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Tiffany Schweer
tiffanyschweer@huskers.unl.edu

Erica DeFrain
edefrain2@unl.edu

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The heart and living room of campus: A mixed-methods comparison of two informal learning spaces at the University of Nebraska, Lincoln

Tiffany Schweer

University of Nebraska, Lincoln, tiffanyschweer@huskers.unl.edu

Erica DeFrain, PhD

University of Nebraska, Lincoln, edefrain2@unl.edu

Abstract

Universities are designing informal learning spaces as open, collaborative environments; while there is a need for collaborative spaces, the majority of students in both spaces are working independently. This article compares the usage and design features of informal learning spaces within the main library and union of a “university.” Frequently referred to as the “heart” or “living room,” this architectural study employs mixed-method, explanatory sequential design. Quantitative data was collected through unobtrusive observations and random-sample surveys, followed by qualitative data collection via focus groups. Students visit the library more frequently and stay for longer periods of time than the union. Certain design features found to be more desired than others included standard-height tables and chairs that are comfortable; areas with natural lighting; and large, individual tables to spread out users’ belongings. Overall, it was found that the “heart” and “living room” of campus are serving their intended purposes. It is important for designers to remember that a variety of users have different needs and preferences that are served by a variety of spaces. This study builds on the limited literature regarding informal learning spaces and is the first to compare a university campus’s library to their union. Results will help shape the future of informal learning space design and guide future research in this field.

Keywords

Informal Learning Spaces, Library Design, University Unions, Assessment

Peer Review

This work has undergone a double-blind review by a minimum of two faculty members from institutions of higher learning from around the world. The faculty reviewers have expertise in disciplines closely related to those represented by this work. If possible, the work was also reviewed by undergraduates in collaboration with the faculty reviewers.

Acknowledgments

I would like to first thank Dr. Erica DeFrain for being a remarkable mentor and advisor; this article would not have been possible without her guidance and support. I would also like to say thank you to Dr. Miyoung Hong for being a great resource and for selecting me to participate as a research assistant. Gratitude to teammates Tara Grebe and Mikinna McGerr for assisting in collecting, analyzing, and presenting this research through the course of the project. Lastly, thanks to UNL's Undergraduate Creative Activities Program (UCARE) for supporting our travel to present our work at the 2019 National Conference for Undergraduate Research.

Why students choose certain informal learning spaces (ILS) is critical for universities to understand. Harrop & Turpin (2013) define ILS “as non-discipline specific spaces frequented by both staff and students for self-directed learning activities” (p. 59), wherein university libraries and Unions have become known as the “heart” and “living room” of campus—terms inferring the specific roles these spaces play in the lives of students.

The Library and Union are arguably the primary non-discipline specific spaces on campus and they each play a central role in student life. Libraries serve as a main academic hub on campus, a quiet place for intellectual work. The term “heart of campus” emerged in the 1920s (Stoddart, 2013), referring not only to the Library’s typical central location, but the idea that the Library supports the primary mission of universities: learning. Unions originated in the early 1800s as a common space, a place for engagement, gathering, and recreation (ACUI, 1990). They were the first neutral space for neither academic nor residential purposes (Rouzer et al., 2014). In 1956, the Association of College Unions International (ACUI) referred to Unions as the “living room of campus.” From the beginning, architects designed Unions in such a way to support this nickname where, according Rouzer et al. (2014), “the physical design of the college Union building invited casual conversations and interactions in a more intimate setting than a lecture hall” (p. 4).

These ILS play a significant part in university marketing, fundraising, and recruitment. Universities spend millions of dollars a renovating and building new spaces on their campuses to better meet students’ ever-evolving needs, which explains why many studies conducted on university campuses focus on evaluating the “success” of these spaces. “Success” is largely measured by gauging whether the investment was effective in terms of recruitment and retention given already constrained university budgets, and whether to allocate resources to future designs.

This study compares students’ use of ILS located within the main academic Library and student Union—the “heart” and “living room”—of the University of Nebraska, Lincoln (UNL). Revisiting the original intent of these spaces, it evaluates whether they continue to fulfill those roles. The goals of this article are to evaluate the “success” of these spaces within each of these two sites, and gain a better understanding the evolving motivations behind why students choose these spaces.

Literature Review

The body of research specifically regarding ILS is relatively small compared to other sub-topics in higher education. Researchers began studying ILS in the early 2000s when the learning commons model began revolutionizing traditional libraries across academic campuses. This work is primarily focused on university libraries and learning commons (James, 2013; Harrop & Turpin, 2013; Asher, 2017; George, Erwin & Barnes, 2009; Walton & Matthews, 2013; Cunningham & Walton, 2016) although some studies have also looked at other comparable spaces such as Library cafés (Deng et al., 2017), and community makerspaces (Sheridan et al., 2014). ILS studies are primarily conducted by librarians and other researchers who want to understand how ILS at their home campuses are being used by students. University Unions include spaces similar to campus libraries’ ILS, yet there is little-to-no literature regarding university Unions as learning spaces. George et al. (2009) released some preliminary results for a three-year study at Butler Community College, including their renovated Union, but final results were not published.

