CURRENT PRACTICES IN DESIGNING AND DEVELOPING EFFECTIVE LEARNING CENTER SPACES IN POSTSECONDARY EDUCATION

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by

Juan F. Jiménez

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DEDICATION

This dissertation is dedicated to several people. First, to my family members who inspired me from the beginning. To my uncle, Hector Frausto, who passed away due to the COVID-19 virus. His influence and guidance will be forever felt in my heart. To my late grandmother, Petra Torres de Frausto, who, with a second-grade education, taught me the value of family and perseverance. To my mother, Elvira Jiménez, who instilled the importance of education at a very young age, and who pushed me to speak up when others cannot. To Hugo Jiménez, the first in our family to earn a doctorate and the one who would always ask, "So, when are you getting that doctorate?" It was great to have the tables turned and have you push me this time around.

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ABSTRACT

Jiménez, Juan F., *Current practices in designing and developing effective learning center spaces in postsecondary education*. Doctor of Education (Developmental Education Administration), May, 2021, Sam Houston State University, Huntsville, Texas.

This qualitative case study was conducted to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. Participants of the study were learning center directors, facilities, information technology, or administrator team members. Data were collected through interviews, which were transcribed and analyzed using first- and second-cycle coding to conduct a within-case analysis. The results of the within-case analysis were used to conduct a cross-case analysis. Themes emerged from the process used to create or remodel a learning center: which were *needs assessment*, *coalition*, *implementation*, and *additional changes*. The emergent themes from the extent to which learning center administrators considered pedagogy, space, and technology in their learning center designs were *instructional*, *space*, and *technology considerations*. Based on the findings of the study, implications for practice and recommendations for further research are shared.

KEY WORDS: Learning centers; Postsecondary education; Community college; Technical college; Physical space; Pedagogy-Space-Technology framework; Needs assessment; Coalition; Implementation; Instructional considerations; Space considerations; Technology considerations; Stakeholder input; Ambient aspects; Future-proof; Post-assessment.

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CHAPTER I

Introduction

Ever since the establishment of higher education in the United States of America, academic leaders have endeavored to assist students who may be underprepared for the scholastic rigor in postsecondary education. Education has made great strides in learning how to support students regardless of academic standing, socioeconomic status, or language barriers. Most of this support would fall under the auspices of developmental education, of which learning assistance is a subset (Arendale, 2002, 2004, 2010; Boylan & White, 1994; Brier, 1984; Casazza, 1999). Learning assistance refers to services for providing academic support for students such as Supplemental Instruction, tutoring, and learning strategies (Arendale, 2002, 2004, 2010). Learning assistance in postsecondary education often takes place in learning centers. As more postsecondary institutions look to either create, remodel, or redesign learning centers with ever shrinking budgets, it is imperative to determine what physical aspects are necessary in designing and developing effective learning centers. This research seeks to determine those current practices by studying the processes used by learning center administrators during the design and development of the learning centers at their institution of higher education.

Background of the Study

I have always been passionate about education in general and became an educator to support students in reaching their academic and career goals. In November 2014, I was hired as the Associate Dean of Learner Support and Transition at a 2-year, public institution of higher education. One of the main tasks for the position was to create a one-stop location for academic support. Prior to my hiring, I had spent one-half of my

career as a middle/high school mathematics instructor at two different schools and the other one-half representing teachers and education support professionals as a teacher's union associate executive director. My previous education and training provided me information about the needs of students, the different ways to support learning, and how to find professional development to stay current in the field of education. However, I was not prepared to be asked questions about the physical layout of a learning center, the specific nuance regarding a remodeling or construction project, the number of people required to be involved to ensure a successful project, how to include the voice of students and staff in the creation of the new space, and how to ensure the physical space did not inhibit student learning occurring within it. These were just the first of many questions I was asked, and I felt required to provide intelligent insight. I believed I was not alone in asking my own first question—where do I begin?

Educators are trained to be flexible and find ways to support student learning no matter what space is provided (Folkins, Friberg, & Cesarini, 2015). Educators are not trained in interior design, architecture, or other fields which culminate in the creation of a physical space (Burruss, 2014). Yet, educators know which spaces *feel* better than others; so, too, do the students. Those looking to create a new physical space may set out to meet with other colleagues, read professional literature, visit other institutions, and join professional associations to gather information and ideas. The literature regarding physical spaces within 2-year academic settings is minimal. Gaining a better understanding as to why administrators involved in the creation of learning center physical spaces choose the physical aspects they do could support other institutional leaders who are tasked with creating a learning center space in years to come. The

rationale to conduct this study is simple—it is one way to support administrators charged with the creation of a new physical space for learning and grow the knowledge base in this area.

Statement of the Problem

Learning assistance has existed in higher education since the 17th century (Boylan & White, 1994). When Harvard College was created, there were few students who could meet the educational demand at the time (i.e., understanding Latin). To ensure the success of the new institution, the administration sought out learning assistance in the form of tutoring for students and worked to ensure the incoming students were able to accomplish college-level work (Boylan & White, 1994). These tutors were either faculty or other students. These supports grew but could not meet the demand of underprepared students. It seemed something more formalized was needed.

In 1849, the University of Wisconsin founded the first "preparatory department" (Brier, 1984, p. 3), which provided support in reading, writing, and mathematics. One institution (i.e., Vassar College) created a similar department within 40 years after the University of Wisconsin. Other institutions (e.g., Cornell University) required students to meet certain conditions, such as attending extra class meetings, enrolling in preparatory courses, or tutoring in the content area (Brier, 1984). These preparatory endeavors spawned tutoring schools separate from the higher education institution, as well as tutoring centers within the institution itself. Some institutions only provided academic assistance in the form of tutoring without the creation of any other preparatory support (Brier, 1984).

Over the years, learning centers became a vital part of the higher education landscape. Arendale (2004) described the history of learning assistance, particularly the learning center, as well as explained the external and internal influences which supported their creation. He noted the time period from the 1600s until the 1860s was a time of serving only white males in higher education. The services provided were predominantly tutoring or preparatory academies (Arendale, 2002, 2010). The next century of history saw underserved populations being assisted by providing developmental coursework (referred to in history as remedial coursework), tutoring, and preparatory programs.

The creation or remodeling of a learning center space is something that does not happen often and may only happen once in the entire career of a learning center administrator. However, the need to remodel learning spaces is increasing due to the addition of new technologies, the number of underprepared students needing support, and the efforts to reform developmental education. There are many variables to consider, such as size, furniture, light, equipment, environment, space utilization, and educational adequacy when planning the creation or remodeling of these spaces (Arendale, 2010; Barrett, Davies, Zhang, & Barrett, 2015; Burruss, 2014; Casazza, 1999). This makes the planning of the physical aspects of a space a high-stakes proposition, especially because Christ (1971) believed that "the primary function of a [learning center] is to help students 'beat the educational system'…by learning more in less time with greater ease and confidence" (p. 35).

Several researchers (e.g., M. Brown, 2005; W. Brown, 2014; Christ, 1971; Enright, 2000) have defined learning centers based upon either services provided, location of the physical space, or both. *Learning centers*, as defined in this study, are

centralized, physical places where all types of just-in-time academic support services are provided in different modalities and at times convenient to the learner. