LIBRARY SPACE ASSESSMENT

Group 2; Academic Libraries (LIS 2771) Fall 2017

Abstract

The assessment of space in an academic library is vital to meeting the needs of shifting user expectations. This report details the evaluation of three academic libraries in the Pittsburgh area. Sorrells Library, Grace Library, and Gumberg Library were evaluated based on the ACRL Standards for Library Space using a Likert-style scale to rate each criterion. Results pertaining to both physical and virtual spaces were then synthesized to discuss positive and negative features and the implications these may have for the user experience. Recommendations for improvement are provided based on the combination of professional literature and the findings from this assessment. Though no serious or permanent issues were identified within the three libraries, these recommendations hope to touch on the changing nature of the academic landscape and the adaptation of space to fit users' needs.

Jennifer Ripka, Elizabeth Waltman, and Alexander Sanford

Introduction

  This space assessment focused on a broad-spectrum analysis of spaces in academic libraries in the Pittsburgh area. Using the "ACRL Standards for Library Space" (ACRL 2016) as a baseline for the current assessment, the physical and virtual spaces of the Grace Library at Carlow University, the Sorrells Engineering and Science Library at Carnegie Mellon University, and the Gumberg Library at Duquesne University were all evaluated for this report. In order to create a reasonable and manageable set of assessments within the scope of this project, the researchers ensured that the libraries being assessed belonged to three different universities.

  The smallest library, Sorrells Library, was selected because it is a discipline-specific library. Grace Library was selected because it was recently renovated (during the 2014-15 academic year). Gumberg Library was selected because it is currently undergoing a series of changes pertaining to space. Between these three libraries, the assessment team was able to aggregate a considerable amount of data for comparison, and to acknowledge some of the key differences between these three libraries. This report will provide details on the process of criteria selection, the assessment criteria themselves, and the assessment procedure followed by an analysis of the assessment results and a few points of discussion and recommendations. Data collected during each of the three individual assessments will be appended to this report.

Methods

  In order to identify criteria for this project, several existing sources were evaluated. Each member of the assessment team reviewed the criteria presented in Cunningham and Tabur's "Hierarchy of Learning Space Attributes," the "Library as Place" dimension of LibQual+, and the "ACRL Standards for Library Space" (2012; de Jagur 2015; ACRL 2016). The group was searching for a set of comprehensive, broad criteria from which to build an assessment worksheet. All group members also acknowledged that it would most likely be necessary to embellish on existing criteria, so the adaptability of the existing criteria was a shared concern. The "Hierarchy of Learning Space Attributes and the "Library as Place" dimension of LibQual+ were both ruled out as possible baselines for the assessment criteria used in this study because all of the same concerns were

addressed by the "ACRL Standards for Library Space," which also provided criteria for evaluating technology and virtual environments (i.e., the library's website).

Because technology and virtual environments are important areas to evaluate in twenty-first century academic libraries, the assessment team elected to use the "ACRL Standards for Library Space" as the backbone of the assessment criteria for this report. In an effort to add greater depth and specificity to the "ACRL Standards," two of the eight items on the list were broken down into sub-criteria to enable the members of the assessment team to have a greater basis for comparison and to clarify the particular aspect of library space that each of the two overarching items (item 3 and item 5) were intended to evaluate. Item 3 of the "ACRL Standards" ("The library has the IT infrastructure to provide reliable and robust virtual and physical environments needed for study and research") (ACRL 2016) was broken down into an overall rating of the original item and ratings on two sub-items which focused on hardware and software respectively ("This library provides users with the necessary hardware to facilitate an efficient workflow. This can include access to printers/copiers/scanners, outlets, projectors, and any machinery necessary to utilize all library materials (e.g., VHS player for VHS tapes)" and "This library provides access to electronic, downloadable, and virtual content that is accessible both in the library and in user's homes through the library website"). Item 5 of the ACRL Standards ("The library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge") (ACRL 2016) was similarly broken into three criteria - the original item, and two sub-items that focus on library partners' use of space and the technological outfittings of pedagogical spaces ("This library provides flexible spaces that are inviting to other teaching/learning partners on campus such as the writing center or professors" and "The pedagogical spaces in the library are outfitted with the appropriate technology for user success in those spaces. (e.g., power strips in study carrels, projector screens in conference rooms)").

For ease and clarity, each member of the assessment group used the same worksheet when conducting the evaluation. (See Appendix A for the complete list of criteria that members of the assessment team used, as well as the shared worksheet.) Each of the 12 assessment items was rated by each group member on a Likert-style scale ranging from 1 to 5 based on the extent to which each group member determined their site met the criterion (1=Extremely Disagree, 5=Extremely Agree).

