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They Do It Here: A Case Study of How Public Space is Used in a Research Library

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Introduction

The evaluation of academic library space and its use is not a new concept within the world of academic libraries. For a number of years, librarians and libraries have been asked to prove their worth by documenting services and use within their physical library buildings. Space within the J.D. Williams Library, the main library at the University of Mississippi, became a concern due to consistent and, for several years, increasing freshman enrollment. Library staff reported hearing students complain about lack of space and electrical outlets. Much of the information available to library administration about the use of library space by patrons was anecdotal. In order to provide a more accurate image of student use of library space, an observational study using a modified version of the Visual Traffic Sweep (VTS) method was used to collect patron actions within the library.

Purpose of the Study

The purpose of this study is to determine how patrons use library public spaces. The idea for the study evolved from decisions that were being made or considered in regard to removing desktop stations from public use rather than upgrading them. The general assumption on the subject is that most patrons are using their own devices (i.e. laptops or tablets). If this is the case, the library would not need to maintain its current number of public computers and could create more public study space. While there is data on public computer use within the J.D. Williams Library, there is no data that could represent the number of patrons using their own devices within the library. The previous year's library patron survey pointed to library desktops as being important to patrons and particularly to students. Within the survey, there were many comments related to library space or lack of space for students trying to study. Feedback from the library patron survey about library spaces stated: "More space! And those wooden chairs are terrible to sit in for more than 30 minutes!", "Sometimes I have a hard time finding somewhere to sit. Need more seats/desks", "I study at the library for about 2 hours every day and most days, it is very hard to find an empty table or space to study. If I find an empty table it is usually not close to an electrical outlet so I can charge my laptop while I study." Another impetus for the study is that public library spaces are constantly being rearranged by students. Librarians notice soft furniture being dragged up to wood tables, into group study rooms, and even moved to different floors. With all of this in mind, a team set about observing, collecting, and analyzing patron actions so library administration could have the appropriate data to make informed, evidence-based decisions. The goal of the research was to accurately record the use of public library spaces and patron actions within the spaces.

Research Questions

- RQ1: *Can patron feedback about library facilities and spaces be backed up by observational evidence?*
- RQ2: *Which public library spaces are used the most?*
- RQ3: *Which public library spaces are used the least?*
- RQ4: *How are patrons using the most-used spaces?*
- RQ5: *How are patrons using the least-used spaces?*

Literature Review

Visual Traffic Sweeps Method

Given and Archibald (2015) describe the Visual Traffic Sweep method (VTS) as an approach that allows researchers to obtain a view of how patrons interact within a particular space. Several studies such as Xia (2005), Dominguez (2016), and May and Swabey (2015) have used this or similar methods to evaluate the use of library and non-library spaces. The method uses observational data gathered most often through seating sweeps along with tools to visualize the observational data. Pre-testing is suggested prior to the commencement of the actual data collection period; this should serve to catch any mistakes so that the process of collecting the data goes smoothly once the project begins (Given & Archibald, 2015).

As mentioned by Lindsay (2016), when assessing space and usage of said space within the academic library, the reliance solely on gate counts can be detrimental. Gate counts can be inaccurate and simply do not tell the whole story, so to rely on those counts for usage data alone is doing a disservice to your library. This study used a similar method to the Visual Traffic Sweep method mentioned in Given and Archibald (2015), Xia (2005), Dominguez (2016), and May and Swabey (2015). While seating sweeps methods are valuable in allowing a capture of the number of people in an area, they do not easily and quickly allow

for accurate documentation of student actions. Therefore, the current study decided to use photographs instead of the standard VTS method. Various forms of technology are often used along with this method. In the case of Lindsay's (2016) study, Google forms were used on an iPad to record the seating sweep counts as they were taken.

Evaluation of Library Services and Spaces

Academic libraries' facilities come in a variety of sizes and shapes. No matter the square footage, many libraries have encountered space and related technology issues. Academic libraries frequently find themselves dealing with older buildings and a scarcity of electrical outlets that make the use of mobile technologies such as laptops, tables, and smartphones difficult. Ramsden (2016) mentions various ethnographic methods that can be used in libraries "to discover how others experience library services and environments, utilizing methods including, but definitely not limited to, observation, interviews, and mapping of experiences" (p. 356). It is important that librarians recognize that an academic library should not be modeled after what librarians want it to be but instead should be modeled after how it can best serve and support its campus communities. The assessment of library spaces fits into three categories according to Ramsden (2016): "assessment of new builds/designs, assessment of old spaces to feed into new design plans, and learning" about space use to "create space or usage pattern typologies" (p. 360). Montgomery (2014) used ethnographic surveys to gain insight on user's space needs. According to Montgomery, "the importance of library space is shifting from the content on our shelves to how students use and learn in our space" (p. 70).

Lopatovska and Regalado (2016) used ethnographic methods to collect observational data of library users' behavior and actions within four different academic libraries. The authors collected data over a one-week period when it was concluded that the libraries would not be experiencing extremely high or low usage. This short period of data collection time is a recurring aspect of many observational studies. In the current study, it was decided that a longer observation period was important to record busy and slow periods of use within the library so that a more complete view of library usage could be recorded.

Lopatovska and Regalado (2016) observed that most students appeared to be occupied with some type of study behavior such as reading or taking notes. The authors also noted that an array of relevant related resources were used by library users and that user preference for print or digital resources varied by the type and current stage of the project the user was completing. Overall findings showed that students came to the library and used a variety of resources regardless of a requirement to do so in their assignments. The authors suggest that when designing library spaces, libraries should include the need for appropriate space and access to resources beyond simply the library collection. Many academic libraries have encountered the issue of the reallocation of library spaces to other non-library units. In such cases, libraries have studied the available space in their buildings and how that space is then being used. Lux,

Snyder, and Boff's (2016) case study of library and non-library units is an example.

Matthews and Walton's (2014) case study of Loughborough University library reflects the assessment process of many academic libraries. The authors describe a process of general user surveys every three years and specific space related surveys given to the university community. Included in their assessment was the process of using photos and videos to capture visual evidence of library space use and changes. Houlihan (2005) states that students want an environment that is designed for the way that they "study, research, and communicate" (p. 9).

In the article, "The library is for studying: Student preferences for study space," Applegate (2009) asks how students use library "soft spaces" (p. 341). Applegate defines soft spaces as "carrels, tables, soft chairs, and study rooms" (p. 341). Applegate's method was similar to the VTS method. Collection times for observational data were recorded during specific weeks of two separate semesters. Those weeks were chosen due to information showing the last two to four weeks as the busiest of the semester. Applegate states that an "effective library is one that addresses the entire spectrum of student needs, does so as part of the entire student space-use ecology on campus, and has the capacity to meet needs that increase over the course of a semester" (p. 345).

Oliveira (2016) used a blended method of traditional and ethnographic methods to learn what types of spaces students wanted in the library. For a two-month period, observational data was collected from multiple locations within the library. Similarly to this study, Oliveira noted that an administrator mentioned the lack of need for the library to continue to provide so many public library computers to users as most users now have their own laptops or tablets. Findings from Oliveira, however, show that public computer usage in the library is high. Further findings by Oliveira showed that 50% of users were studying individually and, if users on computers are included, it increases to 90%. The author concludes that if a library creates spaces to serve student needs, students will use the library.

Surveys are one of the most commons ways libraries use to identify the needs of their users. Zhang and Maddison (2016) found, via surveys, that more study space was a high priority for students, specifically, spaces for collaborative and quiet study. Public computers were also seen as a high priority for students, which clashes with the popular idea that publicly available computers in libraries are no longer important as most students have laptops and/or tablets.

Methodology

For this study, data were gathered from three floors within the library. The first floor consisted of six locations, the second of three locations, and the third of three locations. The visual traffic sweep method was adapted to include the use of a camera to take photographs of each location. The adaptation allowed for each location to be broken into

sections and photographed in order to collect patron counts and their actions. Gaffer tape was affixed to the floor in the shape of an arrow with an area code and section number written on it (Figure 1). The creation and positioning of the arrows was important to the project as it ensured the photographs would remain consistent throughout the semester regardless of the team member taking the photograph. A team of four, which included librarians, library staff, and a graduate assistant, took photos of all 12 spaces over the course of the spring semester. A schedule was created to capture library use in those spaces Monday through Friday during the times of 9am to 5pm. These times were chosen as they are the times the library reference desk is operational and have previously been determined to be the library's busiest hours. The schedule was established and staggered so that it allowed for photos to be taken two days per week two to three times a day. This ensured that all days Monday through Friday and hours 9am through 5pm were captured for the entire semester. By drawing out the data collection process for the entire semester, it allowed data collectors to capture days and times throughout the semester therefore getting a more accurate picture of library use over the semester instead of a small snapshot of use over a smaller time period. The photo method was determined to be the most efficient as photographs could be captured in all 12 library spaces within a 15-minute time period. This also meant that data collectors did not then have to devote large amounts of time to data collection. A checklist was created to be used by each data collector as they moved through the building documenting each of the 12 spaces (Appendix A).

As photographs were taken, one team member downloaded the photos, labeled each one with the proper area code and section number, and then transferred the data with the number of patrons and actions to a paper form. A code was developed in order to quickly label the various patron actions that were taken from the pictures (Tables 1 and 2). It should be noted that patron actions can be combined in multiple ways depending on what the patron was doing. For instance, a patron (P) could be on a desktop (DT) using a cellphone (CP). This action would then be coded at PDtCp. In order to ensure consistency, the same team member transferred all data from the pictures to the paper forms. The data from the paper forms were then plugged into an excel spreadsheet. Data were analyzed using Microsoft Excel and data visualization tool, Tableau.

Library Spaces

The library is composed of three main floors. Each floor has a designated noise level. The first floor (Figure 2) is the talking floor and has the most public space, the second floor (Figure 3) is the quiet talking floor and has the second most public space, while the third floor (Figure 4) is the no talking floor and has the least amount of public space. The 12 public library spaces in this study were of a variety of types.

The first floor spaces were the:

- Ainsworth Commons: Composed of 27 desktop stations, three group study rooms, four pieces of soft furniture at tables, and 12 pieces of soft furniture
- Government Documents: Composed of one desktop station and 6 four-person tables
- Microfilm Area: Composed of 1 four-person table, six pieces of soft furniture, and six microfilm machines
- Information Commons: Composed of 40 desktop stations, 10 pieces of soft furniture, 6 four-person tables, and five group study rooms
- Sky Light Area 1: Composed of 6 four-person tables and eight coffins
- West Circulation Cubby: Composed of 13 desktop stations and five pieces of soft furniture

The second floor spaces were the:

- Baxter Room: Composed of 10 desktop stations, three group study rooms, 6 four-person tables, and 12 pieces of soft furniture
- Sky Light Area 2: Composed of 10 four-person tables and one group study room
- Pilkington Room: Composed of 34 four-person tables, 2 two-person desks, and 17 pieces of soft furniture

The third floor spaces were the:

- Retro Room: Composed of 5 four-person tables, two single-person coffins, and one piece of soft furniture
- Sky Light Area 3: Composed of 18 coffins and one group study room
- Graduate Reading Room: Composed of four desktop stations, 4 four-person tables, and six pieces of soft furniture

Results

RQ1: *Can patron feedback about library facilities and spaces be backed up by observational evidence?*

Observational evidence backed up only part of patron feedback. Feedback received from the library patron survey in regard to library spaces indicated that there were not enough seats or tables in the building to accommodate all of those who wish to study. Results from this study found that there were no observed times in which all seats within in the public areas of the study were full. However, there were times when all available tables within a specific area were occupied.

RQ2: *Which public library spaces are used the most?*

During the study's observable times of Monday through Friday from 9am to 5pm, the Pilkington Room (second floor) was determined to be the most used space with an average weekly use of 1,580 people. The Information Commons (first floor) was determined to be the second

most-used space with an average weekly use of 1,151 people. The third most used space was the Ainsworth Commons (first floor) with an average weekly use of 913 people. The average weekly use of all 12 public areas in the study can be seen in Figure 5.

RQ3: *Which public library spaces are used the least?*

The Microfilm Area (first floor) was determined to be the least-used space with a weekly average of 92 people. The Retro Room (third floor) was determined to be the second least-used space with an average of 159 people each week. The Graduate Reading Room (third floor) was determined to be the third least-used space with an average of 191 people using the space.

RQ4: *How are patrons using the most used spaces?*

In the most-used space, the Pilkington Room, 28 different types of actions were observed (Figure 6). The most observed action was single patron laptop use (PLt), followed by group study laptop use at the four-person tables (PGLt), and single patron study (PSdy).

In the second most-used space, the Information Commons, 37 different types of actions were observed (Figure 7). The most observed action was single patron desktop use (PDT), followed by group study room laptop use by patron groups (PGGsrLt), and single patron laptop use (PLt).

