Recasting the 21st Century Community College Library:
Transforming the Student Experience through Space Planning and Assessment

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Introduction

Over the past decade, academic library buildings have undergone a sea change in purpose and design. They no longer primarily exist to house large print collections of monographs and serials; instead, library spaces have shifted to support three broad types of student activities: individual, quiet research/study, communal/collaborative work, and content-creation activities (content-creation spaces are defined as any kind of makerspace where students can actively create a physical or digital artifact). Two factors have contributed to this new design and usage paradigm. First, libraries' significant fiscal investment in electronic resources and the growth of born-digital data has resulted in decreased requests for immediate access to print collections.[1] Second, teaching practices such as "flipped classroom" models with active learning are replacing traditional lecture-based instruction. These new models of information access and higher education provides an opportunity for the rethinking academic library buildings in terms of space planning and design.

Two-year institutions typically serve different populations of students than other institutions of higher education. The National Center for Education Statistics (NCES) reports that community colleges serve significant numbers of minority, first generation, part-time and lower socio-economic status students. The Community College Research Center at Columbia University found that 44% of low-income students attend a community college as their first post-secondary institution; that number jumps to 57% of students with a family income of under $32,000. The Center also found that 56% of Hispanic and 48.5% of African-American undergraduates initially attend a community college, while only 35.6% of white students do.

TABLE 1

Demographic Data	CPCC
Enrollment	18,885
Male	44.8%
Female	55.2%
White	43.7%
African-American	31.5%
Hispanic	13.2%
Asian/Pacific Islander	6.6%
Other	5%

Central Piedmont Community College is a large, urban multi-campus institution located in Charlotte, NC, that serves a majority-minority student population (table 1). The college provides a comprehensive slate of programs of study with more than 300 degree, diploma, and certificate programs designed to serve the citizens and employers of Mecklenburg County. Additionally, the college offers literacy programs, corporate and continuing education, GED and Adult High School, and houses four middle college high schools in conjunction with Charlotte-Mecklenburg Schools.

The CPCC Library has seven libraries on the six CPCC campuses (one campus houses both a general library and a law library that serves an ABA-accredited paralegal program) staffed by 32 full time and 14 part-time

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employees. In the spring of 2018, the library began the design phase for a new Central Campus library building funded by Mecklenburg County, with construction set to begin in July 2019. The majority of research on academic library spaces has been conducted at four-year schools, and research specifically on community college library buildings and spaces is limited. This study seeks to fill the gap in research on the space needs of community college students and increase understanding of their needs in quiet, group/communal, and content-creation spaces.

Literature Review

Modern academic library architecture has undergone a paradigm shift from book- centered to learner-centered design; the library's primary purpose is to provide intentionally designed spaces to support and promote student learning, not to store physical materials.[2] An examination of library construction from 1995 to date indicates fewer spaces devoted to the traditional library functions of housing reference/circulating materials and individual, quiet study and an increasing number of spaces dedicated to collaborative work, group study, and technology use.[3] A review of the literature on physical library space provides clear evidence that this paradigm shift has meant a reconceptualization of the academic library. The physical library is no longer a place that passively provides information for students to absorb, but rather is a proactive partner in learning.[4]

This clear shift in purpose is reflected in a wave of library research assessing student use of library spaces. This research reflects librarians' desire to understand both how students use spaces with the library, but also what students want and need out of the physical library in order to increase usage of student-centered spaces within the building. Studies have focused on the use of group study rooms, collaborative spaces, maker-spaces, and traditional quiet study spaces in order to understand the full range of student expectations for space utilization.[5] Research in this vein of thought indicates that students want and will use a variety of different library spaces ranging from silent, solo study areas to noisy, collaborative areas depending on factors ranging from student mood and personality (some students need quiet space in order to study; others prefer to study in more communal areas) to assignment requirements. Student needs are inherently contradictory, and require flexibility in design to address.[6]

A second wave of research has attempted to uncover how library spaces influence student performance over time, looking at issues like retention, grade point average, and performance on research assignments. Researchers have studied user behavior to understand if and how different spaces influence learning.[7] Quantifying the institution's return on investment (ROI) for the library has long been a goal of academic librarians, both to help library staff in the provision of services to students and in making the case for funding to college/university administrators. A variety of researchers have been able to identify that flexible spaces designed to address often contradictory student needs drive students to spend time in the building, a factor that ROI research focused on instruction and reference services has successfully correlated to increased retention.[8] Studies have also focused on the makerspace movement in libraries, finding that these spaces spark student creativity and innovation in ways that support their long-term academic development.[9]