A comments section was included at the end of the criteria worksheet in order to allow group members to take notes for reference as to why each item on the assessment measure was given a particular rating. At the end of each individual assessment, each group member totaled the scores from each item to determine an overall rating for each site that was visited and evaluated (possible scores ranging from 12=worst to 60=best).

Each member of the assessment team visited one site and evaluated it based on a set of criteria defined and described above. All group members brought the same worksheet with the same rating scale to each of their respective evaluation sites, which enabled the collection of comparable data and acted as a guide throughout the assessment. In order to thoroughly evaluate both the physical and virtual spaces of each library, each group member visited the physical library as well as the library's website. Brief interviews with library users and staff enabled the assessment groups to collect information that would not have been readily available to individuals who are not part of each university's community (e.g., access to databases, institutional WiFi networks, or downloads that require institutional credentials to log in). An in-person group meeting prior to the on-site assessments was conducted in order to troubleshoot any differences of opinion or misunderstandings that might have negatively impacted the accuracy and clarity of assessment results.

Results

The following chart represents the criterion scores given to the individual library spaces. Each assessment item received a score from 1 to 5 (1=Extremely Disagree, 5=Extremely Agree) and the total possible points a site could receive was 60 (See Appendices B, C, and D for details from the individual assessments).

	Sorrells	Grace	Gumberg
1.	4	4	4
2.	5	4	5
3.	5	5	5

3a.	5	4	3
3b.	5	5	5
4.	3	5	4
5.	5	4	5
5a.	4	3	2
5b.	4	4	4
6.	3	5	2
7.	4	4	5
8.	4	4	4
Total	**51**	**51**	**48**

All three sites received high overall ratings in the assessment: Gumberg received a total score of 48 and both Sorrells and Grace received a 51. From these results some generalities can be established. Gumberg, Sorrells, and Grace libraries all provided adequate study spaces for their patrons. Item 5, "the library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge", was given a 5 at Sorrells, a 5 at Gumberg, and a 4 at Grace. These ratings correspond to each site providing a variety of spaces for groups and individuals. Rooms and tables to accommodate larger groups were available while smaller tables, carrels, and individual study rooms were present in the libraries. All sites provided quiet and loud study environments, which were either designated by floor or clearly separated to avoid the transfer of noise. Assessment team members also noted that each type of space was being utilized at the time of their visit; patrons were using spaces throughout each of the libraries in order to meet their individual or group needs. One area of weakness seen at Gumberg and Sorrels was the access to outlets. This falls under criterion 3a, which relates to spaces' possession of necessary hardware to facilitate an efficient workflow. Both libraries lacked outlets in study areas, Sorrells noting this need in only one-third of carrels while Gumberg saw this as a wider issue across all spaces in the library.

Across the board, each library had the IT infrastructure to provide reliable virtual and physical environments needed for study and research as seen in item 3. Fast Wi-Fi connections

were found in each library, printers and scanners were operational, computers were available for use, and appropriate technology was found in classrooms and study areas. All sites received a rating of 5 on item 3b for providing excellent electronic, downloadable, and virtual content accessible both inside and outside the library. An area that was lacking in some locations was the use of space as an intellectual commons. This was assessed in item 4, evaluating the library's use of physical and virtual spaces for providing programs, exhibits, and lectures. At Grace Library there was an upcoming calendar of academic events that was for the greater Carlow University community, but wasn't produced by the library. Though the large classroom space at Sorrells Library was reservable, there were no events, lectures, or other programming being advertised by the library at the time of the assessment. Only Gumberg's assessment indicated available programming, the library hosting book groups, workshops, a philosophy speaker series, and online professional events.

An area that greatly varied across the sites was the décor and overall appeal of the physical space. Grace Library provided an open, welcoming space with comfortable and updated furnishings, natural lighting, and a café on the bottom floor. While Sorrells contained a variety of comfortable and unconventional seating areas enjoyed by students there was minimal natural light throughout the building. Gumberg Library is the oldest among these three spaces and is showing its age. The building was converted from a parking garage in the 1970's and much of the décor, paint, and carpeting is still representative of this time period. The furnishings are an assortment of different styles while very little natural light is present in the building due to three of the five floors being underground. Though there were discrepancies in aesthetics between the three sites, all assessment team members found the libraries clean, inviting, and safe. These characteristics were evaluated by items 2 and 7 on which all sites scored either a 4 or 5. Each library required card access before or after certain hours, on particular days of the week, or 24/7. Sorrels Library and Gumberg Library provided convenient hours conducive to late night and early morning visitors. Only the Grace Library assessment noted a need for longer operating hours, especially during the weekends and finals week. Sorrells Library, Gumberg Library, and Grace Library also provided welcoming digital and physical environments. Websites and online materials were user friendly

and easy to navigate, and multiple staff members were located in prominent areas of each physical building, available to help students and visitors alike.

