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Article abstract

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Methods – The researchers used a mixed-methods case study consisting of 2,443 "direct observations," 646 environmental scans, 248 patron surveys, and 46 whiteboard poll questions. They created visualizations of results in Tableau, with filters for zone and variable. They then carried out a follow-up furniture preferences survey with 190 respondents.

Results – Independent study dominated the space usage. Users valued spaciousness, quiet, privacy, and a clean environment. Users frequently multi-tasked with additional devices as they simultaneously used the library computers, including cell phones, headphones, and laptops. The majority of students self-reported using a library computer for email and to access the campus online learning platform. They also reported reading/studying and printing as frequent activities, although these were less frequently observed. Unattended belongings were observed along with broken electrical outlets. Temperature and noise levels were highly variable.

Conclusions – This methodology allowed for the exploration of space use and satisfaction and uncovered implications for the redesign of the library space. The library has already taken steps toward making improvements based on this assessment project including: removing some reference stacks in favor of additional seating space, an inventory of all electrical outlets, and the exploration of new furniture and noise control strategies.

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Research Article

Student Use of the Information Commons: An Exploration through Mixed Methods

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Abstract

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Introduction

In 2009, Loyola Marymount University opened its Doheny Information Commons as part of the new William H. Hannon Library. The Hannon Library is open 24/5 with free wireless and a liberal food and drink policy. The first floor of the library features a café, the circulation desk, lockers with electrical outlets, four walk-up computers, library classrooms, reference stacks, and an information commons with 80 computers, 3 enclosed presentation practice rooms, and an Information Desk for reference and basic technology and printing help. Throughout the second and third floors are over 30 enclosed group study rooms that can be reserved online. The second floor features a branded service desk for IT support, device repair, and equipment checkout, a popular reading collection, print periodicals stacks, carrels for both media and individual study, and book stacks. The third floor is the designated quiet floor and features exhibit space, Archives and Special Collections, individual study carrels and group tables, a faculty commons and faculty technology sandbox, a large multi-purpose room, and book stacks.

The Doheny Information Commons space met Bailey & Tierney's (2008) traditional definition of an information commons by featuring 80 computers as "single workstation(s) with access to traditional library services and productivity resources in a high-technology-rich

environment" (p. 2). Furthermore, the library intended it to cater to the millennial student, who needs space conducive to social learning, collaboration, and group activities (Lippincott, 2012). The same year the new space opened, Ross Housewright (2009) warned that academic libraries were "at risk of losing their functional relevance and fading to primarily symbolic importance" if they failed to adapt to the changing information environment (p. 254). Additionally, Housewright asserted that it is important to align with the changing needs of students and faculty by "redeploy(ing) resources flexibly" (p. 259). The mission of the new commons was to support academic life at LMU, but how long might it be until it was no longer offering optimal support?

In 2013, the library strategic plan called for post-occupancy planning of emerging space utilization needs in the public areas of the library. This reflects Lippincott's (2012) advice that "it is important to collect information on the actual needs of students and not just on needs perceived by librarians" (p. 540). The question for any institution that has set up a new space as an information or learning commons is aptly summed up by librarians from Harrisburg University of Science and Technology: "We need to explore ways of assessing the extent to which learning commons services and resources help students succeed as self-directed learners" (Adams & Young, 2010, p. 159). We designed the study described in this article to address the

question of whether an information commons, after six years, was still optimally supporting students' academic life in a rapidly changing environment.

Literature Review

Published research on the design and use of library spaces, especially for the purposes of assessment and planning (or re-planning), has appeared regularly in the second decade of the 21st century. This research has been framed often in the context of paradigm changes that appear with each generation of new libraries, as set out by the frequently cited university librarian emeritus at Yale, Scott Bennett (2008, 2009). The most recent shift is identified as "learning-centered," with spaces in new and renovated libraries dedicated as either learning or information commons, and Bennett (2009) calls on his profession "to launch a design practice centered on learning" (p. 194). An entire library might become a university's information commons (Hisle, 2005), or through new additions or renovation libraries could now contain "a flexible, reconfigurable space that is sized to a reasonable subpopulation of students and equipped with group learning spaces as appropriate" (Beagle, Tierney, & Bailey, 2006, p. 9). Neither the name nor the space came to have a consistent definition or execution, but on the whole this situation has not impeded the beneficial results for libraries or librarianship (Bonnand & Donahue, 2010).

Even as Beagle and others were contributing the vision and summing up the new library spaces, their colleagues in the field had begun the research into library spaces and users that would soon create a substantial body of research with a broad spectrum of methodologies. These ranged from quantitative, intensive seat counts (Dotson & Garris, 2008) to the purely creative setting of the design charrette (Oliveira, 2016; Washburn & Bibb, 2011). Some early studies used a quantitative approach with direct observation sweeps (Applegate, 2009; Dotson & Garris, 2008; Given & Leckie, 2003) and simple

paper questionnaires (Gardner & Eng, 2005). These two modes of quantitative data collection look at what users do, on the one hand, and try to get at what users want and expect, on the other. This mixture of direct observation combined with questionnaires created a key set of studies (Holder & Lange, 2014; İmamoğlu & Gürel, 2016; May & Swabey, 2015; McCrary, 2017).

However, the need to acquire data about both of these important aspects of library spaces has, on the whole, led to research that uses two or more modes of collection and often more than one methodological approach. Ethnographic techniques have been popular, either as the sole approach (Bedwell & Banks, 2013), or as part of a mixed method toolkit, such as a combination of video observation, the NSSE, and user surveys (Webb, Schaller, & Hunley, 2008). Even larger mixes of methods have brought together the quantitative survey, focus groups, filmed interviews, and student-made films (Cowan, 2012), or time-lapse photography, unobtrusive observation, and random-sampled surveys (Asher, 2017). However, "ethnography is a complicated and time-consuming research method" (Khoo, Rozaklis, & Hall, 2012, p. 82).