To date, the ILS research focuses on students’ use of physical spaces, demographics of users, whether or not these spaces are successful, and what technologies are needed in these spaces. Key limitations include many using only one method of data collection, are single cases, or rely on insufficient sample size.

Several quantitative studies evaluating ILS do exist. Although they have helped identify user demographics, they do not articulate fully why students are choosing these spaces. As Deng et al. (2017) state, “the nature of these methods did not allow for a complete, in-depth analysis and understanding of students’ perceptions of the Library as a place, as well as the Library café’s role in contributing to collaborative learning, as qualitative interviews and focus groups would” (p. 6).

For example, in 2017, Asher conducted a mixed-methods study using time-lapse photography (175 collection times), unobtrusive observations, and random-sample walk-up surveys (304 individual, 96 group surveys). Asher found that business, first and second year, and international students use the space more than expected, while humanities used it much less. Overall, students were satisfied with the atmosphere and services, but dissatisfied with insufficient space as their learning commons is often at or near capacity. Asher points out that just because the learning commons is a highly populated space does not necessarily mean that it is successful in fulfilling its original intent. A longitudinal mixed-methods study was conducted by Harrop and Turpin (2013) to look at informal learning spaces both within and outside the Library environment. They took a more general, design-based approach to their results and discussion, turning their data into nine resulting attributes defining an ideal typology of informal learning spaces.

Only a small number of studies have compared multiple campus ILS. Cunningham and Walton (2015) compared students’ use of the Library and other ILS across campus. During two, one-week periods, they conducted 265 interviews in 14 different ILS across campus. Students were found using the Library’s ILS primarily for revisions during exams. This was a single case study and a relatively small population of students were interviewed. Additionally, having one-on-one, faculty-led interviews could have been intimidating, especially to first-year students

who account for nearly half of persons interviewed. Cunningham and Walton (2015) recommend that students who are not using the provided ILS should be included because “involving potential users as well as actual users in the design of the spaces” reveals “what is needed” and “provides the opportunity to create exciting, vibrant areas” (p. 60).

Research Questions & Aims

This study takes the work of previous researchers a step further by comparing students’ use of a university Library’s ILS to those of a university’s Union. As main academic and community spaces on the average U.S. college campus, these buildings fulfill similar central roles in the lives of university students while simultaneously supporting their own unique tasks. Researchers must understand the roles these spaces play and evaluate their success in order to better guide future ILS design. The article is guided by the following research questions:

1. What populations of students are using these spaces?
2. What are the key differences and similarities of students’ uses in the two spaces?
3. What design aspects and features of ambiance are preferred by users?

Methods

The data collected for this study were part of a larger research project examining five sites across the UNL campus. Following explanatory sequential design (Doyle et al, 2016), this mixed-methods study first gathered a quantitative data by way of unobtrusive observations and surveys. The results shaped the development of the qualitative data collected through in-depth focus groups.

The two sites were subdivided into zones based on the designated rooms or areas within each building (Figures 1–6); the Library had five zones, while the Union had four. The unique design and intent of each zone is elaborated in Table 1.

Schweer and DeFrain: The heart and living room of campus: A mixed-methods comparison o
The heart and living room of campus