In the third most-used space, the Ainsworth Commons, 40 different types of actions were observed (Figure 8). The most observed action was single patron desktop use (PDt), followed by single patron laptop use at tables with soft furniture (PLtSfTb), and group study room use by patron groups (PGGsr).

RQ5: *How are patrons using the least used spaces?*

In the least-used space, the Microfilm Area, 16 different types of actions were observed (Figure 9). The most observed action was single patron microfilm use (PMf), followed by single patron laptop use (PLt), and single patron laptop use at soft furniture (PLtSf).

In the second-least used space, the Retro Room, 10 different types of actions were observed (Figure 10). The most observed action was single patron laptop use (PLt), followed by patron group laptop use (PGLt), and single patron study (PSdy).

In the third-least used space, the Graduate Reading Room, 21 different types of actions were observed (Figure 11). The most observed action was single patron laptop use (PLt), followed by single patron study (PSdy), and patron group laptop use (PGLt).

Discussion

Findings show that while the team approached the study with the idea that there was not adequate seating in the library, the study showed instead that the library did not have the correct type of seating. When usage data was overlapped with table occupation rates in the most used library space, the Pilkington Room, the team found that there were very few times throughout the day/week where no open seats were available. The problem appeared to be that due to the nature of the four-person tables, patrons would not sit down at a four-person table that was already occupied even by one person. These findings were similar to the findings of Applegate (2009), who concluded that library users prefer to sit alone unless they specifically come with someone, a group, or know someone with whom to sit down. Figure 12 shows the average number of open seats at tables in use and not in use per hour in the Pilkington Room on a Wednesday. The Wednesday example was chosen as Wednesday was determined to be the busiest day on average in the library. Figure 13 shows the percentage of tables in use along with the number of people at each. From the figure, one can see that the most frequent situation was a single person occupying a four-person table. This, once again, coincides with Applegate's (2009) finding that most vacant seats are at tables occupied with at least one person.

One purpose of the study, was to provide library administration with appropriate data to make informed evidence-based decisions. Upon completion of the study, the findings were presented to library administration and the author was asked for suggestions to improve public library spaces based on the findings of the study. The idea was to take patron feedback along with the results of the survey and use this to design spaces where noise was less of an issue while optimizing seating capacity. The findings were first used to make changes to spaces on the second floor. In the Pilkington Room, the room with the heaviest use, soft furniture was moved to one side of the room, closest to the elevators. This was done to create a defined area for the soft furniture in hopes that it would no longer be dragged up to the four-person tables and in order to act as a noise buffer between the table area and the elevators. In another section of the room, there were three different styles of wood tables; rectangle four-person tables, square four-person tables, and blue top rectangle four-person tables. The blue top tables were moved from the space and more four-person square tables were added from Sky Light Area 2. The section of the room with the four-person tables was broken up into two sections. The rectangle tables were pushed together to create communal seating to mimic a reading room atmosphere. The reasoning for this action was to create a space where it would not be unusual or socially awkward to sit next to an unknown person. In the middle section of the room between the rectangle tables and the soft furniture, the square tables were organized into neat rows. All of the chairs for the four-person tables, whether rectangle or square, were matched. After the changes were made to the area, librarians monitored the area for furniture movement. At the end of the first semester after the change, it was found that only one additional wooden chair had been added to the area. All the soft furniture had remained in place.

In Sky Light Area 2, the four-person square tables that were moved to the Pilkington Room were replaced with

two person tables. This made the aisle wider as the two-person tables were narrower than the four-person tables. Additionally, the library hoped that the removal of the four-person square tables would dissuade group work in the space, reducing the noise patrons complained about via the annual surveys.

In the Graduate Reading room, the computers were taken out of the area as the study showed little use and computer use data backed up this finding. The blue top tables from the Pilkington Room were moved into this area as a substantial number of the tables in this area were matches to the blue top tables. Matching chairs were arranged in the area to give it a finished matching appearance. The movement of furniture in this area was performed for matching purposes.

Conclusion

More changes are incrementally being made to various spaces included in this study. The guiding thought going forward for improving public library spaces is that students recognize spaces created with a clear and defined use in mind. The problem with the various library spaces before was that they were a hodgepodge of different styles of furniture and each space did not appear to have a defined use. In addition, the layout of the furniture on each floor did not conform with the appropriate noise level assigned to each floor. Furniture within the library will be moved from time to time. The library should, however, make the effort to put the appropriate furniture on each floor with respect to the floor's noise level (Figure 14). This should continue to encourage various types of study within the library while providing the appropriate furniture for each space. The goal is to decrease excessive furniture movement, improve the ability to find open seating, and to decrease noise complaints by redesigning public spaces to fit students varying needs.