Discussion

It is quickly apparent that each library did two things very well: they all provided a clean, safe, and inviting atmosphere as well as strong IT infrastructure and access to digital materials. These two key elements reflect some of the changes to library space in recent years. It is vital to embrace technology as a tool for library users and to take provide access to library resources that is still available to users when they are not present in the physical library(Carlson 2001). Providing computers, screens, projectors, printers, and other types of technology that allow students to come in and complete their work is simply a must in the twenty-first century academic library. Gumberg, Sorrells, and Grace all provided their patrons with a variety of useful and necessary technology options. From retrofitting older libraries, as Gumberg has, to taking advantage of recent renovations, as in Grace's case, it is important for libraries to integrate these options from the ground up. Additionally, these spaces are clean, inviting and secure which helps provide a high-quality atmosphere for study. While other key aspects have shifted, keeping a clean, safe, and inviting environment has always been a priority of library assessments (McDonald 2006). To continue to create this type of environment, the three libraries represented in this study make sure to provide for the most basic, but necessary, of user needs.

The primary issue that users at any of the locations must face is access to outlets. Access to power is critical (Germany 2014), but both Gumberg and Sorrells did not have adequate access. While each location provided the necessary technology for other areas of study, students who seek to simply use the space with a laptop could face issues if they are unlucky in their choice of seat. This is problematic as laptops, tablets, and other wireless devices are the primary tools many students use for their work, both for research and daily assignments. Without the ability to keep their personal technology powered up, patrons could be discouraged from using the library spaces.

Both Sorrells and Gumberg also had some issues in terms of aesthetic feel. One major trend that has created a more open and inviting space is the use of natural lighting. While seemingly

minor, the use of natural light can have a significant impact on users' sense of the quality of a space. Many patrons feel that natural light, or at least the option of natural light, is a major positive quality in a library (Line 2002). Grace embraced this in the redesign by placing the study spaces near windows which had built-in shades that adapt to changes in the daylight to allow light in without being blinding. Gumberg and Sorrells both had a significant lack of natural light. While artificial light is necessary (particular during nighttime hours), many patrons prefer natural light when possible, as most find it more comfortable to use.

Ultimately, technology and space is only useful insofar as it is actually being used by patrons (Watson 2010). Each library provided a variety of well-equipped spaces, but Gumberg is certainly the most well-used for reasons other than general study and work. Some of the issues that were noted at Sorrells and Grace were not entirely their own doing, but had to do with situational factors. Because Sorrells is Carnegie Mellon's engineering library and not the main campus library, university and community partners and non-STEM students are more inclined to use spaces provided in the main library. Grace faces a different set of problems. Since the library shares its building with the bookstore, president's office, a café, and other non-library units, it does not display a calendar with events exclusive to the library, but is integrated into the academic calendar instead.

Recommendations and Conclusion.

Since each library generally scored well it would seem none need a major rebuilding. The library that may need the largest scale of remodeling is Gumberg. It seriously lacks access to outlets, and would most likely need a fair amount of work to increase access. Additionally, due to its age, it could benefit from updating some of the older designs and replacing the current furniture with a new, less eclectic pieces. The final and most difficult task would be to increase the amount of natural light in the above-ground parts of the library. In its current state, offices occupy the perimeter of the building and the library space is in the center. A creative redesign could ensure that both benefit from natural light, and give patrons a more comfortable setting.

The first suggestion for Sorrells is to increase its findability through directional signs. The library was well hidden within its building, which could be discouraging to patrons before they

arrive in the library. Next, although outlet coverage was fair, it could still use some improvement. It was noted that some study spaces lacked outlets, which could easily be remedied with some strategically placed power strips as opposed to a complete remodel.

Finally, Grace has the benefit of being recently, and effectively, remodeled. Many of the criteria described in the "ACRL Standards" were addressed in the remodel, as according to students, the library did not meet these standards previously. The primary way Grace can improve is simply to be open longer. Students noted that due to its more restricted hours they were often forced to leave while using the space, which was especially troublesome during finals. Additionally, use of the learning commons within the library could be increased. There were some classes happening in the spaces that were observed, some of which were listed on the general academic calendar. However, since the library is housed in a building alongside IT, the president's office, and other spaces, library events might not be clearly separated out and only show up on the academic calendar. Providing a calendar of specific events that utilize the library's spaces and tools would be useful.

At the present time, each of the three universities to which Grace, Sorrells, and Gumberg belong is fortunate to have a high-quality and progressive library. Each library generally scored well; no serious issues were found. If each library continues to address its weaknesses, engages in self-assessment, and seeks feedback from students, they can continue to adapt as students' needs for space change. It is clear that each location understands that students needs have shifted, and has sought to address these needs however possible. Though they all do well, there will always be room for improvement as technology and other factors continue to alter the academic landscape.