The more big-picture concept underlying the research is that of "library as place," or the idea that the physical library has a psychological and emotional resonance with users as an important public space. This idea is a foundational thread present in research that addresses library design. In some studies, the focus on place considers the role of the library building as a part of the larger college campus ecology.[10] Libraries are one space among many on campus with a student-centered purpose, and librarians seek to distinguish what spaces and activities, both social and academic, draw students to choose the library over other available spaces on campus. What the overall results indicate is that students view the physical library building as the nexus of the social and

academic. As May and Swabey summarize, the "library is a place that connects information to the social experience of learning."[11] Similarly, Khoo, et. al. and Yoo, et. al.'s research determined that students perceive learning as occurring through their conversations and collaborations with classmates. In their study at North Carolina State University focusing on millennial and Generation Y students, Yoo, et. al. found that today's college students have an expectation that libraries offer these spaces. For today's student, libraries are no longer defined by collections, but by the activities that their physical spaces encourage and support.[12]

The role of technology in space planning and use is another dominant theme in the literature, appearing in Applegate (2009), Latimer (2011), Brown-Sica (2011) and Khoo, et.al. (2016). Changes in the way that libraries provide information were an early factor that opened up library design to the possibilities of engaging students through architectural design. When the usage of print resources declined due to the dramatic growth in the availability and usage of electronic resources, the typical academic library no longer had to focus so strongly on how to house and provide access to the stacks. A design model in which technology-supported spaces encourage students to find their spot in the library to study alone and with friends aided by their laptop, tablet, or other device has ascended in prominence.[13]

Purely architectural considerations in designing and building new library buildings also appear in the literature. Student preference for natural light and the use of glass in construction to allow for daylighting as the primary source in indoor areas has been well documented.[14] The importance of furniture and flexibility seating arrangements, particular ones that allow students to reconfigure spaces to suit their particular need in the moment, has been noted by Applegate (2009), Latimer (2011), and Cha (2015).The use of building materials, wayfinding measures, zoning, and building flow are additional architectural elements that create inviting and inclusive environments for students.[15]

Research on academic library buildings has also focused on the issue of methodology. Researchers have explored the most effective methods for both understanding how student actually use the physical library, and for involving students in planning for new and renovated spaces and buildings. Among quantitative methods, student surveys are the most common used.[16] Surveys generally provide library staff with data on student perception of libraries. Participatory action research is used to involve students in the design of spaces for which they will be the primary users.[17] Observational studies are commonly used either alone or in conjunction with surveys to provide additional data on the ways in which students interact with and use physical spaces.[18] Most recently, the literature reveals a reliance on observational techniques borrowed from anthropological methods, ethnography being the most prominent.[19] The literature indicates that the most commonly used forms of ethnographic-like research include interviews, easel feedback, map annotation, and photo studies.[20]

Relatively little research addresses the design and construction of community college library buildings. Given the history of the development of community colleges in the United States, many library buildings are just approaching the end of their usable lifespans and becoming candidates for demolition and reconstruction; many were built during the 1960s and 1970s, a period of rapid growth for community colleges. Simon's 2004 "Redefining the Facilities of Community College Libraries and Learning Resource Centers in the 21st Century" represents one of the earliest contemporary considerations of how to design community libraries to meet the needs of the next generation of students. Simon acknowledges the potential for library buildings conceived as one-stop shopping for students with access to not just library materials, but a host of supportive services including group and communal spaces.[21] Horning and Klaus (2017) discuss making library spaces inclusive and welcoming, while Luzuis (2009) presents a case study focused on the practical aspects of managing a construction project.[22]

Ithaka S+R's Community College Libraries & Academic Support for Student Success (CCLASSS) project is a promising and recent in-depth consideration of the particular circumstances and needs of community college students. The report published in August 2018 suggests that community college students seek out quiet spaces in the library because it is often their sole source of distraction-free space.[23]

Methodology

The mixed-method research methodology used was a student survey and quantitative approaches for determining needs in the new CPCC Library. The survey replicated relevant questions a 2014 CPCC Library space planning survey. Delivered in May 2018, the 10- question survey asked students to indicate areas of the library used, the frequency of use, and to identify needs for new individual/quiet, group/communal, and content-creation spaces. To obtain quantitative data, this study employed the easel feedback model; large whiteboard easels were placed on each of the CPCC Library's four floors for students to record their needs in spaces for quiet study, group study, and content-creation spaces. Additionally, the CPCC Library conducted two focus groups in June 2018 on (1) the students' vision for the library and (2) an assessment of their space needs. Six students attended each focus group.

Survey Results and Discussion

CPCC's Institutional Effectiveness department administered the library survey to a randomly selected sample of 500 students, with a 17% response rate. The respondent demographics adequately parallel student population.

TABLE 2

Frequency of Use	CPCC
Daily	15.8%
Weekly	47.4%
Monthly	7.9%
Infrequently	6.5%
Never	22.4%

In the survey, the CPCC Library sought to determine general use patterns of the physical building. Overall frequency of library visits mirrors full time/part time enrollment at the college (table 2). CPCC students report significantly higher usage on a weekly basis than on a daily bases. Approximately 60% of CPCC students are enrolled part-time and thus not on campus daily.

The weekly usage trend continues with both designated quiet and group study spaces. In both cases, weekly usage exceeds daily usage (insert figures one and two). Figures 1 and 2 illustrate both the activity of studying

FIGURE 1
Studied Alone/Quiet Area Use

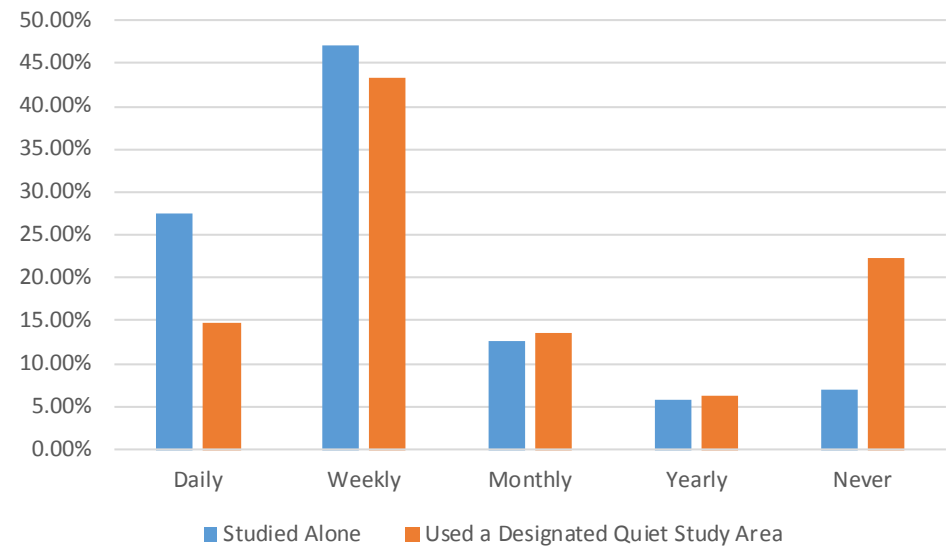
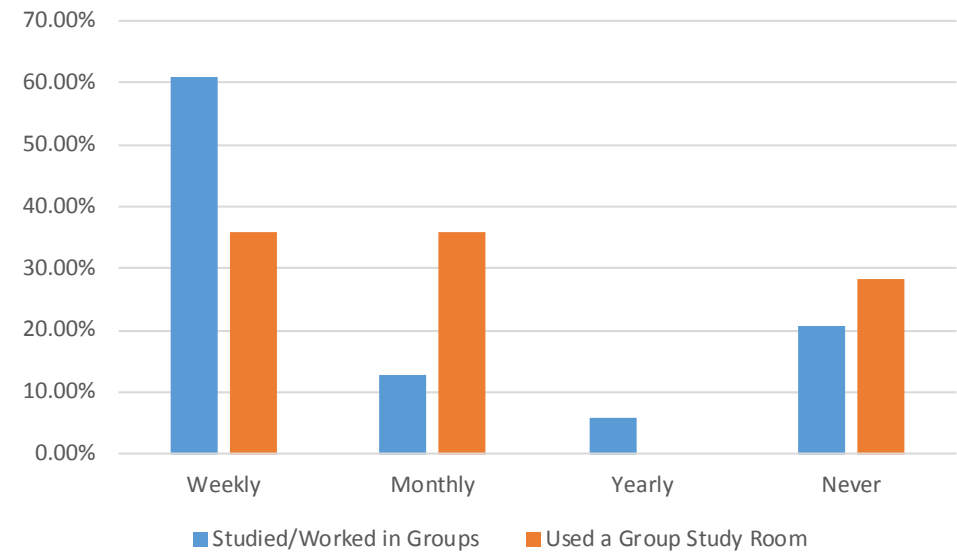