The majority of research in this literature review looked at the use of space or the behaviour of users in library spaces generally, with a minority dedicated to pre-occupancy assessment for design (23%), or post-occupancy assessment (18%). Further, not all of the latter had as their subject a designated commons or similar space. Some research focused solely on measures or ideal attributes of library or commons space. Cha & Kim (2015) used surveys of academic library users in the Netherlands, while the TEALS standard was the product of another (Abbasi, Elkadi, Horn, & Owen, 2012). Only two longitudinal studies exist (Fox & Doshi, 2017; Montgomery, 2014). We believe that our research makes a strong contribution to this important post-occupancy category of library space assessments and data.
Another gap that we identified is that of studies

that provide detailed data on use of the computers and devices that are the key components of the information commons model. Even though the quantitative approach predominates in the research under review (about 42%, with an additional 37% if mixed-method research is added), and direct observation is frequently employed, only two studies (5%) included observation of the screen itself: that is, what the users were actually doing on their computers and devices while they were in the library. To answer the question of what students "really do" in the library, Paretta & Catelano (2013) used direct observation at two sites. These researchers did not look at space use or other factors, but do provide highly detailed data on print vs. computer, and academic activity vs. leisure activity. The one other study also utilized direct observation, and set out to analyze the use of a particular library space (not a commons), but didn't provide any detail about the frequency of academic vs. leisure use of technology (Faletar Tanackovic, Lacović, & Gašo, 2014).

Is there a developing evidence base of common findings among space studies? The preponderance of users working on their own has been frequently found (Bryant, Matthews, & Walton, 2009; Crook & Mitchell, 2012; Ferria et al., 2017; Holder & Lange, 2014; Thomas, Van Horne, Jacobson, & Anson, 2015). One ethnographic study highlighted single users "appropriating" group tables by spreading out personal items (Bedwell & Banks, 2013, p. 12). On the other hand, if group space is not provided, it will be improvised (Hursh & Avenarius, 2013; Webb, Shaller, & Hunley, 2008).

The research is not clear about other elements of expectations for library spaces, however. Students still value and prefer a quiet library, despite predictions about upcoming generations, but what constitutes excess or distracting noise appears to be contextual

(Cowan, 2012; Crook & Mitchell, 2012; Faletar Tanackovic, Lacović, & Gašo, 2014; Khoo, Rozaklis, Hall, & Kusunoki, 2017; McCaffrey & Breen, 2016; Newcomer, Lindahl, & Harriman, 2016; Regalado & Smale, 2015; Suarez, 2007). Even very recent studies suggest that "students consider the quiet communal spaces integral to their experience of the library" (Yoo-Lee, Lee, & Velez, 2013, p. 509).

Furniture is another component of the information commons that some writers thought would need to depart from traditional library practices (Hisle, 2005). This may not entirely be the case. More than a few studies indicate that the ideal workspace may be "a big desk," that is, rectangular, no-frills tables, or the old-fashioned carrel (Hall & Kapa 2017). Arguably, "space in which to spread themselves and their belongings out" (Washburn & Bibb, 2011) is the feature in question, rather than the furniture itself. Not all the data agrees. Ferria et al. (2017) found booths popular, and Webb, Schaller, & Hunley (2008) found 60% of respondents split between wanting tables and a preference for soft seating.

Aims

In 2009, this new library had opened with a "perfect" Information Commons space designed to support the millennial student. After six years, our aim was to see if students were utilizing the Information Commons in unexpected ways and deviating from the anticipated "millennial" behavior for which we had built it. We designed our post-occupancy study to answer the following research questions:

- What areas of the Information Commons do students really use or not use?
- What furniture configurations are preferred?
- What mix of technology, resources, and activities are students engaged with inside of the space?

Figure 1
Observation zones of the Information Commons.

Methods

Given our research question – to assess how students and others use the Hannon Library's Information Commons – we adopted quite naturally the case study. We wanted to know what the users were doing, and where, and with whom, but also to find out their attitudes towards key environmental factors such as comfort, temperature, and noise. Simons (2009) defined case study research as "an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme or system in a 'real life' context. It is research-based, inclusive of different methods and is evidence-led" (p. 21). Many case studies employ mixed methods, defined as "the combined use of both quantitative and qualitative methodologies within the same study in order to address a single research question" (Hewson, 2006, p. 179).

We had little difficulty in choosing to employ mixed methods, because such "research works particularly well for case study research as it allows the researcher to take the rich empirical data yielded from case studies and apply either quantitative or qualitative methods to the data" (Kitchenham, 2010, p. 2). We carried out the study during the spring semester of 2015 between April 6th and 19th. All instruments and procedures for this study were reviewed and approved by the LMU Institutional Review Board.

Direct Observations

Direct observation of library spaces can be as simple as the sweep or headcount (Given & Leckie, 2003) or more "systematic" observation that collects specific data about users such as "gender, being or not being in group" and activities or technology (Applegate, 2009, p.

342). If a research question will benefit, the researchers can use direct observation to collect both quantitative and qualitative data (Ferria et al., 2017). The first data collection method consisted of 2,443 direct observations made about the location and behavior of subjects who were physically present in the information commons, or about the space itself such as out of order equipment and unattended belongings. Daily observations were made in the morning (between 9:00 a.m. and 12:00 p.m.), afternoon (between 1:00 p.m. and 4:00 p.m.), evening (between 5:00 p.m. and 8:00 p.m.), and late night (after 9:00 p.m.) by librarians and library staff. To better facilitate the observations, the researchers adopted the zone concept, "spaces… coherent in terms of use, environment, furniture, and so on" (Khoo, Rozaklis, Hall, & Kusunoki, 2017, p. 57). We divided the information commons into five observation zones (see Figure 1) with designated observation points. Observers recorded each person's activity and use of library resources and technology using a Qualtrics form on iPads (see Appendix A).

Environmental Scans

Given & Archibald (2015) recommended "to use a range of methods" in assessment that would include factors such as lighting and noise, to make up for a lack of direction in this regard in library design guidelines (p. 102). Therefore, the researchers collected 626 environmental scans in each zone at designated areas in a separate Qualtrics form (see Appendix B). They measured temperature with a digital thermometer in degrees Fahrenheit with a humidity range, they measured noise level in decibels with a digital sound meter, and noted any out of order equipment (computers, printers, scanners, lights, and photocopier), as well as any messy or dirty sites.

Patron Surveys

While direct observation can address who and where questions, it cannot provide insight into the users' choices and expectations. We wished

to collect and incorporate data about "spatial choice" and "the importance of space attributes in different contexts" (Cha & Kim, 2015, p. 274). A convenience sample of patrons filled out 248 questionnaires in the Information Commons during the same two-week period (see Appendix C). The survey asked users to self-report on activities and preferences, and it measured many of the same things we directly observed to allow for comparison and triangulation. We used a $50 Amazon gift card raffle and chocolates as incentives.