References

ACRL. 2016. "Academic Library Building Design: Resources for Planning: Standards and

Guidelines." Updated 2016. http://acrl.libguides.com/c.php?g=459032&p=3138023.

Carlson, S. 2001. "The deserted library" *The Chronicle of Higher Education* 48 (12): A35.

Cunningham, Heather V., and Tabur, Susanne. 2012. "Learning Space Attributes: Reflections on
Academic Library Design and Its Use." *Journal of Learning Spaces* 1 (2): 6.

http://libjournal.uncg.edu/index.php/jls/article/viewFile/392/287.

De Jager, Karin. 2015. "Place Matters: Undergraduate Perceptions of the Value of the Library."

Performance Measurement and Metrics 16 (3): 289–302.

doi:10.1108/PMM-08-2015-0021.

Germany, L. 2014. "Learning space evaluations – timing, team, techniques." In *The future of learning

and teaching in next generation learning spaces,* edited by K. Fraser, 267-288. Bingley, UK:

Emerald Group.

Line, M. B. 2002. "Library buildings: A user's viewpoint." *LIBER Quarterly* 12, no. 1: 73-87.

McDonald, A. 2006. "The ten commandments revisited: The qualities of good library space." *LIBER

Quarterly* 16 (2).

Watson, L. 2010. "The future of the library as a place of learning: A personal perspective." *New

Review of Academic Librarianship* 16 (1): 45-56. doi:10.1080/13614530903574637.

Appendix A

Library Space Assessment Worksheet

Library Name:

How does this library meet the ACRL Standards for Library Space? _____/60

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1. The library creates intuitive navigation that supports self-sufficient use of virtual and physical spaces.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

2. The library provides safe and secure physical and virtual environments conducive to study and research.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3. The library has the IT infrastructure to provide reliable and robust virtual and physical environments needed for study and research.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3a. This library provides users with the necessary hardware to facilitate an efficient workflow. This can include access to printers/copiers/scanners, outlets, projectors, and any machinery necessary to utilize all library materials (e.g., VHS player for VHS tapes).

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3b. This library provides access to electronic, downloadable, and virtual content that is accessible both in the library and in user's homes through the library website.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

4. The library uses physical and virtual spaces as intellectual commons, providing access to programs, exhibits, lectures, and more.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5. The library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5a. This library provides flexible spaces that are inviting to other teaching/learning partners on campus such as the writing center or professors.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5b. The pedagogical spaces in the library are outfitted with the appropriate technology for user success in those spaces. (e.g., power strips in study carrels, projector screens in conference rooms.)

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

6. The library's physical space features connectivity (WiFi, cell reception) and up-to-date, adequate, well-maintained equipment and furnishings.*

*Does it look good? Does it work?				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

7. The library provides clean, inviting, and adequate space, conducive to study and research, with suitable environmental conditions and convenient hours for its services, personnel, resources, and collections.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

8. The library's physical and virtual spaces are informed by consultation with users.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Comments:

Appendix B

Results of Grace Library Assessment

The Grace library at Carlow University has the nice advantage and strength that it was recently renovated during the 2014-15 academic year. During the remodel the space had been updated with many of the ACRL standards and guidelines criteria in mind. The redesign was very open, had lots of windows on the front of the building, as well as overlooking the inside, lending to a lot of natural lighting, updated seating, and a variety of new spaces. After the renovation the library, especially when combined with the learning commons, does work to help provide a well-equipped and suitable environment for students to study and research.

The downside to the renovation was the loss of a floor, and therefore a very large need to reduce the collection to fit the smaller space, and general loss of space to make use of. The first floor of the library was lost to the university commons, this new space includes lots of seating, no noise restrictions, and a café. Here students can do general group work, personal work, or anything without regards for the sound they are making. While this is useful space, it doesn't truly belong to the library therefore is only partially relevant.

The library begins on the third floor, the entrance faces the circulation desk and felt very open, clean and inviting. The first floor contains the collections. With the reduced space the collections are mostly kept on movable shelving to keep space concerns in mind. Only the periodicals, reference books, and general non-academic reading material are on regular shelving. Most of the collection now is online following a major weeding effort to fit the collection in the new reduced space. The first floor of the library also included some group study rooms, a very popular conference room, and a computer lab, in addition to a lot of study carols and other seating. This space seemed very well suited for individual study and research; the group areas were also very well outfitted with relevant technology for working on group projects and presentations. The second floor also contained a lot of space for individual study, but also had a digital learning

commons, math lab, and a classroom. These spaces each were well outfitted for their purposes with relevant technology.