FIGURE 2
Studied in Groups/Group Study Room Use



alone or in a group and the usage of designated library spaces for each activity. More students engage in each type of studying than use spaces designed for the activity. This result speaks to the small number (four) of group study rooms available in currently library facility, as well as some potential issues with the location and design of those spaces.

TABLE 3
CPCC Survey Enhancement Requests

Enhancement	% of Respondents
More quiet spaces	34.5%
Private study room	33.3%
More group study	27.6%
More project/maker/creation spaces	6.9%

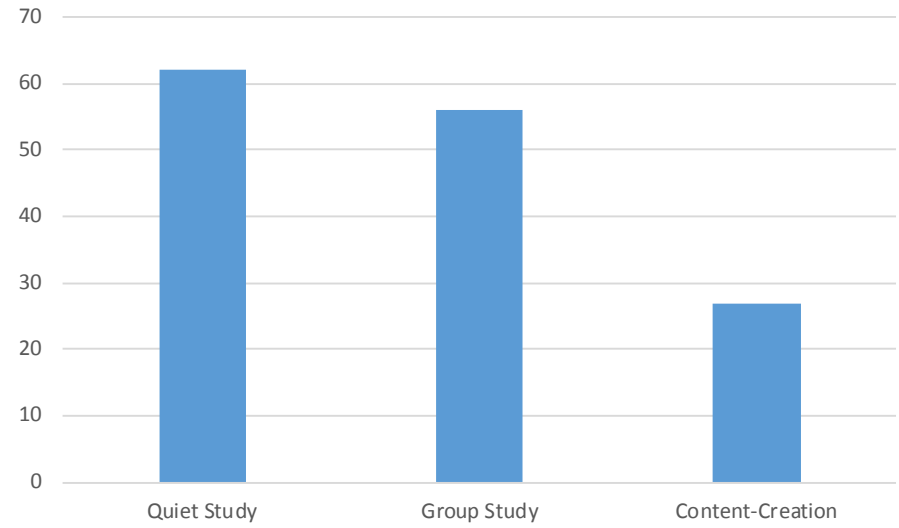
The survey also asked student which enhancements to the physical spaces would improve their ability to study (table 3). The results indicate the importance of spaces specifically designed to promote quiet study. An important finding here is the desire for privacy in quiet study spots. CPCC students also expressed a need for more group study rooms. Fewer respondents, however, ranked content-creation spaces as space that would improve their overall ability to study.

The survey provided an opportunity for respondents to enter comments (table 4). The dominant themes present in the survey results again reflected the need for distinct quiet and communal study spaces within the building. A notable finding here is that technology and charging outlets appeared within the top five themes. While access to content creation spaces did not rank highly with respondents, access to technology within the library and a space to charge devices came up frequently in the comments, which seems to corresponds to the findings of Watson (2004), Fairlie and Grunberg (2012), and Fairlie (2014) on technology ownership and access.[24]

TABLE 4
CPCC Open-Ended Comments

Theme	Frequency	% of Total
Quiet Study	35	15.7%
Group Study	30	13.5%
Technology	28	12.6%
Charging Outlets	15	6.7%
Furniture	14	6.3%

FIGURE 3
Easel Feedback Totals



Ethnographic Research Results and Discussion

Easel Feedback

The four easel feedback stations at CPCC generated 145 total responses (insert Figure 3). As Figure 3 shows, CPCC student feedback on the need for quiet spaces (N=62) echoed the survey results, with many comments focused on those spaces. As with the survey comments, the easel feedback suggests a need for not just quiet space, but isolated, private, maintained quiet space. Group study rooms prompted 56 comments, with requests for additional group study rooms as the most common theme. Comments on group study rooms also included multiple requests for soundproofing or a location where usage would not disturb other students.