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Figure 1. Arrows with area code and section number

Table 1. Patron action codes

Patron Actions	Codes
Cellphone	Cp
on desktop	Dt
on desktop & laptop	DtLt
Group Study Room	Gsr
on laptop	Lt
desktop station on laptop	Ltdts
microform machine	Mf
Pring Station	Ps
on Scanner	Scn
Studying not computer	Sdy
Soft Furniture	Sf
Sleeping	Slp
at Table	Tb
on Tablet	Tblt

Table 2. Patron codes

Type of patron	Codes
1 person	P
2 or more people	PG

Figure 2. First floor map
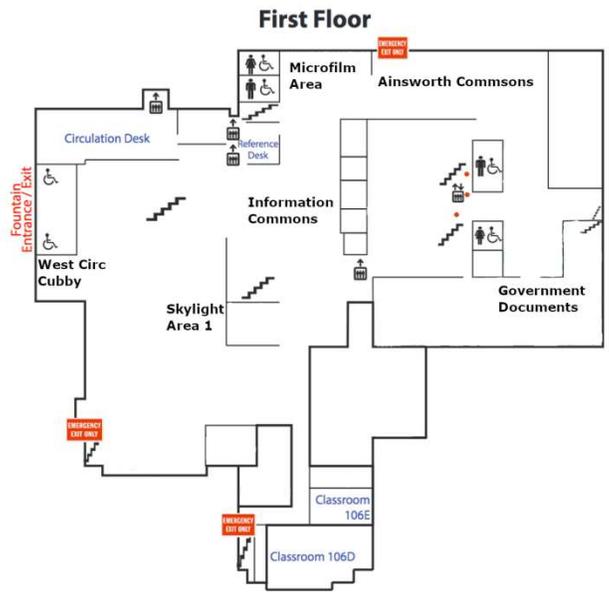
Figure 3. Second floor map
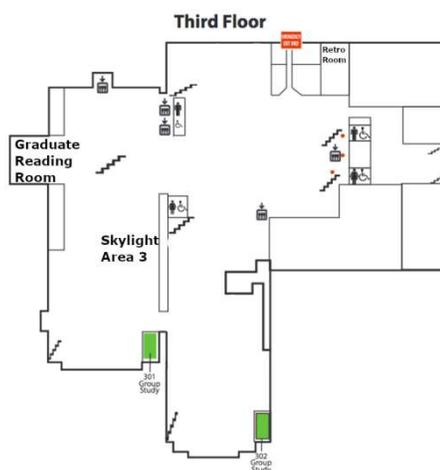
Figure 4. Third floor map

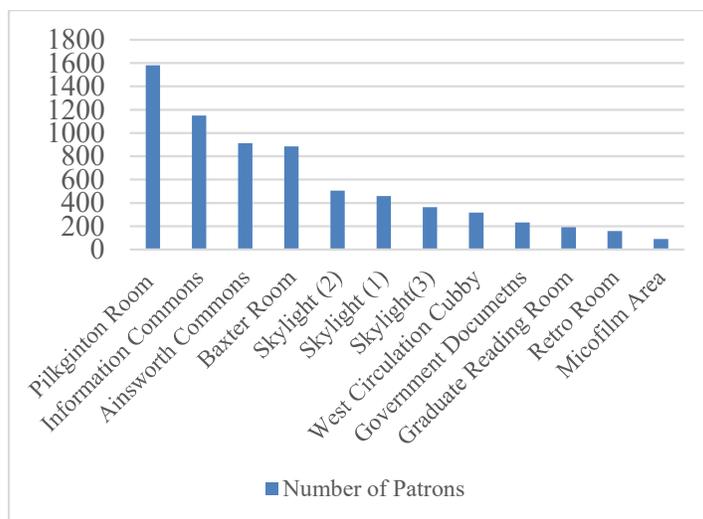*Figure 5.* Average weekly patron use by area