Figure 1. Library basement level

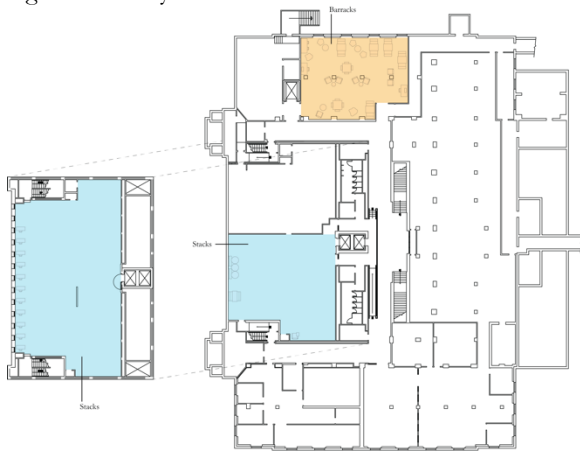


Figure 4. Library floor three

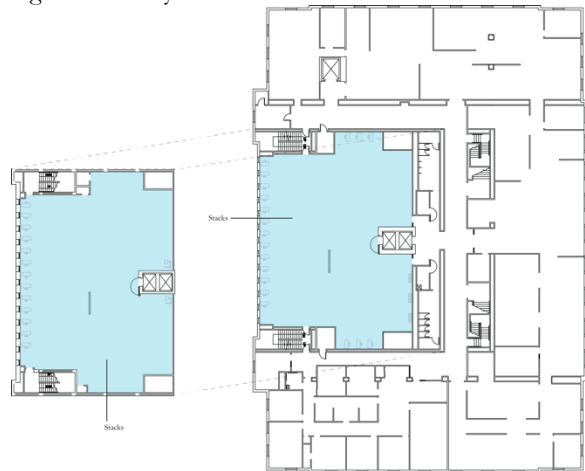


Figure 2. Library floor one

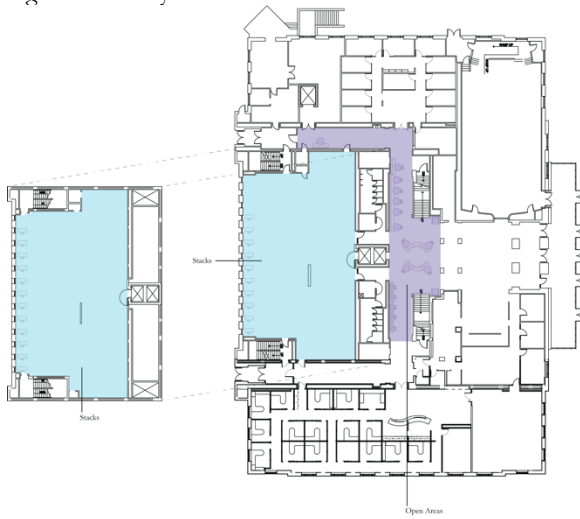


Figure 5. Union basement level

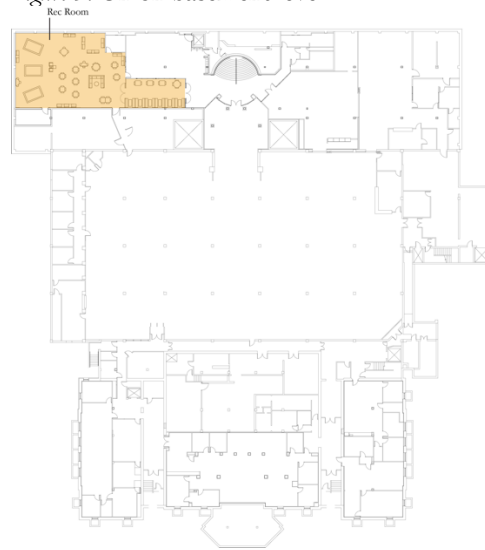


Figure 3. Library floor two

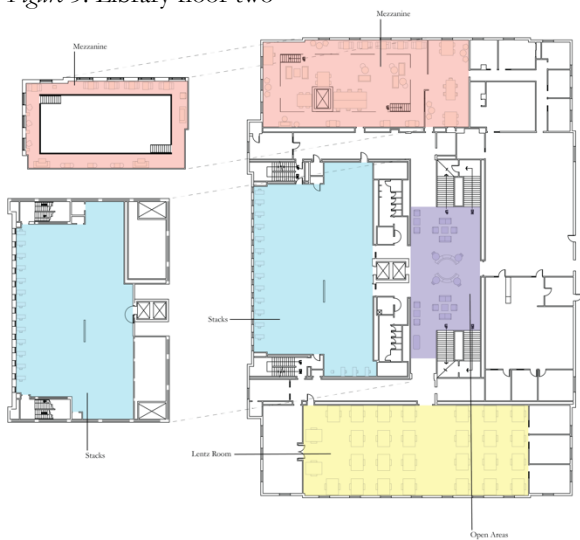
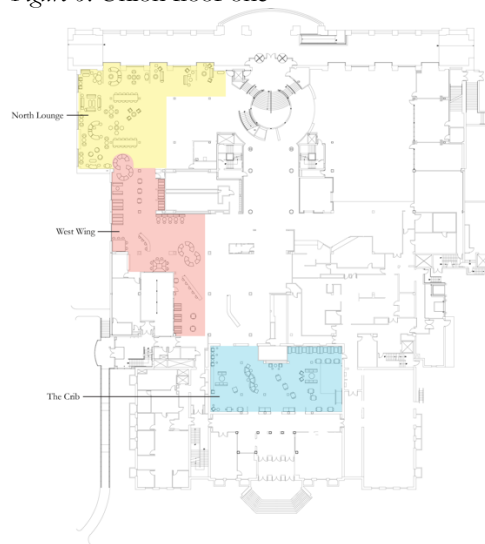