The space was very well designed and maintained. It was clean, open and inviting, and library staff was very friendly. While the library did lose space for its collection, the changes made during the renovation really improved how remaining space is used. In talking to a couple students, one who was there during the time of the renovation, the changes really improved the library and made the space into one students used; the main complaint now is simply library hours. During the school year it closes at midnight, without much of an extension during finals weeks. Many students wanted to use the space to study, but wouldn't have access during the hours they often wanted to study in the library. As far as resources, the online and physical both were very easily navigable and well maintained. The same students said that the resources, especially those online, were easy to use and very strong for their purposes. The library took full advantage of the renovation to create a better space for patrons.

How does this library meet the ACRL Standards for Library Space? 51/60 (ACRL. 2016.)

1. The library creates intuitive navigation that supports self-sufficient use of virtual and physical spaces.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:
Very open design. Renovated in 2014-15 Academic year. Periodicals, reference, and general reading materials well laid out upon entering. General collection has been condensed and using movable shelving of multiple varieties to use the small space as effectively as possible. Overall a very open design and very navigable. The library website is well made, search is at the tope with other major information is located just below in big boxes, library policies are also clearly stated online.

2. The library provides safe and secure physical and virtual environments conducive to study and research.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

Very safe and secure. Doors require key card access at certain hours, top floor entrance requires key card entrance at all times, and staff can easily see and hear to make sure area is safe. The library itself is the third and fourth floors of the library and the second is a café and learning commons. Virtual spaces are limited to student access only and only Carlow community can access the virtual infrastructure, the computers and the other technology.

3. The library has the IT infrastructure to provide reliable and robust virtual and physical environments needed for study and research.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

The as a physical space is adequate. When the building was remodeled the library itself was shrunk to make room on the entrance floor for a café and a loud space. The online facilities are available at home, and the majority of the collection is located online.

3a. This library provides users with the necessary hardware to facilitate an efficient workflow. This can include access to printers/copiers/scanners, outlets, projectors, and any machinery necessary to utilize all library materials (e.g., VHS player for VHS tapes).

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:
The library was well suited with technology. On the first library floor there were multiple group study rooms outfitted with screens to have a large display while doing group work, a conference room similarly outfitted, and a nice well-equipped computer lab. The upper floor of the library had a digital learning commons, a math lab, more group study rooms, a classroom with a variety of tools, and a sandbox room. Each room had a variety of equipment all available and suitable for work. They also added outlets, printers and computers well placed around both floors so that there would always be easily accessible.

3b. This library provides access to electronic, downloadable, and virtual content that is accessible both in the library and in user's homes through the library website.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:
The majority of the libraries resources were online. There was a large weeding project during the remodel, but keeping as much as possible and using creative shelving and shelves to keep as much of the collection as possible. It has a online search and its resources are available to the students at home much like the ULS.

4. The library uses physical and virtual spaces as intellectual commons, providing access to programs, exhibits, lectures, and more.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

In terms of a learning commons the library very much so achieves this. Being a smaller school, exhibits were not seemingly a strong point. But with both the one floor café with a louder environment and then the quiet areas of the library and its variety of spaces for use, it definitely allows for patrons to have their preferred environment for learning and a variety of different uses. With the classroom, conference room and other spaces it does also provide places for lectures and other programs.

5. The library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

Again, library itself has a lot of group study rooms, and other spaces for group working. Also while the main areas of the library are quiet spaces, the entrance is into a café and other large space that for any working in a louder environment or doing some group work that may not require the group study spaces does allow for group working.

5a. This library provides flexible spaces that are inviting to other teaching/learning partners on campus such as the writing center or professors.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

Yes, there are a variety of places, computer labs, math labs, digital learning commons and other spaces that are there to help students with their work. The sandbox, conference room and classroom are nice, well equipped, and available for outside people to come in and help. I couldn't find any listings for actual usage, so the space is there but I was unable to see if they were used.

5b. The pedagogical spaces in the library are outfitted with the appropriate technology for user success in those spaces. (e.g., power strips in study carrels, projector screens in conference rooms.)

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

Most spaces are well maintained to have Wi-Fi and outlets are available at many of the carrels, which are well placed on multiple floors. The study rooms have nice equipment for all to see what is currently being worked on in the big screens. The computer labs and math lab did have what seemed to be adequate computers and in abundance. Other spaces did seem to be well equipped with what was necessary and provide for the success of the students who seek these tools in the library

6. The library's physical space features connectivity (Wi-Fi, cell reception) and up-to-date, adequate, well-maintained equipment and furnishings.*

*Does it look good? Does it work?

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:

The library was entirely covered by Wi-Fi. I was unable to access it myself as I was not a student, but the coverage did exist. As a whole the library looks very clean, things seem to work well. The seating was comfortable, had a variety of options and looked nice.