Whiteboard Polls

In order to provide an additional "user feedback channel" (Halling & Carrigan, 2012, p. 70), the final data collection method consisted of polling by means of small mobile whiteboards stationed in the Information Commons. We posted questions on each whiteboard:

1. I need ___ when I come to the Information Commons.
2. What adjective best describes the Information Commons?
3. Put a smiley face on the map (of the Information Commons) next to the things you like.
4. How can we improve the first floor?
5. Name one change you would make to the first floor space.

Furniture Survey

Researchers deployed a follow-up furniture survey some two years after the primary study, and 190 respondents participated during a one-week period during the spring semester of 2017. We built the survey online using the Qzzr software and provided pictures of a variety of furniture options. During the day, library staff circulated in the Information Commons in staggered shifts, and asked users to complete the survey to gather input on how to configure existing and future furniture (see Appendix D). Staff used chocolates as an incentive.

Table 1
Furniture Survey Results

Furniture Purpose	Top Preference	Reasons
Library Computer Workstations	Private group workstation (88%)	Privacy (70%), space for my stuff (67%)
Table & Chair Configuration (without desktop computer)	4 chairs facing each other (54%)	Studying/homework (59%), collaboration (59%), space for my stuff (52%)
Table Shape	Rectangular (78%)	Space for my stuff (68%), studying/homework (55%), comfort (51%)
Working Alone	S-Divider (52%); Carrel (39%)	S-Divider for privacy/closed off (70%), comfort (60%), aesthetics (59%). Carrel for privacy/closed off (57%), good writing surface (58%).
Collaborating	Enclosed booth (47%); High-back booth (38%)	Enclosed booth for privacy/closed off (81%), seating configuration (57%). High-back booth for seating configuration (63%), comfort (53%).
Lounge Furniture	High-back couch with coffee table (46%); Armchair and coffee table (37%)	High-back couch for comfort (89%) and aesthetics (89%). Armchair and coffee table for comfort (89%).
Take a Phone Call	Soundproof phone booth (45%)	Privacy (92%), quiet (72%)

Data Analysis

A combination of quantitative and qualitative approaches was employed to analyze the collected data. Quantitative reports were run in Qualtrics for the patron survey, direct observations, and environmental scans to extract frequency distributions and percentages to ascertain usage and preferences. A similar report was run in Qzzr for the furniture survey. Furthermore, usage counts were filtered in Qualtrics by day of the week, time of day, and zone to look for significant differences. This allowed for the construction of a heat map to visualize usage (see also Asher, 2017 for a similar approach to heat mapping), and a visualization dashboard in Tableau to visualize activity (see Appendix F). The mean temperature and noise level was calculated as a representative measure of central tendency for each zone. Also, the mean was calculated to represent the average amount of available space taken up by each user and the average number of users inside of each group study room.

Answers to the qualitative questions in the patron survey and whiteboard polls were coded thematically and categorized for analysis using Excel to identify patterns in users' affective attitudes towards the Information Commons. The 10 major categories that emerged are in Appendix G. Routine usage statistics of the computers in the Information Commons was consulted during the same time period. The researchers compared the results from each of the methods employed to look for verification across multiple data points.

Results

User Demographics

There were 2,107 (86%) direct observations that recorded the presence of a person using a space, using the laser printers, or otherwise engaged in some use of the Information Commons. Of these, 1,096 (52%) were females, while 1011 (48%) were males. Undergraduates accounted for 213 (86%) of the patron survey respondents, while 22 (9%) were graduates and 13 (5%) were guests. The gender of 151 (61%) of the patron survey respondents was female, while 97 (39%) was male. The whiteboard polls and furniture survey did not ask for demographics.

Seating and Furniture

The most popular seating configuration during the study was the workstation with a desktop library computer designed for group work and collaboration (see Appendix E and Figure 2). We established this by our direct observations as well as by computer use statistics extracted by IT during the same period of time. The follow-up furniture survey two years later also supported the initial findings (see Table 1) where 167 respondents (88%) preferred a private group workstation over computers right next to each other because they wanted privacy and space. Even though the group workstations were designed for collaboration, 207 students (84%) reported working alone in the patron survey, and we observed 1833 students (87%) working alone through direct observations. There were on average 1.1 people using the enclosed presentation practice rooms. In another averaged measurement, users took up 81% of all available space at each workstation in the observations even though there was usually only one person at a station designed for collaboration. Often, the user treated the space like their home or office by spreading out study material, devices, food, and clothing. In the patron survey, respondents were asked to rank the top five reasons they chose their spot. The top 5 reasons were "access to a library

computer" (164 total votes and 81 #1 rankings), "spacious" (166 total votes and 52 #1 rankings), "quiet" (135 total votes and 42 #1 rankings), "clean" (103 total votes), and "privacy" (102 total votes).

User Activities

In the patron survey, 228 respondents (92%) self-reported using a library computer in the Information Commons, and this was also the most frequent activity directly observed (see Figure 3). Of the respondents, 25 students said

Figure 2
This particular multi-person workstation is the most popular site in the Information Commons.