Figure 6. Union floor one

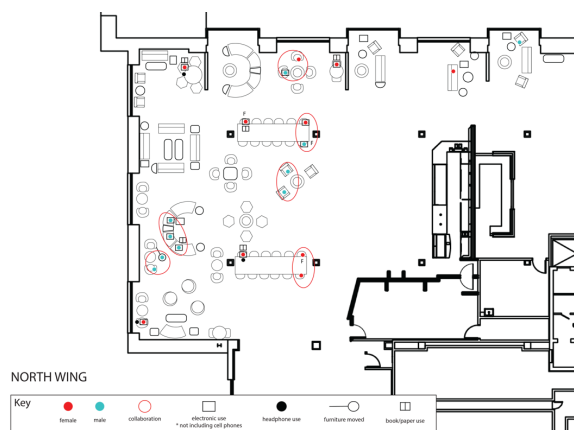


The heart and living room of campus

Quantitative data. Researchers conducted observation sweeps by quietly walking through each site with maps of the zones and recording where students were sitting, if that had rearranged furniture, whether they were male or female, if they were working alone or with others, and whether they were using a laptop or tablet, headphones, books or papers, a markerboard. A total of 121 observation sweeps were conducted between the two sites (60 in the Library; 61 in the Union), observing 10,316 total individuals (6,049 in the Library; 4,267 in the Union). An example of a behavior map from a single observation and a compilation of all observations are shown in figures 7 and 8. Observations were conducted Sunday evenings and Monday through Friday within the hours of 08:00 to 21:00 and at least an hour apart. Behavior mapping data was recorded by hand and then input into an electronic data base where data points could be analyzed for trends and outliers.

Research assistants gathered electronic surveys through simple random sampling. Participants were required to be UNL students, at least 19 years of age or older. Participation was completely voluntary. The survey, initially piloted by a small group of students, asked both open- and close-ended questions;

Figure 7. An example of a behavior map from a single observation sweep in the Union. This map is of the North Lounge in the Union on January 23rd, 2019 at 19:00.

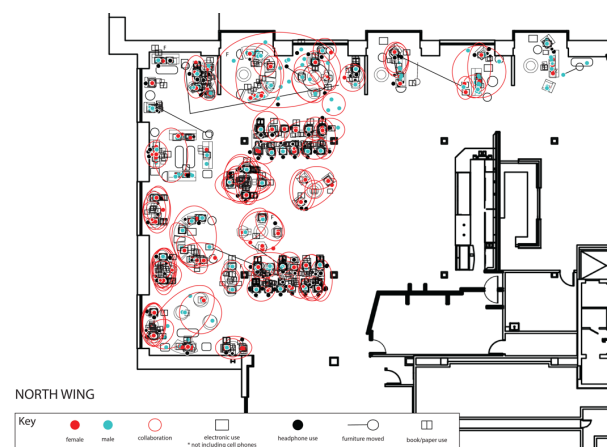


gathered participants' demographic, usage, and satisfaction data; and took about 10 minutes to complete. A total of 258 students completed the surveys: 144 from the Library, 114 from the Union. Survey data was compiled and stored electronically. Researchers used the closed-ended questions to graphically analyze users, while open-ended questions were evaluated and sorted to find common themes, then elaborated on in focus groups.

Qualitative data. Observation and survey data were collected separately and simultaneously, then initially analyzed. Follow-up focus groups were held to gain a better explanation of the preliminary findings. Two separate hour-long focus groups with five students each were held at the Library and the Union. To analyze focus group data, researchers transcribed the recorded sessions and corresponded themes to the previously recorded observation and survey data.

IRB approval. This research involved human subjects and was part of a larger study which was approved by UNL's Human Research and Protection Program with International Review Board, approval number 20181018684 EX.

Figure 8. An example of the final compilation of behavior maps. This is all 61 observations from the Union in the North Lounge.



The heart and living room of campus

Table 1. Zone breakdowns from each site				
		Design Intent	Seating Capacity	Average Occupancy (%)
Library				
Barracks		Located in the basement, only two fire escape windows allow for a small amount of natural lighting and no views to the outside. A variety of furniture types. Quiet, but some talking.	32	17.55
Lentz		Only furniture type is large wooden tables, each with 2 wooden chairs. Tables are well spread out. Small artwork displays in the center of the room. Large windows and a high ceiling allow for lots of natural lighting. Very quiet, occasional low-level talking.	56	27.77
Mezzanine		A wide variety of furniture, much of it very flexible. Brightly colored with blue and green accents throughout. Plenty of green plants and natural lighting. Fairly quiet, low-level talking. Privacy screens incorporated around furniture and via built walls.	92	25.33
Stacks		Located on all 8 floors of the Library. Individual cubicles, each with one desk and one padded chair, separated by partitions. Most desks have a window with a nice view overlooking the front courtyard of the Library and an adjustable shade screen. Harsh fluorescent lighting. Nearly silent at all times. Partitions and bookshelves allow for lots of visual privacy.	106	43.44
Open Spaces		A variety of mostly comfortable, cushioned furniture types. Not all seats include a table. Generally, the loudest zone in the Library, with normal level talking. High traffic areas.	55	18.73
Totals			341	29.57
Union				
Rec Room		Located in the basement of the Union. No windows. Pool tables, game tables, and TVs. Intended to be a hangout space. Normal level talking.	94	10.30
North Lounge		A large, open space with a coffee-house aesthetic. Wide variety of comfortable and flexible furniture. Not much visual privacy. Large, floor-to-ceiling windows flood the room with light. Nice views to a large courtyard and the campus fountain. Starbucks is located here. Typically, a loud and bustling space. A few TVs with cable.	94	23.90
West Wing		Primarily booth seating, along with some standard and high-top tables with hard chairs, a couple couches. Half of the zone has large windows; the other half has none. Good, soft lighting. Located directly adjacent to the campus food court. A loud, high traffic area especially during peak times. Most seating arrangements allow for good visual privacy.	115	21.10
Crib		Primarily comfortable lounge furniture, booths, some high-top tables with stools and some standard tables and chairs. No windows. Darker, low-lit. Quieter, but normal level talking. Lots of traffic cutting through during peak times. A piano and a small stage are located on the far end.	64	21.00
Totals			367	19.10