7. The library provides clean, inviting, and adequate space, conducive to study and research, with suitable environmental conditions and convenient hours for its services, personnel, resources, and collections.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:
Very clean and inviting. The library was very well maintained, building was in the center of campus, had the café in the bottom, and allowed food and good facilities. The personnel were very nice and talkative, collections have been reduced when the lost the first floor to the café in the remodel, but did have a large online collection, and used the space as well they could. Hours weren't the best, open till midnight on weeknights, closes earlier on weekend but still available during daylight and until 10 on Sunday. The students did say it needed better hours, especially during finals.

8. The library's physical and virtual spaces are informed by consultation with users.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Notes:
The librarians were very easy to talk to, did track many statistics which they used to gauge usage and other useful information.

Results of Sorrells Library Assessment

The Sorrells Engineering and Science Library (Sorrells) at Carnegie Mellon University was assessed for this portion of the library space assessment. The design of the virtual and physical spaces of Sorrells was impressive, and on a scale of 1-60 (1 = worst, 60 = best), this library received an overall rating of 51. Many students were using the library at the time of the assessment, which points to some of the things that Sorrells does well.

Sorrells has exceptional technological infrastructure, which is especially important for libraries that are designed to support STEM disciplines. All of the machines available to library users were functional at the time the assessment was conducted. In addition to about thirty desktop computers and a printer/scanner/copier station, this library is well-equipped with outlets in nearly every individual study unit, and throughout the group study areas. Every individual computer station contains a surge protector, and about two-thirds of the study carrels have outlets within the unit. The library also has an excellent wireless connection, which was easy to connect to through the guest network. The phone reception varied quite a bit, and was weak in the back corners, but this is unlikely to be a problem anywhere but one small study room.

Sorrells also does an excellent job of providing spaces for a variety of student study arrangements. There are large tables for group study as well as some rooms that can accommodate larger groups, and there were several different areas for individual study – carrels, computer stations, small tables, and pod-like seats that resemble the more luxurious business class seats on international flights. Both the group and individual areas seem popular with students, and the quiet parts in the back of the library are clearly delineated from the louder sections. There are also a few unconventional seating areas that students appear to enjoy (a stage-like space, and a large, mostly-enclosed curving bench).

The online space associated with Sorrells was easy to navigate, and was, according to a student worker at the front desk (which was staffed by two students and a non-student library employee), accessible both on and off campus to CMU students. Databases and other digital resources are easy to find in the library's online catalog. Physical resources are similarly easy to

find in both the online catalog and inside the physical library using the Library of Congress classification system.

However, there are a few areas where Sorrells could improve. First, although finding things in the library is easy, locating the actual library (which is on the 4th floor of the building) was not. This could be a deterrent for first year students who are still becoming familiar with campus. Second, there did not appear to be many programs, lectures, or exhibits being offered in the library. Since Sorrells has a large classroom space with a projector in the back of the library, it seems like an opportunity is being missed to create an intellectual exchange. Third, some students using carrels without outlets were forced to devise creative solutions for their power needs; this could be resolved easily by adding a few strategically-placed power strips. Finally, although the library clearly consulted users about library changes, there was no obvious avenue that students could take to offer suggestions that were not being actively solicited.

Standards for Libraries in Higher Education. (2006). Retrieved October 20, 2017, from
http://www.ala.org/acrl/standards/standardslibraries

Library Name: **Sorrells Engineering and Science Library, Carnegie Mellon University**
How does this library meet the ACRL Standards for Library Space? **51**/60

1. The library creates intuitive navigation that supports self-sufficient use of virtual and physical spaces.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5
2. The library provides safe and secure physical and virtual environments conducive to study and research.				

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3. The library has the IT infrastructure to provide reliable and robust virtual and physical environments needed for study and research.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3a. This library provides users with the necessary hardware to facilitate an efficient workflow. This can include access to printers/copiers/scanners, outlets, projectors, and any machinery necessary to utilize all library materials (e.g., VHS player for VHS tapes).

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

3b. This library provides access to electronic, downloadable, and virtual content that is accessible both in the library and in user's homes through the library website.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

4. The library uses physical and virtual spaces as intellectual commons, providing access to programs, exhibits, lectures, and more.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5. The library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5a. This library provides flexible spaces that are inviting to other teaching/learning partners on campus such as the writing center or professors.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

5b. The pedagogical spaces in the library are outfitted with the appropriate technology for user success in those spaces. (e.g., power strips in study carrels, projector screens in conference rooms.)

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

6. The library's physical space features connectivity (WiFi, cell reception) and up-to-date, adequate, well-maintained equipment and furnishings.*

*Does it look good? Does it work?

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

7. The library provides clean, inviting, and adequate space, conducive to study and research, with suitable environmental conditions and convenient hours for its services, personnel, resources, and collections.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

8. The library's physical and virtual spaces are informed by consultation with users.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

Comments/Notes:

1. The library was difficult to find. I had to ask for directions. Books classified with LC.

3a. Printer/Scanner/Copier functional, easy to find. Lots of computers (~30).