the library computers could be improved by having more of them, disallowing those not using them to sit there, being cleaner, having more specialized software, and/or having mice that worked better. Other frequent activities users self-reported: 188 (76%) said they were reading/writing/studying, which observers only recorded for 590 students (28%); and 159 (64%) self-reported printing, which observers only
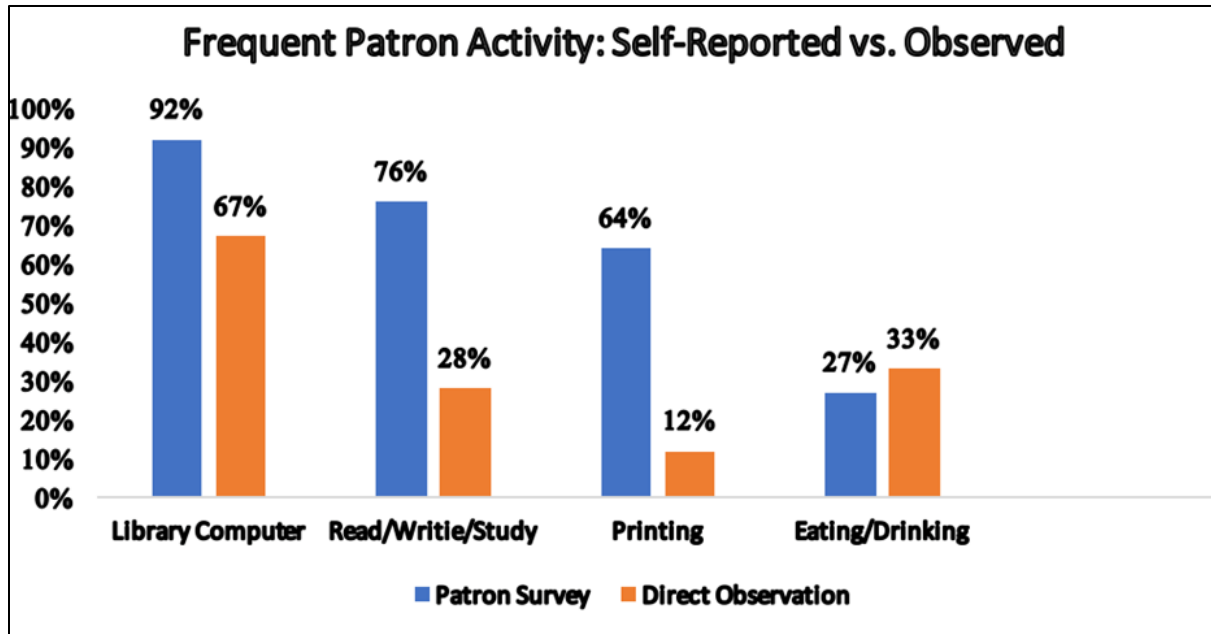
Figure 3
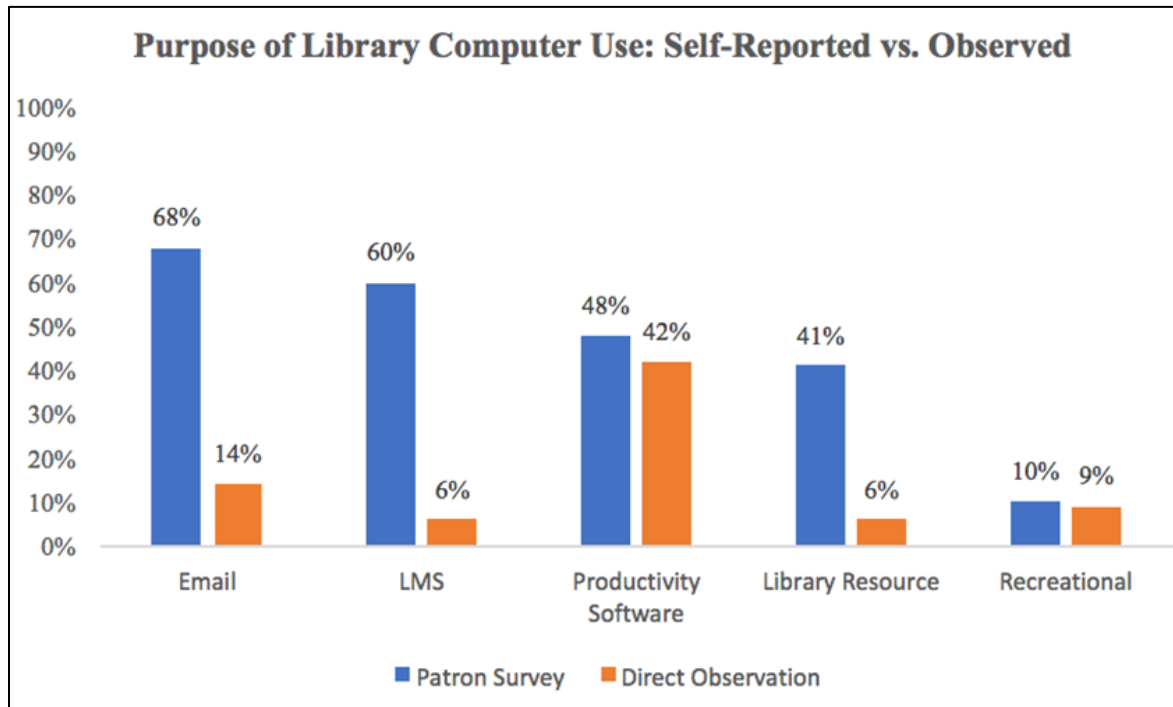Surveys alone may be somewhat inaccurate.

Figure 4
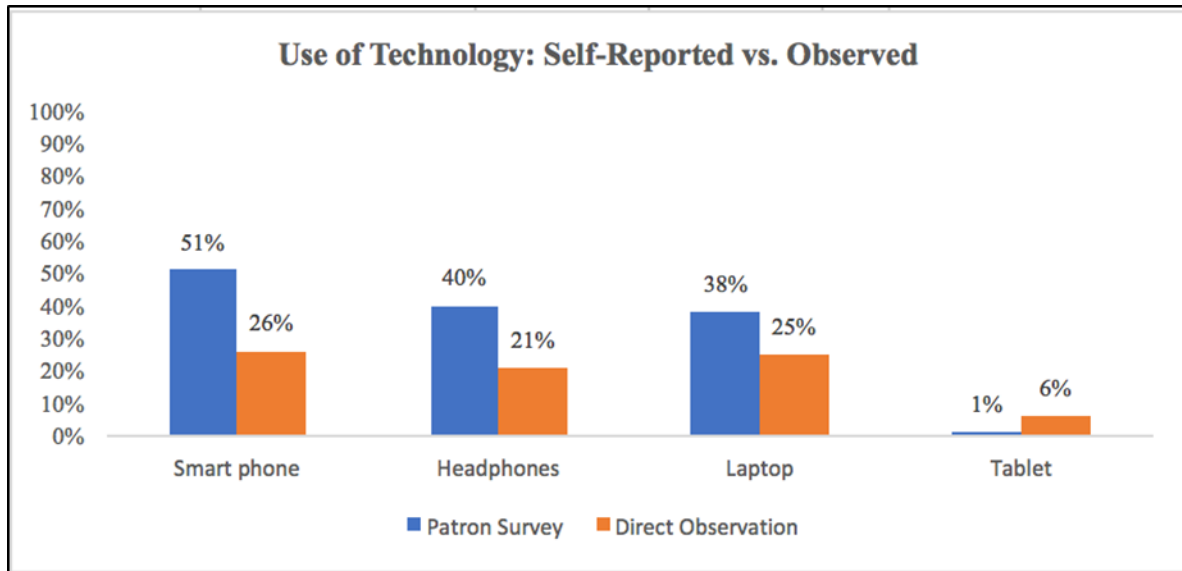Users' purpose for utilizing library computers.

