

Counting Heads: Building Space Assessment into your Library Assessment Plan

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Libraries count the number of reference questions, book checkouts, online resources use, and much more. Yet, when it comes to gathering ongoing data about user interactions with our physical spaces there is generally only one data point: gate counts. This paper will examine how to build a robust, sustainable, and repeatable three-year assessment plan around space, with examples from our own experience.

Current Studies on Library Space

In library literature the most common space studies occur once or twice to answer a question about use or prepare for a renovation. Recently Project Information Literacy examined how libraries planned for a renovation of library space. It polled librarians, architects, and library consultants that took part in 22 recent projects. This study found that “Once a project was completed, formal evaluation metrics were rarely used, whether project costs were \$2 million or \$100 million”¹ Furthermore, the studies conducted before renovations weren’t much better and often left off major user groups, such as faculty.

While these targeted studies are the most common, they are not the only way libraries learn about how their users interact with their spaces. There are often more in-depth ethnographic studies that focus on learning about users of library spaces and services, Nancy Foster’s *Studying Students: The Undergraduate Research Project at the University of Rochester* being the most well-known.² These studies do not focus solely on library space, but they often have very useful information about how patrons interact with libraries.

The final way libraries look at patrons’ use of space is the simplest: just counting the people who enter the space. Most libraries have a gate counter at the door, so this is easy to collect and can even be used to create hourly usage patterns. These do give a broad picture of how many people are entering the library over time and can actually serve as a backbone when combined with other data collection methods.

Benefits of Studying Library Space

Imagine that tomorrow a donor walked into your building and said “If I gave you \$100 million dollars to do whatever you wanted with space what would you do?” Is the answer you give to this question based on hard data and planning or would your library have to scramble? Or how about the opposite question from a space crunched campus, “Why should the library have so many square feet when students can find what they need online?” Does the library’s counter argument have hard data on how the space is used? Often when considering adding space assessment into the library’s ongoing assessment plan concerns are brought up about costs, time, energy and expertise. Each of those barriers can be overcome, but the library needs to determine their objectives and goals around library space to ensure that the time and effort produces usable results.

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At the William M. White Business Library, where the authors have experience working as a branch library on a space-crunched campus, our large open study spaces have been eyed repeatedly for alternative uses. The library conducted an ethnographic study a few years before developing this plan, but as that aged we needed a way to create current, replicable data to use in our conversations. The library uses the data gathered in this study in conversations about why the library exists, for planning incremental changes, and developing plans on future directions of the library across services, spaces, and collections.

Library space studies can be intimidating because the range of questions the library needs to explore can be about services, collections, particular areas of the library, and/or how these all interact. In a well-designed study the library can actually take its standard data collection points (circulation, computer use, reference counts, etc.) and add in space related variables. In the authors' implementation of this plan one of our objectives was to build a clearer picture of how all these areas interacted. We discovered in the process some things that came as no surprise (students want the quiet floor to be quieter, but also like the collaboration floor) and some that did (students favor divided tables in quiet study zones). All these discoveries have allowed us to make small changes (moving tables and adding on-call hours) and request bigger ones (new furniture and repurposing a former shelving area).

In addition, this data also helped when we experienced the loss of a coffee shop in the library. Before the implementation of the plan the library only collected gate counts. Post-loss of the cafe we had a 26.2% decrease in the number of people who walked through our doors during the sample period. But since we have built in-depth data collection into our system we were actually able to see that the use of the space was transformed and that the drop in the total use wasn't a cause for concern. While the library may have had fewer people coming in and out (perhaps just to buy a cup of coffee) there was only a 4% decrease in the occupancy rate in the library. In addition, users who identified a break between classes as one of the activities they used the library for dropped 40% after we lost the coffee shop. In other words, the traffic went down because the entry floor transformed from a place to get a coffee between classes to a space to sit and get work done for a longer period.

Framework

This three-year data collection plan was initially designed to mirror the local strategic plan cycle. Since the first year has the most intensive data collection, the length of the cycle should not extend past four years because that data will become less reliable. The plan should also not be shorter than three years because you want to have a few years of consistent data collection to produce enough data to see trends. The goal of this plan is to build a longitudinal set of sample data on average weeks in the spring and fall. You will supplement this data in both the fall and spring with deeper queries into areas of interest. We recommend the more in-depth study occur in the fall and the brief study in the spring, but these time periods can be flipped to better serve your needs. There should just be at least two studies a year, one brief and one in-depth. For sake of clarity, this paper will assume that the in-depth study occurs in the fall, with the quick study in the spring. These weeks should be chosen as ones that are representative of average use of the space. In our implementation of this plan we choose the last two weeks of October and the last week of February because the majority of the library instruction sessions are over

TABLE 1
Study Framework

	Year One	Year Two	Year Three
Spring	Design in-depth study of entire library for fall	Quick study Data analysis	Quick study Data analysis
Fall	In-depth study	In-depth study on one question Data analysis	In-depth study on one question Data analysis

and it is not yet midterms, providing us with a more representative sample. These smaller sample sets repeated over time not only give you good longitudinal data, but also are easily scalable across libraries.