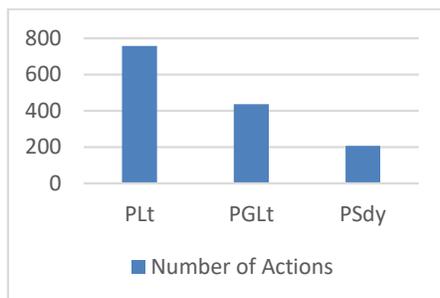*Figure 6.* Pilkington Room use by number and type of action

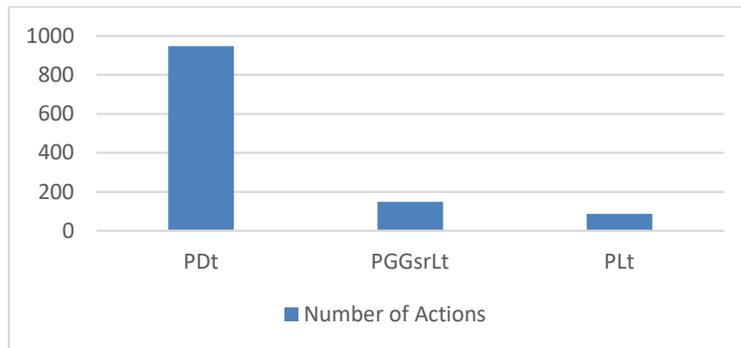*Figure 7.* Information Commons use by number and type of action

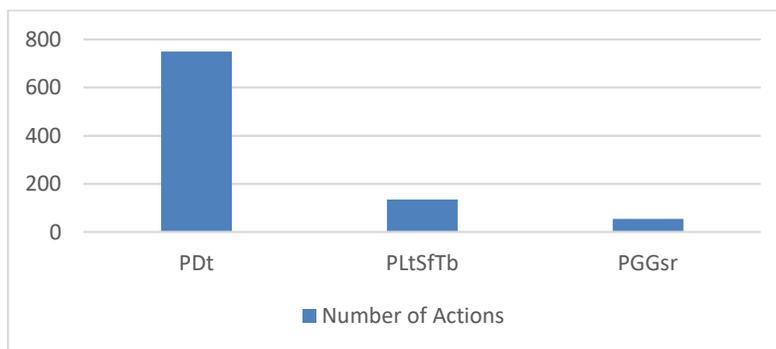*Figure 8.* Ainsworth Commons by number and type of action
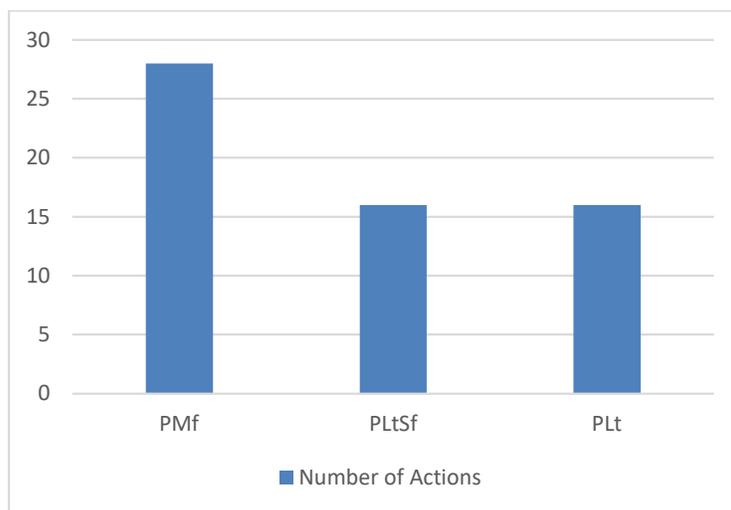

Figure 9. Microfilm area by number and type of action
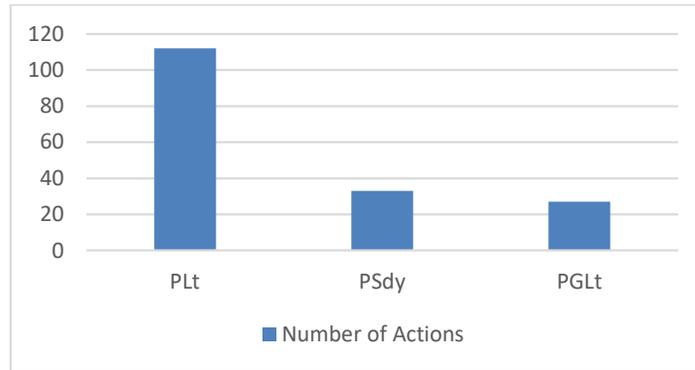
Figure 10. Retro room by number and type of action