CPCC responses mentioned content-creation spaces in the easel feedback with much less frequency (N=27). These comment included requests for 3D printers, lamination machines, a green screen room, a gaming room, a recording studio. As a Pew research report on college students and technology indicates, community college students overall have less access to devices and broadband, suggesting that one reason why responses lag in the category in total number and specificity is a lack of widespread exposure to these types of spaces and the technology that supports them.[25]

Focus Groups

The design team of Morris-Berg Architects and Moody-Nolan Architects engaged Brightspot Strategies to produce a programming and adjacency plan for the new library space. As a part of this process, the library held two student focus groups, one focused on visioning and the other on a needs assessment for physical spaces. Brightspot Strategies facilitated both focus groups.

The visioning session required the students to select three images from a card deck that they felt best illustrated what they wanted the library to be. The students selected images that represented a welcoming environment (outstretched hand), quiet, contemplative, natural spaces (a mountaintop), and communal spaces for working in groups or alone (a school of fish), but with others nearby. The students described a building with Zen-like "inspirational" spaces that made them "feel good" about being on campus, reflecting the design aesthetics noted in Kan

Kilek and Hasirci (2011) and Latimer (2011) in terms of light and green space. They wanted the library to be both a place where they could study, focus, and concentrate, but also where they could engage with other students and collectively learn (the "library as place" concept from the literature appeared frequently in student comments). Finally, they did id want the library to offer them spaces for socialization, given the limited amount of opportunities to do so in other buildings on campus. The CPCC survey results indicated that 52.9% of respondents use the library to relax or socialize on a weekly basis. The connection between socialization and learning made here reflects the work of May and Swabey (2015), Khoo et. al. (2016), and Yoo, Lee, and Velez (2013).

In the needs assessment session, comments related to content-creation spaces and technology reflected the emerging themes present in the survey and easel feedback data and the literature on technology access:

- "I didn't have Internet access for about six months and the library was my lifeline."
- "Access to 3D printers, plotters, and other technology is isolated in classrooms for specific programs. I had to run back and forth between the library and the other building in order to get my assignment done. I'd rather do it all in the library, because I can't use the technology when there's a class in that room."

These types of comments are suggestive that technology-rich content-creation spaces would be desirable to CPCC students and perhaps could be classified as an emerging need. In particular, locating those spaces within the library rather than only in classroom buildings expands access to the technology.

Limitations and Further Research

The CPCC ethnographic information focused on existing library users, who differ from students who do not or are unable to use physical library spaces. Additional research into the influence of student demographic data, including employment and socioeconomic status, would increase understanding of outside factors that determine what students need in library spaces. As Wolff-Eisenberg and Braddlee (2018) note, community college students "face significant challenges related to balancing work and school, finances, childcare arrangements, language barriers, transportation to and from the college, and navigating resources and services at their college."[26] The richness of the ethnographic data also suggests that more research of this design is needed.[27] As well, more research on the role of libraries in providing technology would provide vital insight.

Implications and Recommendations

Community college students express frequent and intense needs for private, isolated, quiet study spaces. Group study spaces are a common need, though usage patterns vary. These students indicate a need for technology-supported spaces, but inequities in technology acquisition and exposure between student populations may explain the lack of specific and concrete requests for content-creation spaces and tools. The idea that content-creation spaces can spark creativity and innovation in ways that support long-term academic development and bridge the digital divide should receive serious consideration during space planning for community college libraries.[28]

As one CPCC student stated during a focus group session, "We don't live on campus, but we have to live on campus." This statement is key to understanding the how the design of the library building can support student academic needs, engagement, and retention. Community colleges are not residential like universities, but students are on campus before, between, and after class. Community college administrators should recognize that library buildings need to be designed and conceptualized as a part of the overall campus ecology of social and learning spaces, particularly on campuses where general student gathering spaces are limited.[29] For community college students, the library is often the one place on campus that can serve as the nexus of the social and the academic and allow students to engage deeply both with information and fellow classmates.

Endnotes

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