3b. Anonymous student worker – library resources accessible on and off campus for CMU people

4. The large classroom space in the back was reservable, but there were no events, lectures, etc. being advertised that I noticed.

5. Lots of different spaces all being used. (carrels, tables, comfy chairs, rooms, "pods" – remind me of luxury airplane seats that celebrities use when they fly internationally)

5a. No obvious evidence that teaching/learning partners utilize this library (maybe they use a different library on campus). Bulletin board right outside library door – advertising campus events/activities.

5b. Outlets near majority of study spaces (not in all carrels). Projectors in study rooms.

6. WiFi good. Guest network easy to access. Mobile reception iffy.

7. Minimal natural light. Hours are good (need CMU ID after midnight). Personnel available at desk (multiple employees).

8. "Food in the library" survey available online. No obvious way to make other suggestions.

Appendix D

Results of Gumberg Library Assessment

Overview

Five floors: patrons enter on 4th floor

Hours: generally open between 11 and 15 hours per day, including early morning and late night

Access: card access is required on weekdays after 5pm and at all times on weekends

Special Resources and Collections:
    Phenomenology Center
    University Archives: featuring the Wright Collection and the Hailperin Collection,
    Spiritan Collection,
    Curriculum Center, Duquesne Dissertations

Navigation

I found the navigation of space to be easy and intuitive. Elevators, bathrooms, and water fountains are in the same location on each of the five floors. While some doors in the stairwell are missing signs, the directory in the two elevators is clear and concise. All shelves and materials are labeled, though there is some discrepancy between identifying shelves by call number or subject. Classrooms, special collections, study rooms, and reference desks are all easy to find and clearly marked with appropriate signage. The three exceptions to this are the Viewing Rooms, Writing Center, and Spiritan Collection. These resources were difficult to find, offered no descriptions about available materials, and did not designate when and who could access the space.

Space and Décor

The five floors feature many flexible areas for study including quiet, group, individual (both carrels and rooms), and technology rich classrooms. Whiteboards are heavily used, with many being moveable and others incorporated on tables and walls. Access to outlets was a major weakness of

the space, with many tables and study areas out of reach. Much of the carpeting, furniture, and paint are representative of the 1970's when Gumberg was transformed from a parking garage. Giant concrete pillars reside in the middle of the three lower floors, characteristic of the brutalist architecture. As three of the floors are underground there is little to no natural light in most areas. Many tables, especially those on the fifth floor, were nothing more than foldable tables with mismatched plastic folding chairs. While not ideal, this is a sign of change in the library; as materials and shelves are removed these new study spaces are added to better fit community needs.

Technology and Digital Resources

The space features four printers, one photocopier, one scanner, one microfilm reader, four MIDI keyboards connected to notation software, and computer stations available for "quick lookup" and extended use. Gumberg Library features a rich variety of digital resources: there are 261 research databases, 375 librarian produced LibGudies, 30 YouTube videos and tutorials, and access to 24/7 help through Ask A Librarian.

Overall Evaluation

As a whole, I found that the Gumberg Library is fulfilling the needs of its community. Resources were catered to specific subjects reflecting courses and areas of study within the university. While much of the building is outdated I could see where improvements had begun, especially in group study spaces and technology rich classrooms. Furthermore materials and resources, especially those in a digital format, reflected the changing needs of students and faculty. I think the biggest sign of success for this library is that almost every space was being used. From quiet floors to group study to the special rooms and collections, patrons were spread out and using all available spaces, equipment, and resources. Though there are improvements to be made this use of space is a sign that Gumberg Library is successfully serving its community at Duquesne University.

How does this library meet the ACRL Standards for Library Space? (ACRL. 2016) **48/60**

1. The library creates intuitive navigation that supports self-sufficient use of virtual and physical spaces.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5
- Bathrooms, water fountains, and elevators in the same location on every floor - All stacks marked, although some discrepancy between call number or subject - Library directory in elevators; some floors missing signs on doors denoting resources - Website and discovery search system very easy to navigate				
2. The library provides safe and secure physical and virtual environments conducive to study and research.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5
- I felt very safe on Duquesne's campus and inside Gumberg Library. - Panic alarms near stairwells, in study rooms, and in bathrooms in case of emergency - Required to swipe in after 5pm on weekdays and at all times on weekends for safety - Prompted to log in with Duquesne MultiPass to use some online resources				
3. The library has the IT infrastructure to provide reliable and robust virtual and physical environments needed for study and research.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5
- Fast and reliable Wi-Fi connection - My cell reception is great (Verizon); cannot speak for other providers				