Year One

Research Questions

In the six months before the initial data gathering will take place, significant attention should be paid to the design of the three-year study cycle. Gathering longitudinally comparative data should serve as the primary objective of space data collection. Therefore, it is important to allow sufficient time for planning to determine the best framework and methodologies for collection. While there will be opportunities to fine tune data collection between study periods, the existence of a solid framework should allow this to occur without impacting the comparability of data. For instance, a robust study design must be flexible enough that more specific questions that arise in years two and three can be studied by employing more focused data collection techniques while maintaining the broader framework established in the first year.

With this in mind, it is important when running the study cycle for the first time to consider collecting benchmark data one of your objectives. While the cycle may only last three years, you will want a solid foundation of data that will still be relevant enough to carry into all subsequent cycles. Decisions need to be made about how the data will be used and what questions it needs to answer. Throughout this phase, the library needs to account for both long-term and short-term goals and needs of space-usage data.

When planning the initial cycle of our study, we had one objective and two questions. Our objective was to build a robust set of quantitative and qualitative data that would be comparable over time. Our questions were: how do users interact with our space, services, and collections, and how do they currently feel about the library space. This objective and these questions guided the development of the study from implementation to analysis.

Methods

Data collection methods must be chosen based on the research questions selected for the study period. These questions will help determine which of the methods are most suitable to find the answers the study is seeking. While any single method can produce useful information, most library space studies have indicated that mixed-method studies are most valuable. In addition to providing a greater depth of information, mixed-method studies, particularly those that utilize qualitative and quantitative methods, work together to ensure greater validity of trends and conclusions that might be identified as well as a deeper understanding of user behaviors.³ For our study, we collected gate counts, service interactions, circulation, zonal occupancy, and survey data.

Quantitative Data Collection

Most libraries will be familiar with using quantitative methods for gathering space-use data. Typically, libraries will passively collect gate count data to determine traffic in their space. While gate counts are easy to collect and comparable between libraries, they only present part of the space-use picture. Even if gate counts are collected frequently, they only show the traffic through the library doors, not what users do after they've entered the space. To get actionable data, libraries must use additional methods to collect richer space-use information during the bi-annual study periods.

Libraries regularly collect additional use data that can be used to help understand how users interact with the space. Granular circulation data provides a window on when, what, and where users are interacting with the collection. For example, hourly circulation data that can be pinned down to a specific service desk will show the time a user checked an item out, where they found it, and where they went to check it out. Similarly, libraries that

routinely record user interaction statistics will be able to determine when interactions occur, the nature of those interactions, and possibly where or with whom those interactions were held.

Headcounts of library spaces provide a more precise look at user activities and preferences within the library, but require manual counting of users in the library and are more laborious than the quantitative methods outlined above. However, the specificity of data achievable by headcounts far surpasses passive methods. While gate counts provide an idea of the total number of people that have been in the space during a given hour, they cannot show how many users sat in a particular section of the library. Conducting headcounts by zone of the library provides data indicating the relative popularity of various areas, types of furniture, and technological resources. Headcount data collection is also highly customizable and relatively flexible, allowing adjustments to be made throughout the collection process that can be related back to the benchmark data.

While some space studies stop at collecting headcounts, we would recommend taking it a step farther and using these headcounts to conduct an occupancy study. To transform a headcount study into an occupancy study, it is only necessary to record the number of seats available in each zone at the beginning of the first day of each study period. When you analyze your headcounts, you will divide the headcount for each zone by the number of seats available in that zone to calculate the percentage of seats occupied at the time of the count. An occupancy study allows for direct comparison between spaces or furniture types that have different capacities. For instance, if a headcount of 10 is recorded in two different zones, you might assume that they were equally popular with users without considering their capacity. Your conclusion would change if you knew that one held 12 seats and the other 24. Similarly, changes might be made to zonal capacities between studies and occupancy data allows for direct comparison to measure the effectiveness of those changes.

When we analyzed the data at the end of the first year, we found that the zone with the highest occupancy on the quiet floor included divided tables. Since we had no other divided tables on the first floor, we were unsure whether the zone's relative popularity came from its location or the table dividers. Consequently, we repurposed some dividers found in storage to create a second set of divided tables in a lower use zone to study the effect. Data collected during the quick study of the second year indicated average occupancy rates of these new divided tables were 7.36% higher than those of the zone overall and increased to a 12% difference in the larger second-year study. This has lead to a budget request for dividers to repurpose more tables and a study that will occur in year three collecting both qualitative and quantitative data to try and determine why these divided tables are more popular in the quiet zones.