Results

Student populations. Understanding the users or potential users of a space is the first step in planning and designing new spaces. Demographic data were gathered from survey participants (Table 2). Across both sites, women were the primary participants, making up 60% of Library respondents and over 75% of the Union's. This is more accurately represented by observational data which showed 53.6% of Library and 57.2% of Union users to be women.

Of survey respondents, the majority of users were undergraduates. Freshmen represented only 10% and 14% of respondents in the Library and Union respectively. This was different from the findings of Asher (2017), where the majority of users were first- and second-year students. It should be noted, due to Nebraska state law, users were required to be 19 or older to participate. According to the UNL website, 16% of total students were age

18 or younger as of August 2018. This could explain this gap.

In general, race data and international status were as expected compared to the university's student population. One key outlier to note is that while only 2.71% of the total student population in fall 2018 identified as Asian, 11% of Library users identified as Asian.

The colleges of Business and Arts & Sciences comprised the most users, followed by the college of Education & Human Sciences, which happen to be the largest three colleges within the university. Another unexpected finding was that 12% of Union users were architecture students, compared to only 1% in the Library (where Architecture students make up only 2% of the total student population). This could be due to unintentional bias in selecting survey participants based on survey administrators being university architecture students.

	Library (n=144)	Library (%)	Union (n=114)	Union (%)
Gender*				
Female	87	60.42	88	77.19
Male	56	38.89	25	21.93
Other	0	-	0	-
Prefer not to answer	1	0.69	1	0.88
	144		114	
Class Standing**				
1 st Year or freshman	14	9.72	18	15.79
Sophomore	47	32.64	32	28.07
Junior	43	29.86	39	34.21
Senior	37	25.69	20	17.54
Graduate	2	1.39	5	4.39
Other	1	0.69	0	0
	144		114	
Race				
American Indian or Alaska Native	0	-	0	-
Asian	16	11.11	5	4.39
Black or African American	2	1.39	3	2.63
Hispanic or Latino	2	1.39	4	3.51
Native Hawaiian or Pacific Islander	0	-	0	-
White	113	78.47	90	78.95
Other	0	-	1	.88
Prefer not to answer	6	4.17	3	2.63
Multiple	5	3.47	8	7.02
	144		114	

The heart and living room of campus

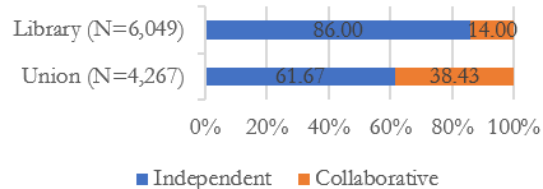
International student?				
No	134	93.06	105	93.11
Yes	10	6.94	9	7.89
	144		114	
College				
Agricultural Sciences & Natural Resources	16	11.11	12	10.71
Architecture	1	0.69	14	12.50
Arts & Sciences	43	29.86	27	24.11
Business	31	21.53	15	13.39
College of Nursing	4	2.78	1	0.89
Education & Human Sciences	16	11.11	15	13.39
Engineering	10	6.94	7	6.25
Fine & Performing Arts	2	1.39	1	0.89
Exploratory & Pre-Professional Advising Center	3	2.08	2	1.79
Journalism & Mass Communications	4	2.78	8	7.14
Public Affairs & Community Services	1	0.69	1	0.89
I'm not sure	0	-	2	1.79
Other	3	2.08	1	0.89
Multiple	10	6.98	6	5.36
	144		112***	

*more accurately represented by observation data
**participants must have been at least 19 years of age, thus limiting the number of underclassmen who could participate
***two participants did not to answer

Utility comparisons. The key similarities and differences of use of these two central spaces helps designers think about what kind of ILS should be included in both libraries and Unions, as well as other ILS across campus in the future. For example, unobtrusive observations noted whether users were working independently or collaboratively. Users sitting alone or in groups working on individual tasks were documented as working independently. Users actively interacting were marked as collaborating. Unobtrusive observation data documented a majority of users at both sites working independently (Figure 9). Collaboration was significantly higher in the Union than the Library, however.