Figure 5
Use of technology.

recorded for 253 students (12%). Seven students complained that the printers could function better and be spread out to other parts of the commons. We observed a printer out of order 69 times (11%) during the 2-week period.

We found that 67 respondents (27%) in the survey said they were eating or drinking, which we directly observed 695 times (33%). The users' concerns with eating and drinking while at work appeared in survey and whiteboard poll responses, where 24 comments suggested improvements such as snack vending machines, a water bottle refilling station, or a designated food zone. There were eight users who said that there should be less trash and food.

Respondents self-reported utilizing a library computer 169 times (68%) for email and 149 times (60%) for myLMUConnect, while only 119 people (48%) reported using a library computer for productivity software and 102 people (41%) for library resources (see Figure 4). The only significant usage captured through direct observation was productivity software, observed 885 times (42%). Users reported frequently multi-tasking with additional devices while they used the library computers, including

smart phones 126 times (51%), headphones 99 times (40%), and laptops 94 times (38%) (See Figure 5). Direct observation noted these devices, although less frequently. Both methods found tablets very little used.

Environment

The average temperature was between 72 and 75 degrees Fahrenheit (see Figure 6) across all 5 zones, but there was variation. In zone 5, it got as low as 67 degrees, and in zone 2 as low as 67.5 degrees. There were nine respondents who commented either in the patron survey or the whiteboard polls that the temperature was too cold (see Appendix G). The average decibel level was between 50 and 55, but there was also wide variation. In zone 3, observers recorded up to 76.8 dBA. Zones two and three were the noisiest because of their proximity to the printers and the lobby and Information Desk. There were 32 students who commented that it was too loud and that there should be a designated "no talking" and "no cell phones" area. Remarkably, there were 161 reports of unattended belongings also observed, most frequently after 9 p.m. We also observed several broken power outlets, prompting users to plug into more distant
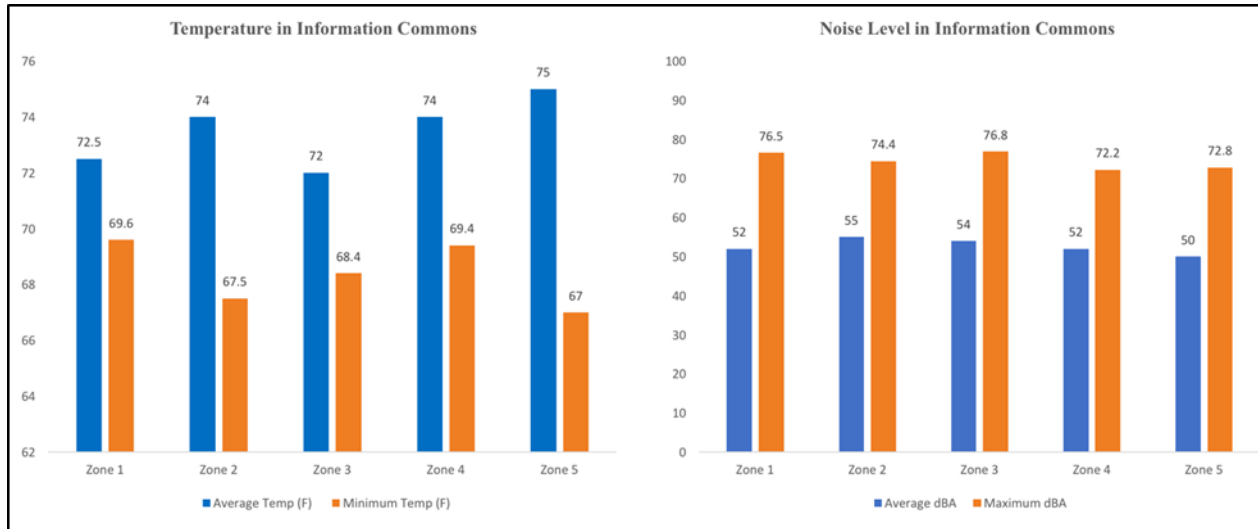
Figure 6
Average temperature and average noise level.

outlets to compensate, creating a trip hazard. Of the observations in zone 5, broken lights were observed 16 (13%) times, and 4 students commented it needed to be brighter.

Discussion and Outcomes

Although the planners and architects designed the Information Commons as a collaborative, social learning space, the results of the study indicate that students want quiet, privacy, and space to spread out, along with cleanliness. Since we only observed 1412 (67%) students actually using a library computer (often they were using their own devices while sitting at a computer workstation), we determined that they could benefit from study space not tied to a desktop computer. We opened up more study space in the Information Commons in the summer of 2016 by emptying underutilized reference stacks and replacing them with over 30 additional seats (large rectangular tables and chairs). In the summer of 2017, we installed floor-box power outlets to go along with this new seating.

We also made a handful of small improvements based on the study, including the installation of self-serve dispensers with wipes for cleaning keyboards and tabletops. We worked with IT and Facilities to set up an inventory for outlets, Ethernet ports, and light fixtures that could be checked regularly. Responding to comments in our surveys, we made sure to supply new iMac mice, installed a new water bottle filling station, and relocated one printer to the far side of the Information Commons. Another upcoming change will be to install bag hooks underneath the computer workstations that are close together to offer more space.

Even though our study established that a majority of our users preferred library computer workstations with privacy and space to spread out, we still had a gap in knowledge about other furniture preferences. As Bieraugel & Neill (2017) point out in an article applying Bloom's taxonomy to library spaces and creativity, it is important to design learning spaces for different intended behaviors (p. 37). They determined, for example, that quiet study space and computer labs support reflection, but on the other hand communal tables support networking (p.48).

There were 28 respondents who suggested napping pods, newer furniture, more desk

space, and more comfort during our study. We therefore undertook a furniture survey done in spring 2017 to gather more information. This follow-up research revealed that for tables and chairs without a library computer, 103 respondents (54%) preferred 4 chairs facing each other because this was conducive to studying or homework, collaboration, and offered space for their belongings (see Table 1). A great majority, 148 (78%), preferred a rectangular table shape. Therefore, we rearranged the new seating into rectangular tables with four chairs facing each other.