Figure 11. Graduate Reading room by number and type of action
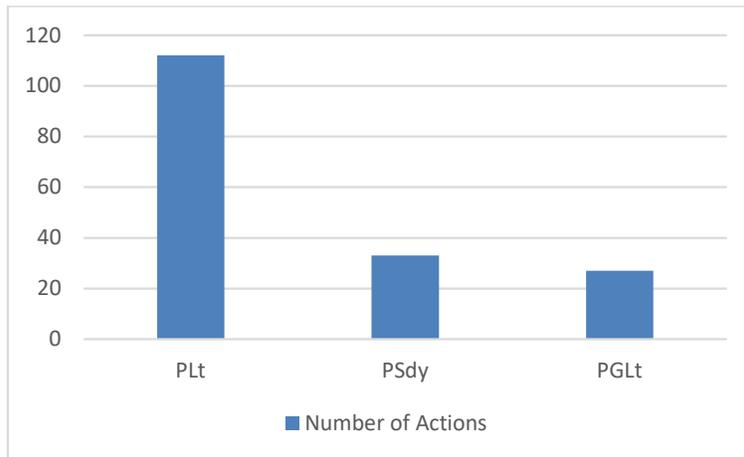
Figure 12. Pilkington Room open seats at tables on Wednesdays
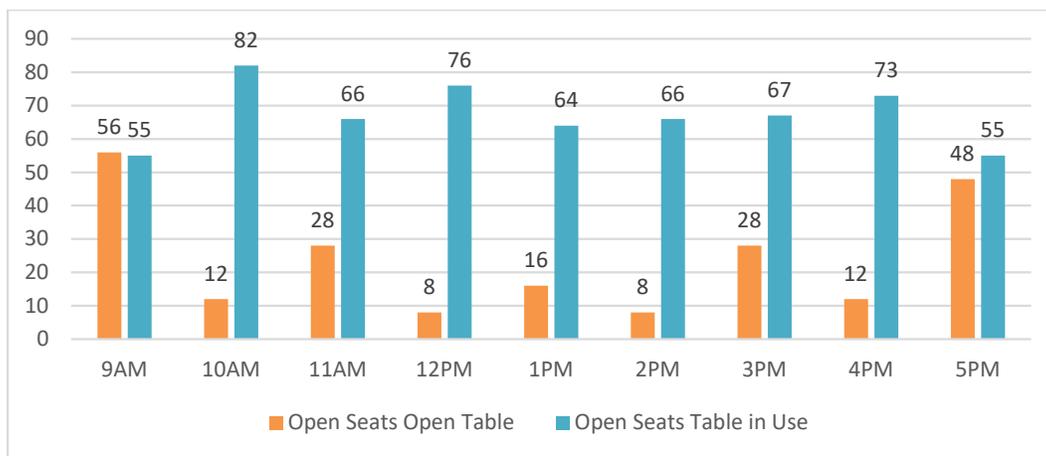
Figure 13. Pilkington Room tables in use on Wednesdays with number of patrons