Survey participants answered questions regarding their reason for visiting that location, how long they planned to stay, and frequency

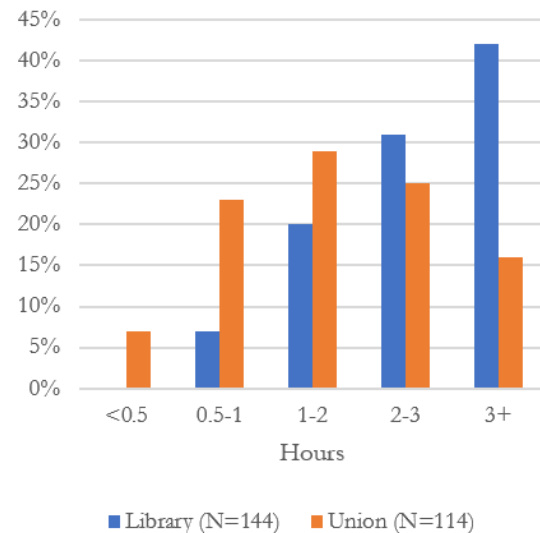
Figure 9. Percentage of Independent vs Collaborative Users based on observation data.



of visits per week. Overall, it was found that participants in the Library stayed longer than students who were visiting the Union (Figure 10). Students reported they visited the Library more frequently than the Union (Figure 11).

Most Library survey participants were working independently (Figure 12). Union respondents' tasks were more diverse, although most were still working on coursework alone. Relaxing, socializing, and "something else" all

Figure 10. Anticipated length of stay as reported by survey participants.



The heart and living room of campus

ranked fairly high among Union respondents in comparison to Library participants. Behavior mapping could not accurately determine whether users were collaborating on schoolwork or socializing. The results of the survey supported the initial observation findings that most students were working independently in both sites, but that much more collaboration was undertaken at the Union.

Users in both sites were observed typically using a personal laptop or tablet (Figure 13). Books and paper, along with headphones, were more commonly used in the Library (Figure 13). Students expressed a desire for whiteboards to be included in the Union spaces and a need for more in the Library.

Figure 11. Frequency of visits per week as reported by survey participants.