Qualitative Data Collection

Any or all of the quantitative methods outlined above can and should be combined with appropriate qualitative data to compose a clearer picture of library space use. Libraries have employed several different qualitative methods when studying space including charettes, surveys, and ethnographic techniques. While all of the quantitative methods outlined might be employed in a single study period, qualitative studies demand more time both during the data collection and analysis phase. Therefore, significant consideration should be given to determining which methods will be most effective for addressing the questions being considered and which are supportable by those collecting and analyzing the data.

For structured user feedback, traditional surveys might be employed. Care must be taken in the deployment and collection of surveys to limit response bias. When designing surveys that a user will fill out independently, it is important to fully consider how users might interpret questions. For instance, the responses to our survey asking what floor was being used that day indicated that our users clearly don't think about the floors (upstairs versus downstairs) in the same way. Thought must also be given to the best method for distributing the survey

including passive versus active, physical versus electronic, to all users, or only to those interacting with staff. The distribution method should consider what the data collectors can support and the likelihood of reaching the target populations. Surveys can be modified to target specific user groups or a broad range of users, depending on the design. They often serve as a useful tool for gathering a bigger set of data and feedback quickly and with little effort.

Libraries have also recently deployed a number of ethnographic techniques in the collection of space use data. These techniques can provide guided feedback from users, but as with surveys, the self-reported feedback will not always be reliable. Several libraries have reduced the limitations of each of these methods by employing more than one technique and comparing the data from each.

The charette process comes from the field of architecture and collects data from users' brainstorming. Hobbs and Klare provide an example in which they asked small groups of their users to use colored markers and sticky notes to design their ideal library space on a large piece of paper.⁴ While they were more specific with some groups, such as asking them to design a group study space, this method relies on the open-ended nature of responses. Due to the need for a focal point when conducting charettes, this technique might be employed when the study has a specific goal with specified options in mind, such as a space remodel or redesign.

Observations have been employed to better understand the behaviors of users. Several researchers have used a technique known as participant observation in which an observer uses the space along with those being observed. The goal is to be unobtrusive and record the natural behavioral patterns of the users. Suarez utilized this technique in his research, but emphasized the importance of blending in with other users to avoid influencing behaviors.⁵ Other studies have avoided this through the use of trained students to conduct the observations⁶ or through video observation.⁷ Regardless of the observers chosen for this sort of study, the results will be affected by the bias of the observer when trying to determine the motivations or reasons for engaging with the space in a particular way.⁸ Conducting observations will be especially useful when questions arise regarding the specific behaviors of users in a space, particularly when reporting bias may be a problem or insufficient knowledge of users' behaviors exists to inform the design.

In our study this use of both qualitative and quantitative methods provided a better picture of both how space was used and feelings about the space. One example of this is the use of the new virtual desktop machines that replaced the traditional desktops right before we conducted our first in-depth study. The quantitative data indicated that these computers were in almost constant use, but qualitative data collected in survey responses displayed a high level of user frustration with the new machines. We received comments about speed, login difficulties, printing problems, and general untrustworthiness. The library conducted an analysis of this data, wrote it up and sent it to the IT department for their information and shared it internally with other libraries who were considering switching to these machines. A number of the issues have since been resolved, but we continue to monitor and share information with the IT department.

Implementation

After completing the planning phase of the first year, the data collection team should prepare to execute the study. This will include selecting an appropriate data collection window, creating data collection tools, training collectors, and conducting the study itself.

When considering the data collection window, it is important to remember that your objective is to create a data set that is primarily comparable to subsequent data sets and secondarily indicative of typical space use over the semester. Important considerations include limiting traffic variables such instruction sessions or tours and avoiding extraordinary use times like finals or breaks. Since the data needs to be comparable to subsequent

semesters and years, such variables would be detrimental to its usefulness. Duration of the study can also create a cushion for overcoming unforeseen and unrepresentative points in the data. For our initial study cycle, we determined the two weeks at the end of October best served these purposes. The end of October avoids typical weather-related closures, exams, breaks, and most instruction sessions. Furthermore, the two week duration allowed us to account for those anomalies that did occur in one week or the other in the initial study period as well as those in subsequent years. In our case, the extra week helped us gather more reliable data about use patterns in our information commons when our computers in that zone were unexpectedly down for most of an afternoon during the first week of the study period. After verifying that use patterns for other days were relatively stable from the first week to the second, we could extrapolate the likely use of that zone in the first week by analyzing the data from the second week.