Legend: ■ Tables in Use ■ 1 Patron ■ 2 Patrons ■ 3 Patrons ■ 4 Patrons ■ 5 Patrons ■ 6 Patrons ■ 7 Patrons
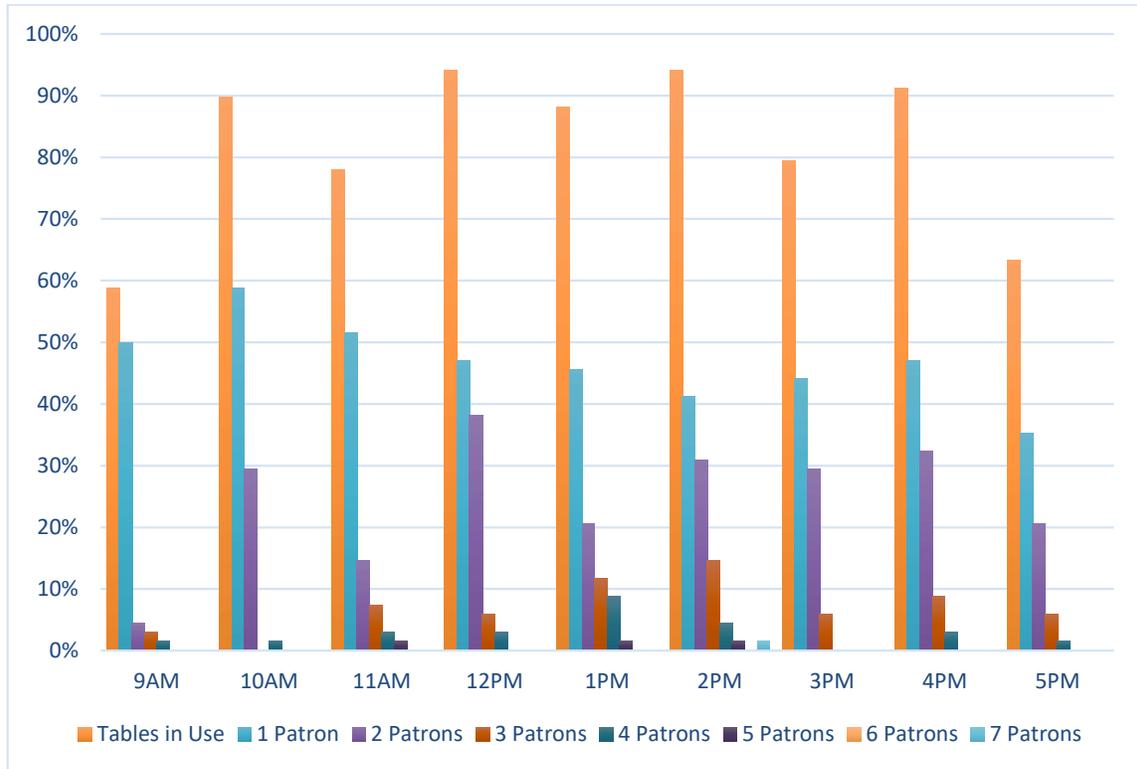
Figure 14. Furniture placement structure

3rd Floor-no talking   Single user/smallest

2nd Floor-quiet   Single/small group/mid-size furniture

1st Floor-talking   Group/communal/largest
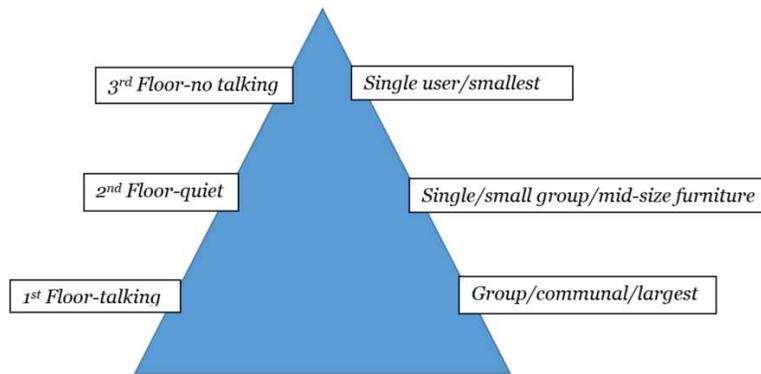
Visual Traffic Sweep Checklist

Visual Traffic Sweep Checklist			Date:			2ND FLOOR		Time:		3RD FLOOR		Initials:	
1ST FLOOR						2ND FLOOR				3RD FLOOR			
Government Documents Room			Sky Light Area			Baxter Room				Retro Room			
FD1			Sk(1)1			Bx1				Rtr1			
FD2			Sk(1)2			Bx2				Rtr2			
FD3			Sk(1)3			Bx3				Rtr3			
FD4			Sk(1)4			Bx4							
						Bx5				Graduate Study Room			
Ainsworth Commons			West Circulation Cubby			Bx6				Grd1			
AC1			WCC1							Grd2			
AC2			WCC2			Sky Light Area				Grd3			
AC3						Sk(2)1							
AC4						Sk(2)2				Sky Light Area			
AC5						Sk(2)3				Sk(3)1			
AC6										Sk(3)2			
AC7						Pilkington Room				Sk(3)3			
						Plk1							
Microfilm Area						Plk2							
M1						Plk3							
M2						Plk4							
						Plk5							
Information Commons						Plk6							
IC1						Plk7							
IC2													
IC3													
IC4													
IC5													
IC6													
IC7													
IC8													
IC9													
IC10													
IC11													