3a. This library provides users with the necessary hardware to facilitate an efficient workflow. This can include access to printers/copiers/scanners, outlets, projectors, and any machinery necessary to utilize all library materials (e.g., VHS player for VHS tapes).				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- 4 printers (wireless capability) - black and white only
- Color printing - $1.00 per page, allow 24 hours for order to be completed for pickup at circulation
- 1 photocopier (¢10 per copy)
- 1 scanner
- 1 microfilm reader
- 4 MIDI keyboards w/ notation software
- Listening/Viewing room: not well marked and not accessible without a key from circulation
- Not enough outlets: many tables and study areas inaccessible to power. Some effort has been made to run power strips along walls and columns with the addition of moveable power stations. Some outlets have also been outfitted with USB chargers.
- 1 phone charging station: cords for any type of phone but it is in a terrible location away from main study area and very high up on the wall.
- Station of computers on 4th (main) floor for "quick lookups and printing"
- Computers lining the walls on main floor and in the Curriculum Center with internet access, Microsoft Word, EndNote, SPSS, and SAS

3b. This library provides access to electronic, downloadable, and virtual content that is accessible both in the library and in user's homes through the library website.				
Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- Research Databases - 261
- LibGuides - 375
- YouTube Tutorials - 30
- Access to Ask a Librarian/Ask PA - available 24/7
- Software downloads (such as EndNote) provided for Duquesne students, faculty, and staff
- Digital Commons - institutional repository

4. The library uses physical and virtual spaces as intellectual commons, providing access to programs, exhibits, lectures, and more.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- The library hosts webinars, workshops, flexible classroom space, and special events:
- 5-day impact challenge for raising your scholarly profile
- Africa Week 2017
- Reading/Book groups
- Philosophy Speaker Series
- EndNote Workshops

5. The library designs pedagogical spaces to facilitate collaboration and learning, and the creation of new knowledge.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- Excellent group study spaces: "open air" on the main floor with whiteboard walls and power outlets. Rooms with doors and blinds. Large tables on quiet and loud floors.
- Individual study carrels and private study rooms (can fit 1-2 people) that can be checked out for 2 hours.
- Graduate student study room
- Multimedia classroom with 7 stations that feature computer/monitor and dry erase tables
- Rolling whiteboards
- Quiet and loud study areas

5a. This library provides flexible spaces that are inviting to other teaching/learning partners on campus such as the writing center or professors.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

The only outside partner present in the library is the Writing Center. No designated room or a sign displaying hours. They split their time between the library and another building on campus. At Gumberg Monday - Thursday, 1 or 2 hours each day (times vary)

5b. The pedagogical spaces in the library are outfitted with the appropriate technology for user success in those spaces. (e.g., power strips in study carrels, projector screens in conference rooms.)

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- Once again outlets are a problem in some areas of the library, especially the individual study carrels and large study tables.
- Rooms (group study, small study, and classrooms/conference rooms) are equipped with proper equipment for the space including screens, whiteboards, computers and monitors, phones, dry erase tables, and outlets.

6. The library's physical space features connectivity (Wi-Fi, cell reception) and up-to-date, adequate, well-maintained equipment and furnishings. *

*Does it look good? Does it work?

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- The library space is very out of date - converted from parking garage in 1970's
- A mix of carpeting, most very old and a bright orange color
- Walls painted in 1970's style
- A great variety of tables, some just folding or card tables. Not the best look but easily moved for flexibility.
- Most chairs are not the best looking but functional and comfortable. A series of couches and chairs that no one used were small, slippery, hard, and pleather.
- Concrete, brutalist architecture with large columns in the middle of floors.
- Limited natural light. Floors 1-3 are underground but even on upper floors windows are only seen on one half of the floor.

7. The library provides clean, inviting, and adequate space, conducive to study and research, with suitable environmental conditions and convenient hours for its services, personnel, resources, and collections.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- Library is kept very clean, including the bathrooms
- Plenty of trash can and recycling bins
- Reference desk, Curriculum Center, Phenomenology Center, Archive, and Circulation Deck provide convenient hours with appropriate staffing.
- Weekdays - Gumberg is open 7am - 1am
- Weekends - times vary but generally open for 11 - 15 hours
- Open 24 hours leading up to and including finals week
- Vending machines on the main floor - snacks, drinks, and coffee. Food is allowed to be delivered to the library (must meet driver outside building)
- Temperature can vary - some floors are colder or hotter than others

8. The library's physical and virtual spaces are informed by consultation with users.

Extremely Disagree	Disagree	Neither Agree nor Disagree	Agree	Extremely Agree
1	2	3	4	5

- Circulation desk features a comment box for patrons to make suggestions
- Website includes "request a purchase" for materials
- Acquisitions, improvements, and additions made after analyzing patron use: more group study space/tables, bone boxes, the constant battle of adding more outlets