The furniture survey asked about preferences for doing additional specific activities. For working alone, 99 students (52%) preferred the S-Divider, while 74 (39%) preferred a carrel. Beyond the obvious factor of privacy, those choosing the S-Divider mentioned comfort and aesthetics as important factors, while those choosing a carrel mentioned a good writing surface. When asked about their preference for collaborating, 89 (47%) chose an enclosed booth for privacy and its seating configuration, while 72 (38%) chose a high-back booth for its seating configuration and comfort. This seating configuration is consistent with the preference for the table and chair configuration as four chairs facing each other. For lounge furniture, 87 respondents (46%) preferred a high-back couch with coffee table, while 70 (37%) preferred an armchair and coffee table. Comfort was an important factor behind both choices, while those opting for the high-back couch also mentioned aesthetics. We were able to put this recommendation to use in the spring of 2017 when we replaced the low-back couches in the first floor lobby area with armchairs and coffee tables. We plan to make future strategic budget requests for furniture based on these preferences.

To address the general noise problem in the Information Commons, we consulted with Newson Brown Acoustics, LLC. They suggested an electrical sound masking system to make background noise or white noise. Other suggestions included sound baffles, adding physical barriers between workstations, or designating certain areas for quiet vs. social and putting up signage. Also, our follow-up furniture survey found that 86 respondents (45%) preferred to take a phone call in a soundproof phone booth because it offered privacy and quiet. These are similar to possible solutions found in the literature: McCaffrey and Breen (2016) found evidence that "interventions such as the development of a noise policy, zoning, rearranging of furniture, removal of service points from reader spaces, and structural improvements to reduce noise travel are worthwhile interventions for libraries to consider when faced with noise problems" (p. 788).

Limitations

The direct observation methodology had limitations. If users had multiple browsers open during the direct observations, we only recorded what was in the open window on their screen at that moment in time. It was also difficult to be discreet when observing users; we recorded "can't tell" for what purpose they were using a library computer on 527 (25%) of the direct observations. Some students failed to take the whiteboard polling methodology seriously and left facetious answers. Another limitation was the lack of real measurement of users' true level of collaboration during a seating sweep since it provides only a snapshot in time rather than an ethnography. A limitation to the follow-up furniture survey came with it being online only, and therefore we recruited only those using a computer or device. The final limitation was that all observation and survey instruments were limited to the Information Commons space. We therefore have data only from those who we found in that space, but no data from those who, from choice or other circumstance, were not in that space. We don't know who chose not to be there, or who wanted to be there but couldn't,

and the insights those groups of users might have provided.

Conclusions

This mixed methods case study explored the usage, satisfaction, and preferences of users in the Hannon Library Information Commons. Independent study dominated the space usage. Students valued spaciousness, quiet, privacy, and a clean environment. Students frequently multi-tasked with additional devices as they simultaneously used a library computer, including cell phones, headphones, and laptops. Also, unattended belongings were frequently observed along with broken electrical outlets. The study paved the way for improvements and the partial redesigning of the space. Even though our study confirmed some findings from other studies, including a preference for working alone and the desire for quiet, it is important for each library to conduct its own assessment because "one size does not fit all academic libraries" and "designs will, and should be, different on every campus" (Head, 2016, p. 26).

Acknowledgements

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Appendix A
Direct Observation Form

Individual Patron Activity Drop Down Menus

What day of the week is your shift?
o   Monday
o   Tuesday
o   Wednesday
o   Thursday
o   Friday
o   Saturday
o   Sunday

What time of the day is your shift?
o   Morning (9a-noon)
o   Afternoon (1-4p)
o   Evening (5-8pm)
o   Late Night (after 9pm)

You are going to mark/record the activities of each person in your zone. Fill out one form for each person. First, select your Zone. Then select the approximate area in the zone for the location of the person you wish to record.

Are there unattended belongings in the space (belongings, but no person present)?
o   Yes
o   No

What is the gender of the person?
o   Male
o   Female
o   Unknown

29

- o N/A- group presentation room
- o Unattended belongings present

For observations in the Group Presentation rooms, complete one observation survey per room, NOT PER PERSON. Which group presentation room technology is being used in the room? Check all that apply.
- o LCD
- o Wall Talker
- o Camera
- o Laptop Attached to Camera

Group Presentation Room - Record the total number of People in the room:
_____ # Females
_____ # Males

What is the person doing at the copier?
- o Scanning
- o Copying
- o Printing
- o Faxing
- o None of the Above or Can't Tell

Is office equipment (hole punch, stapler, or paper cutter) being used?
- o Yes
- o No

Is DSS software such as Jaws, Kurtzweil, or ZoomText being used?
- o Yes
- o No

Is the person using the scanner?
- o Yes
- o No

Is the person using the DSS magnifier?
- o Yes
- o No

What is the person doing at printer(s)?
- o Releasing a Print Job
- o Waiting for a Print Job
- o Having Trouble with a Print Job
- o None of the Above

How long did the person use the walk-up computer?
- o Less than 1 Minute
- o 1 -5 Minutes
- o 5 -10 Minutes

o > 10 Minutes

Record the person's level of collaboration with other people.
o No collaboration- working alone
o Social interaction (appears not related to schoolwork)
o Paired (working with another person on schoolwork)
o Group (working with 2 or more others on schoolwork)

What percentage of the available space is the person or group using?
_____ % of space

What is the seating arrangement of the pair?
o Beside each other
o Across from each other
o Diagonal
o Other _____

Note the subject('s) technology use, if any. Which of these devices are in use? Check all that apply
o Library Computer
o Laptop
o Smart phone
o Headphones
o E-reader
o Tablet or Notebook
o None
o Other-specify _____

What was the purpose of using this Library owned computer? If possible, please specify.
o Library Resource (Catalog, Database, E-book) _____
o Recreational (Games, non-school related, social media) _____
o Email
o Productivity Software (Microsoft Office) _____
o Specialized Software (such as Matlab, SPSS, Photoshop) _____
o myLMUConnect _____
o Other/Can't Tell _____

Record all the Activities that you observe for this subject(s).
o Browsing for/using Lib Book
o Eating or Drinking
o Interacting w/ Staff Member
o Printing
o Reading, Writing, or Studying (Non Computer)
o Sitting on Floor / Squatting
o Sitting on Library Furniture
o Sleeping
o Standing
o Talking

- o Using Earplugs
- o Using Electrical Outlet
- o Using Ethernet cable
- o Waiting in Line
- o Walking (in transit)
- o Other _____

Note any additional observations about the person's activities/belongings/seating or the space itself (e.g. use of extension cable, wearing a coat, frustration, confusion)

Appendix B
Environment Survey

What day of the week is your shift?
- o Monday
- o Tuesday
- o Wednesday
- o Thursday
- o Friday
- o Saturday
- o Sunday