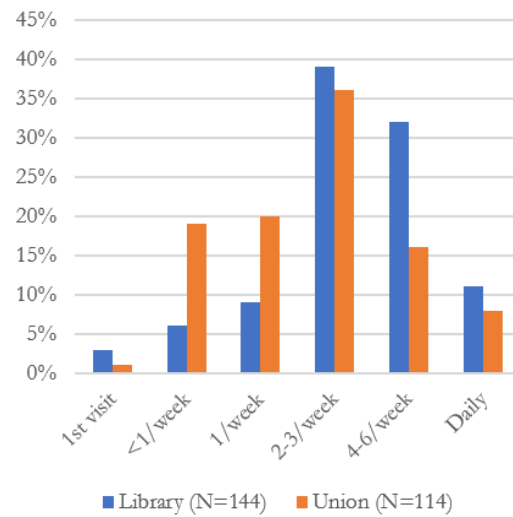
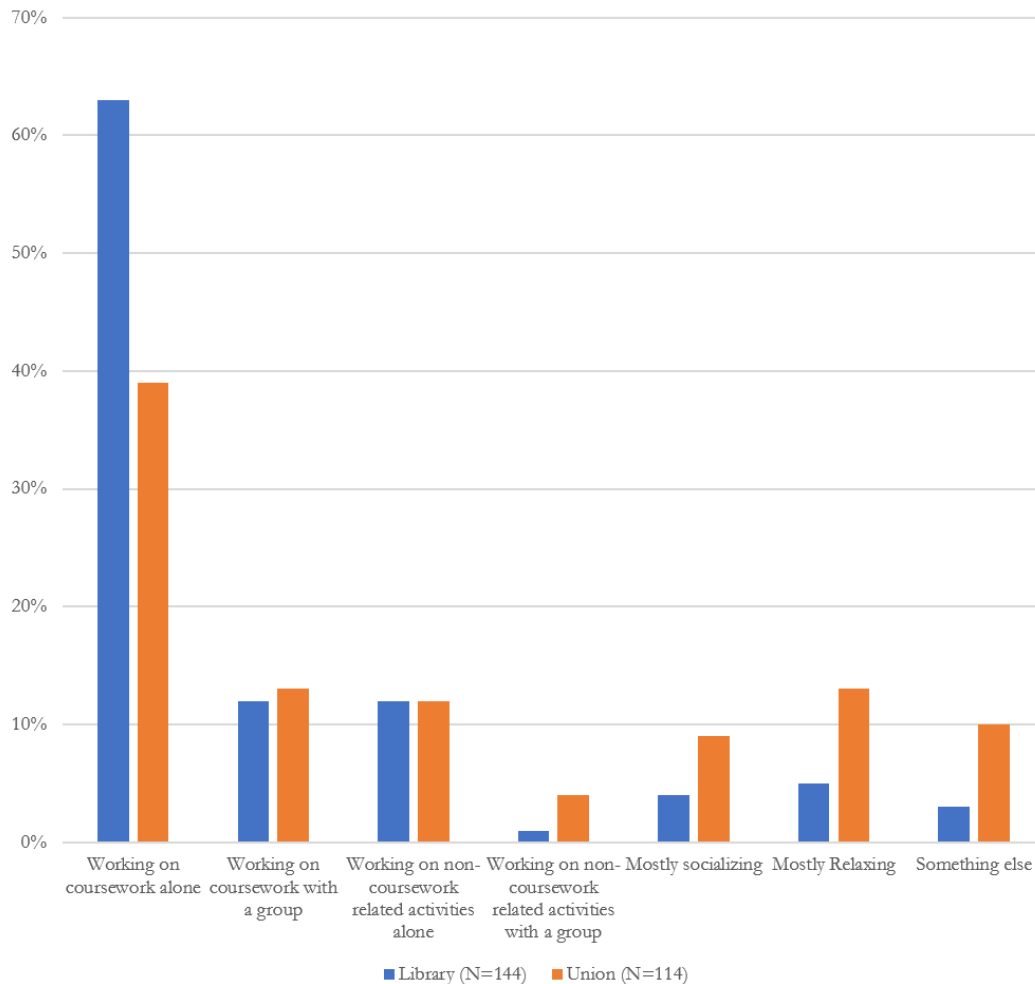
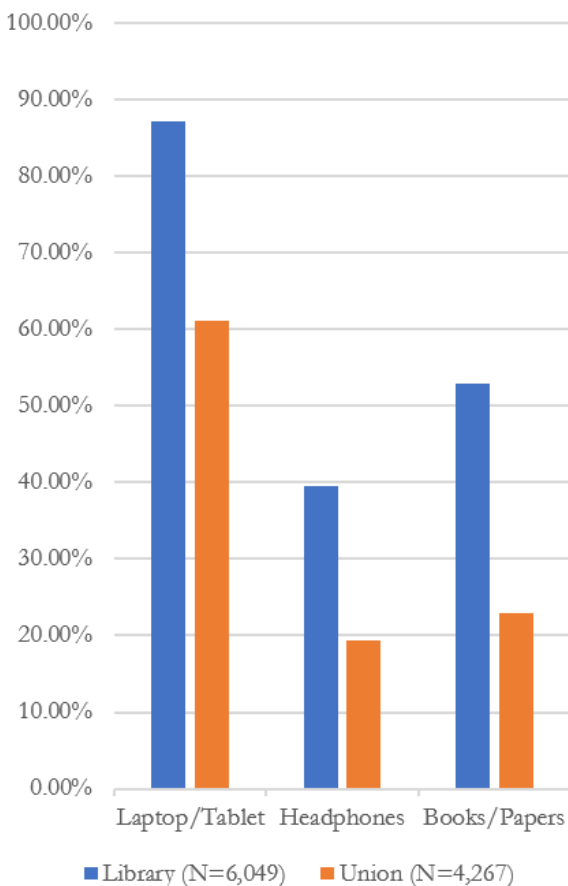


Figure 12. Reason for coming as reported by survey participants. Users were able to identify multiple reasons; therefore, percentages may exceed 100%.



The heart and living room of campus

Figure 13. Percentage of students using resources to support their tasks at each site as recorded through observations.



“One thing I thought would be nice at the Union would be to have moveable whiteboards,” commented one focus group participant. A Library survey respondent noted “sometimes the whiteboards are unavailable and so I can’t study effectively.”

Design and ambiance preferences. User preferences and usage patterns became apparent after visual analysis of unobtrusive behavior mapping, and analysis of survey and focus group data. The two sites had similar seating capacities. However, the Library averaged a higher occupancy rate (Table 1).

Survey participants across both sites identified their top three workspace features as:

1. size of personal workspace
2. having an individual study table
3. comfortable furniture

The top three ambiance features supporting productivity differed between the sites, however. In the Library, 85.9% of participants identified quiet in their top-three ambiance needs. Union participants identified being around others studying and views to the outside as important. Noise privacy and visual privacy were important among respondents as a whole.

The Library and Union survey data revealed students top three amenities as access to power outlets, WiFi, and food availability. WiFi connection is available throughout the entirety of both sites. Seats with access to power outlets were often occupied first, especially compared to seating arrangements in the middle of the room with no power outlets. Both sites include access to vending machines. The Library does not include any food or drink vendors, whereas the Union houses numerous food options. Many students referenced visiting the Union because they wanted coffee while they worked or socialized, stating “They have Starbucks here!” and “I came because I wanted to drink coffee while I worked.”

