journals, requesting electronic materials, finding literature and journal articles)	☐	☐	☐	☐	☐	☐
Self-paced tutorials about library research	☐	☐	☐	☐	☐	☐

When should the library offer virtual consultations or online workshops with a librarian to provide assistance with library research? Select you most preferred time.

- ☐ 8am to 12 pm CST (Monday-Friday)
- ☐ 12-4 pm CST (Monday-Friday)
- ☐ 4-8 pm CST (Monday-Friday)
- ☐ 8 pm to 12 am CST (Monday-Friday)
- ☐ Weekends during the day
- ☐ Live virtual services not needed

How would you spend money to improve the library? Please select the two most important items.

- ☐ Longer hours
- ☐ More comfortable furniture
- ☐ More computers
- ☐ More online resources (ebooks, ejournals, databases, etc)
- ☐ More electrical outlets
- ☐ More individual desks
- ☐ More print books
- ☐ More quiet/silent study spaces

- ☐ More whiteboards
- ☐ Other (Please specify):_____

Thinking about your overall experience with the library, what is one thing that you would like us to know to improve your experience?

Appendix B
2018 Student Experience Survey

I have read the "Agreement to Participate" document and agree to participate in this research.

- ☐ Yes
- ☐ No

Last semester, how often did you visit the university library?

	Daily	Multiple days in a week	Once a week	Once a month	Never
In person	☐	☐	☐	☐	☐
Online	☐	☐	☐	☐	☐

How satisfied are you with the library spaces below at your library?

	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied	I don't use this space in the library
Quiet study spaces	☐	☐	☐	☐	☐
Collaborative study spaces	☐	☐	☐	☐	☐
Group study rooms	☐	☐	☐	☐	☐
Computer areas	☐	☐	☐	☐	☐

If you study in places other than the university library, what do you like about those spaces?
[Check all that apply]

- ☐ More study space
- ☐ Quieter study space
- ☐ Food/drink availability
- ☐ Software availability
- ☐ Equipment (e.g., computer, printer, scanner, etc.) availability
- ☐ Longer hours
- ☐ More comfortable furniture
- ☐ I can find a seat
- ☐ I prefer to study at home
- ☐ Other (Please specify) [ ]

Last semester, how often did you use each of the library resources below?

	Daily	Multiple days in a week	Once a week	Once a month	Never
Journal articles	☐	☐	☐	☐	☐
Subject specific databases	☐	☐	☐	☐	☐
Print books from the stacks	☐	☐	☐	☐	☐
Textbooks on reserve	☐	☐	☐	☐	☐
Electronic books	☐	☐	☐	☐	☐
Library Subject & Course Guides	☐	☐	☐	☐	☐
Special Collections & University Archives	☐	☐	☐	☐	☐
Digital images	☐	☐	☐	☐	☐
Streaming media	☐	☐	☐	☐	☐
DVDs on reserve	☐	☐	☐	☐	☐
Patient care tools	☐	☐	☐	☐	☐

Please indicate the relative **importance** of each of the library resources/services for your research or coursework.

	Very important	Important	Somewhat important	Not at all important	I don't use this tool/service
Journal articles	☐	☐	☐	☐	☐
Subject specific databases	☐	☐	☐	☐	☐
Print books from the stacks	☐	☐	☐	☐	☐
Textbooks on reserve	☐	☐	☐	☐	☐
Electronic books	☐	☐	☐	☐	☐
Library Subject & Course Guides	☐	☐	☐	☐	☐
Special Collections & University Archives	☐	☐	☐	☐	☐
Digital images	☐	☐	☐	☐	☐
Streaming media	☐	☐	☐	☐	☐
DVDs on reserve	☐	☐	☐	☐	☐
Patient care tools	☐	☐	☐	☐	☐
Library instruction arranged by your professor	☐	☐	☐	☐	☐
Library workshops that you self-selected to attend	☐	☐	☐	☐	☐
Other (Please specify)	☐	☐	☐	☐	☐

How **easy** is it to use the university library website for the services below?

	Very easy	Easy	Difficult	Very difficult	I don't use this service
Finding journal articles using the search box on the library home page	☐	☐	☐	☐	☐
Finding an e-book using the search box on the library home page	☐	☐	☐	☐	☐
Finding a print book using the search box on the library home page	☐	☐	☐	☐	☐
Accessing a database to search for articles and other scholarly materials	☐	☐	☐	☐	☐
Requesting a print book from another library	☐	☐	☐	☐	☐
Requesting an article from another library	☐	☐	☐	☐	☐
Logging into my library account to renew a book	☐	☐	☐	☐	☐
Asking for help from a librarian by IM/chat	☐	☐	☐	☐	☐
Using library Subject & Course Guides to access materials by subject	☐	☐	☐	☐	☐
Finding media (e.g., films, videos, online images, etc.)	☐	☐	☐	☐	☐
Booking a group study room online	☐	☐	☐	☐	☐
Other (Please specify)	☐	☐	☐	☐	☐

How **likely** are you to recommend the following library services to another student?

	Very likely	Likely	Unlikely	Very unlikely	I don't use this service
One on one research consultation with a librarian	☐	☐	☐	☐	☐
Library workshops about library research (e.g., finding resources, requesting materials, etc.)	☐	☐	☐	☐	☐
IM/Online chat research help	☐	☐	☐	☐	☐
E-mail research help	☐	☐	☐	☐	☐

Suppose you had funding to improve the university library. Please select up to three of your most important priorities from the list below.

- ☐ Access to more online journals
- ☐ Access to more books (e-books, print books, textbooks)
- ☐ More computers
- ☐ More quiet study space
- ☐ More group study space
- ☐ More electrical outlets
- ☐ More whiteboards
- ☐ More drink/food options
- ☐ Additional comfortable furniture
- ☐ Other (Please list) [ ]

Think about your overall library experience at the institution, please tell us about your experiences with the library that positively impacted your coursework or research.