What time of the day is your shift?
- o Morning (9a-noon)
- o Afternoon (1-4pm)
- o Evening (5-8pm)
- o Late Night (after 9pm)

You will begin your shift by recording details about the general environment of your zone. First, select Your Zone.
- o 1
- o 2
- o 3
- o 4
- o 5

Select the approximate area in zone 1 for the location of where you are standing.
- o Doorway of Copy Machine Room
- o GP 106
- o In Between Computers #89/ & #7

Select the approximate area in zone 2 for the location of where you are standing.
- o In Front of Leonardo Printer
- o Between Computer G & Table

Select the approximate area in zone 3 for the location of where you are standing.
- o In front of Walk-Up Computer #1
- o Information Commons Desk

Select the approximate area in zone 4 for the location of where you are standing.
o   Between Table & Computer 45
o   Between Couches & Computer A

Select the approximate area in zone 5 for the location of where you are standing.
o   Between Computer 77 & Computer 80
o   Between Computer 82 & Reference Stacks PN 1997-PQ 6010
o   In Front of Computer 67

Record the Temperature Level in your Area (in degrees F).
_____ degrees F

Record the Humidity Range in your Area (%).
_____ %

Record the Noise Level in your Zone.
_____ dBA

Is there any "Out of Order" Equipment in your Zone?
o   None
o   Computers
o   Printers
o   Scanners
o   Lights
o   Photocopier

Is there any Equipment or Furniture in your zone that is Messy or Unclean (e.g. spills, excessive trash)?
o   Yes
o   No

Please describe what was messy or unclean

Appendix C
Patron Survey
Please take a few minutes to fill out this brief survey so we can improve the Information Commons space!

By completing this survey, you will have the chance to enter a raffle drawing to win a $50 Amazon gift card (provided you give us your email address).

Below is a consent form allowing us permission to use your anonymous feedback. No information that identifies you will be collected or released.

What activities are you engaging in today on the Library's first floor? Select all that apply.
o   Print
o   Study
o   Read

o   Eat/Drink
o   Write
o   Get Help from a Staff Member
o   Photocopy
o   Group Work
o   Take a Nap
o   Talk/Socialize
o   Scan (scanner)
o   Use a Reference Book
o   Other- please specify _____

Which devices are you using within the Library's first floor space today? Select all that apply. Include both devices supplied by the Library and devices you bring with you.
o   Library Computer
o   Laptop
o   Smart Phone
o   Headphones
o   E-Reader
o   Tablet or Notebook
o   None
o   Other- please specify _____

For what purpose(s) are you using the Library Computers today? Select all that apply.
o   Library Resources (library catalog, research databases, e-books)
o   Recreational (games, social media)
o   Email
o   Productivity Software (Microsoft Office)
o   Specialized Software (used in my Schoo/College, such as Matlab) _____
o   myLMUConnect
o   Other- please specify _____

When you picked your spot on the first floor of the Library today, which factors were most important to you? Please choose the top FIVE factors from the list on the left and drag & drop them into the "Top Five Factors" Box on the right in order of importance (#1 = most important).

Top Five Factors
_____ Spacious (can spread out)
_____ Quiet
_____ Ambient or Background Noise
_____ Nice View
_____ Privacy
_____ Proximity to Other Students
_____ Bright Lighting
_____ Comfortable Seating
_____ Access to Power Outlets
_____ Comfortable Temperature
_____ Access to a Library Computer

_____ Aesthetics (decor)
_____ Talking is Tolerated
_____ Cleanliness

Describe your level of collaboration with other people today on the first floor of the Library.
o   No collaboration- I am working alone
o   Paired (working with another person)
o   Working with a group of 2 or more
o   Other- please specify _____

What could be done to make the "Information Commons" (first floor of the Library) a better space for you?

What is your gender?
o   Male
o   Female

What is your status at LMU?
o   Undergraduate student
o   Graduate student
o   Faculty/staff
o   Guest or Other

Is there anything you would like to add?

Appendix D
Furniture Survey (images available at https://lmu.box.com/v/furniturestudy)

These questions only pertain to the "Information Commons" space located on the First Floor of the Hannon Library. This is the area you are currently sitting in. The space includes over 80 iMac computers, printers, and the Information Desk. We need your feedback so we can improve the space. Thanks for your input!

Pick Your Preferred Spot to Use a Library Computer
  o   Private
  o   Open

Which option(s) best explains why you chose this spot to use a library computer?
  o   Privacy
  o   Space for My Stuff
  o   Noise Level
  o   Open Space / Not Closed Off
  o   Location (e.g. close to printer)
  o   Collaboration

Pick Your Favorite Table and Chair Configuration
  o   4 Chairs Facing Each Other
  o   1 Chair Against the Wall

- o 1 Row Facing the Same Direction
- o 2 Chairs Facing Each Other
- o 2 Chairs Against the Wall

Which option(s) best explains why you chose this table and chair configuration?
Conducive to Studying / Homework
- o Space for my Stuff
- o Collaboration
- o Open Space / Not Closed Off
- o Privacy
- o Quiet

Do you Prefer a Rectangular or Round Table?
- o Rectangular Table
- o Round Table

Which option(s) best explains why you chose this table?
- o Space for My Stuff
- o Comfort (e.g. easier on my legs)
- o Conducive to Studying / Homework
- o Collaboration

Pick Your Ideal Private Space for Working Solo
- o S-Divider
- o Carrel
- o Space Pod

Which option(s) best explains why you chose this spot as your ideal private space for working alone?
- o Privacy / More Closed Off
- o Comfort
- o Writing Surface (e.g. table)
- o Aesthetics / Appearance
- o Compact (efficient use of space)
- o Space for My Stuff
- o Noise Level
- o Open Space / Less Closed Off

Pick Your Ideal Private Space for Collaborating
Enclosed Booth
- o High-Back Booth
- o High- Back Couch

Which option(s) best explains why you chose this spot as your ideal space for collaborating?
Seating Configuration (e.g. beside, across)
- o Comfort
- o Privacy / More Closed Off
- o Writing Surface (e.g. table)

- Space for My Stuff
- Noise Level
- Open Space / Less Closed Off

Choose your Favorite Lounge Furniture
- High Back Couch with Coffee Table
- Armchair and Coffee Table
- Reverse-C Chair
- Low Back Couch with Coffee Table
- Barstool and Counter