Regarding environmental satisfaction, many survey participants were somewhat to extremely dissatisfied with control over temperature (Library: 34.8%; Union: 33.6%) and lighting (Library: 33.5%; Union: 28.2%) at both sites. Over one quarter of Union survey participants expressed dissatisfaction with views to the outside, and 22% were dissatisfied with noise privacy. This is of note, as these were both identified as important to students’ productivity. Similarly, in the Library, noise privacy was important, yet it had the greatest level of dissatisfaction among respondents.

Discussion

This mixed-methods study allowed for a wide range of data to be collected across two sites. After initial analysis, conclusions can begin to be drawn regarding what design elements are working and shape future ILS design.

Limitations. Limitations for this study include the inability to conduct observations every hour of building operation, as well as all semester long. Researchers conducted observations by hand, in real time and thus human error should be considered. This study uses actual occupancy rates. Perceived occupancy refers to a space feeling full in the eyes of the user, even if there are plenty of open seats (Asher, 2017). Actual versus perceived occupancy is an important metric that future studies should look into in order to gain a better understanding of the usage patterns of these spaces. Survey results represent the survey respondent population and may not be completely representative of the entire user population. A larger sample size could provide better confidence in the results.

Noise level as a determinant for space choice. Noise level and noise privacy are two fundamental differences between the “heart” and “living room” of campus. The Library is primarily quiet throughout all five zones, and this was a key appeal for most of its users. The Union, on the other hand, is a bustling, noisier space, especially in the North Lounge and the West Wing, the two most occupied zones. These two zones were observed as also having the highest rates of collaboration. Students may feel more comfortable talking with others in the Union because there is no established expectation for quiet, as in the Library. Students who were working individually in the Union often commented they preferred the noise that the Union provides. Focus group participants said, “I actually like the white noise of people around me. If I’m in a quiet place I’m not very productive,” and “I need people bustling around me and doing things.”

Usage patterns suggest there were certain design and ambiance features privileged by users. Size of personal workspace and having an individual study table were top workspace priorities among survey participants. Students elaborated on this need in both focus groups: “I like to have a big table. I have my laptop and all my papers, I really like

when you have so much room to spread out,” and “sometimes the tables might be a little too small. I like to spread my stuff out.” Zones which included comfortable furniture were praised for it, while those without were criticized. Students requested hard chairs to be replaced with more comfortable options. Booths—with cushioned seating and large tables, accommodating one-to-four students—were requested more than any other furniture type. These were observed to be the first seating options to fill up and were the most requested by survey and focus group participants. Booths also allow for more visual privacy, another top need for survey participants. Although lounge furniture is somewhat utilized by students, there is a much higher need for practical furniture: standard height tables and chairs. Observations, survey and focus group data found windows, views, and natural lighting was another feature students preferred. Zones which featured large windows and natural lighting had higher occupancy rates than rooms with little or no natural lighting.

These design and ambiance features of each unique zone reflect the domestic metaphors to which they have become attached: the Library as the “heart,” the intellectual hub and primary location for learning outside of the classroom; and the Union as the “living room” or central place for community, social interaction and engagement.

Designers of future informal spaces would benefit from being conscious of their users and how they are employ these spaces. Students have diverse learning styles and needs, which also vary based on their day-to-day tasks. Students make decisions on where to work and study based on these variables. As a result, universities should provide a variety of spaces which accommodate the needs of the student body as a whole. Spaces suited for both individual and collaborative work are needed, while it should be considered that there is more of a need for individual study spaces than collaborative. Large tables with practical, yet comfortable chairs are the most needed, while

a smaller amount of lounge furniture can still be incorporated. Users prefer working in areas with windows, providing ample natural lighting and views to the outside. Campus libraries and unions play crucial roles in the lives of students and support their needs in similar, yet unique, ways.

Recommendations. Future study of undergraduate students not using the provided ILS on campus are sorely needed. They might consider how these spaces could better accommodate those students' needs, or if they should. Also needed is an expanded comparative analysis across multiple U.S. campuses of similar institutional profile (i.e., small liberal arts colleges (SLAC), historically black colleges and universities (HBCUs), flagship state universities). Attention to workspace and ambiance design within a space and how these factors affect students' abilities to work within a space could add important aspects to this body of literature, as well analyses of qualitative data of users' behavior. Future studies can help shape the development of new and renovated spaces to improve students' learning experience.

Conclusion

This study evaluated the success of the main Library and Union—or “heart” and “living room”—at the UNL campus to examine the needs of the specific university's student population within the context of ILS. Previous literature is limited by single methods of data collection, insufficient sample sizes, being single case studies, or only exploring qualitative or quantitative data. Therefore, this study builds on previous literature by contributing growth in the area of using mixed methods, a relatively recent development in this area of study. With limited research regarding university's Union spaces, it is the first study thus far to compare a campus Union to its Library. These findings and conclusions are essential for shaping the future of ILS planning, design, and use for a variety of

stakeholders, including designers, administrators, donors, and, of course, the primary users: students.

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