Tools for data collection and training in those tools must be created prior to the beginning of the study. This will vary according to the data collection methodologies selected, but could include standardized questions, printed surveys, data recording sheets, online surveys, or whatever your collection method may require. In our case, we color-coded maps of the library, indicated on our routine gate count sheets when a headcount should be taken, created matching color-coded headcount recording sheets, and ensured our student workers understood the process. The authors also created the surveys we would distribute and agreed on the times and method of passing them out and collecting them.

After the initial data collection period has ended, basic analysis can be performed to begin to identify trends. During this initial analysis, you should identify major patterns that are immediately actionable or will require further data collection to verify. It will be important to focus on finding these patterns as soon as possible so that you can make changes to the space or determine which questions require more exploration so that you can define the focus of the shorter data collection period to be conducted in the first six months of year two. In our case, based on a combination of low occupancy data and qualitative data from our survey that indicated a desire for collaborative space, we were quickly able to identify the possibility of a new collaborative space on our entry floor which resulted in the addition of a large table in that space from a less popular area. We also noticed a strong demand for divided tables, which along with survey responses indicating strong individual study use of the first floor, prompted our deployment of table dividers from storage. As you can see from our examples, this period is a useful time to rethink how existing resources are distributed and how they might be moved to better accommodate user behaviors. In the second and third year of the study, we used our data collection periods to examine the usefulness of these changes.

Years Two & Three

The second and third years of the study build off of the work conducted in the first year. The first six months will be devoted to a shorter, simpler data collection period and a deep analysis and comparison of the data from both study periods. The second six months involve a deeper study, similar to the one conducted the first year, but with a much narrower focus. Again, remember the importance of designing the studies in the second and third year with comparability of data in mind.

Quick Study

During the first six months of the second and third years, a quick study should be held to gather data to evaluate modifications made since the last data collection period. Since baseline data has already been collected, this study can be shorter and less involved than the in-depth work of the previous six months. Care should be taken again as to the timing of the data collection to ensure comparability and for the reasons outlined above.

The purpose of the quick study is to support and verify the data already collected and the verification of modifications made based on quick analysis of prior data. This means the data collection, while providing an overall picture for longitudinal comparability, should focus on the modifications as much as possible. That does not, however, require more in-depth data collection mechanisms. In fact, we only slightly modified our existing techniques to meet these dual objectives. To account for the divided tables and better understand the zone in which they are placed, we merely subdivided the headcounts of that zone by furniture type. Since the zones themselves did not change, we were easily able to compare the zone use total to that of the previous study while also getting new data on users' furniture preferences within the zone. Instead of deploying a multi-question survey, we placed a large sign in the zone where users could indicate whether they liked the changes or not.

Analysis

In-depth analysis of the gathered data should occur throughout the first six months of years two and three. This should include both comparisons between qualitative and quantitative data gathered in both collection periods to discover deeper patterns than those identified at the end of the last six months. Additionally, results should be compared longitudinally to verify modifications and the validity of the comparison. While modifications should produce changes in user behaviors, it is unlikely that significant changes will be made to all spaces in the library. You should expect similarities in use patterns for unmodified areas over time. Observing dramatic swings in use of unmodified areas should prompt an evaluation of possible causes and likely result in the next data collection period focusing on that area.

The results of the in-depth analysis are important both for establishing the focal point for the next large study and for producing actionable information. If the end of the first six months aligns with the end of the fiscal year as it does for us, the information gleaned from this analysis can also function as the basis for budget requests. For example, in our study the collaborative floor showed a high level of occupancy along with survey responses requesting additional tables. We had an underutilized staff storage area that we felt could be repurposed into a collaborative zone. We asked for and received funding for removal of the shelving, painting, and power in the area based on this data.

In-Depth Study of One Question

The second half of the second and third years will look very similar to the second half of the first year. Once again, a longer, two-week study should be conducted, but it should be far more focused than the first year. A good approach to these studies would be to collect the same quantitative data as the quick study and to select a single question from the first year's qualitative study that requires comparative data. In our case, we asked only a single question which, combined with the headcount and gate count data, allowed us to explore the effect of our coffee shop closing as discussed above.

Beyond the First Three Years

After the three-year cycle is complete, the process starts anew. By this time, sufficient data should have been collected to construct a baseline understanding of users' patterns of interaction with the library space. While data collections should keep longitudinal comparability in mind, the new cycle allows a complete rethinking of the questions of the library that should be addressed in the next cycle.

In Conclusion

While the authors are in the final year of our three-year plan, we have already seen tangible benefits from making

space part of our ongoing assessment. Those benefits come in two forms, the quick tangible benefits (new furniture, funding for painting and power, etc.) and long-term understanding of our users and our space. These long-term benefits are why we advocate for building space assessment into your standard plans. They have helped us understand the effect of changes outside of our control (lost coffee shop), better advocate for our users around space, and plan where the library should go in the future.

Notes

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