Which option(s) best explains why you chose this furniture for a lounge area?
Comfort
- Aesthetics / Appearance
- Conducive to Work / Study
- Collaboration or Socializing
- Seating Configuration (e.g. beside, across)
- Space for My Stuff
- Writing Surface (e.g. table)
- Privacy

Where would you prefer to take a phone call in the Information Commons?
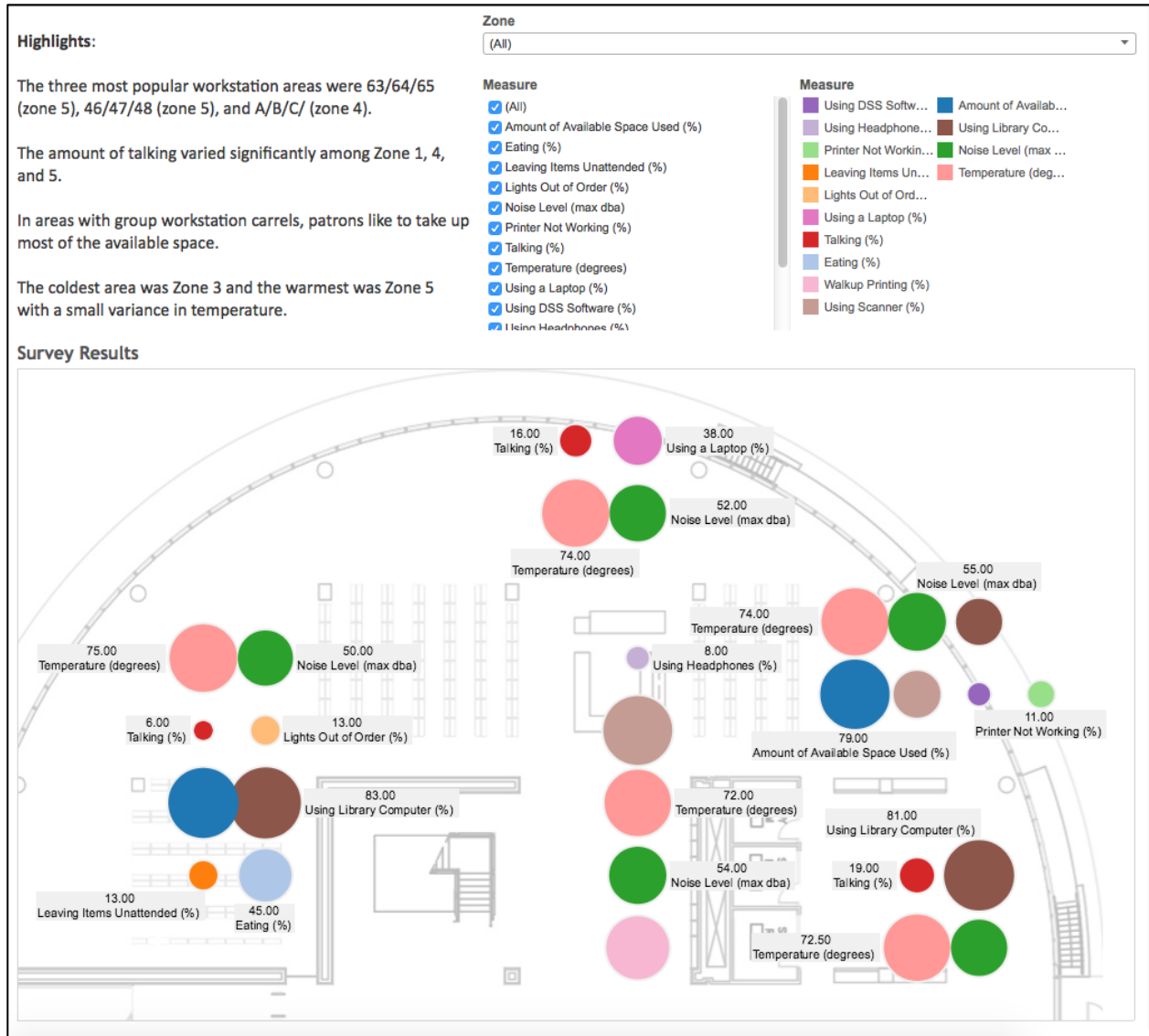Soundproof Phone Booth
- Move to Another Area in the Library
- Group Study Room
- Computer Carrel
- Open Study Area

Which option(s) best explains why you chose this spot to take a phone call?
- Privacy
- Quiet
- Open Space / Not Closed Off
- Space for my Stuff

Appendix E
Heat Map of People Observed in Each Area

Appendix F
Tableau Visualization of Activity in Each Zone

Highlights:

The three most popular workstation areas were 63/64/65 (zone 5), 46/47/48 (zone 5), and A/B/C/ (zone 4).

The amount of talking varied significantly among Zone 1, 4, and 5.

In areas with group workstation carrels, patrons like to take up most of the available space.

The coldest area was Zone 3 and the warmest was Zone 5 with a small variance in temperature.

Zone
(All)

Measure
☑ (All)
☑ Amount of Available Space Used (%)
☑ Eating (%)
☑ Leaving Items Unattended (%)
☑ Lights Out of Order (%)
☑ Noise Level (max dba)
☑ Printer Not Working (%)
☑ Talking (%)
☑ Temperature (degrees)
☑ Using a Laptop (%)
☑ Using DSS Software (%)
☑ Using Headphones (%)

Measure
Using DSS Softw...   Amount of Availab...
Using Headphone...   Using Library Co...
Printer Not Workin...   Noise Level (max ...
Leaving Items Un...   Temperature (deg...
Lights Out of Ord...
Using a Laptop (%)
Talking (%)
Eating (%)
Walkup Printing (%)
Using Scanner (%)

Survey Results

Appendix G
Top Comments from Patron Survey and Whiteboard Polls

Category	# Times	Details
Noise/Too Loud	32	Designate a "no talking" and "no cell phones" area
Furniture	28	Napping pods (9), newer furniture, more desk space, more comfort
Library Desktop Computer Station	25	More computers, kick out people not using the computer, cleaner, more specialized software (7), mice that work better (6)
Food & Drink	24	Snacks/vending machines, water bottle refilling station, designated food zone
Miscellaneous Space Suggestions	15	Charging station, plants, 3D printer, etc.
Temperature/Too Cold	9	Too cold
General Cleanliness	8	Less food and trash
Printers	7	Spread out to more locations, improve functionality, pay without OneCard
Hours	5	Open 24/7
Lighting	4	Brighter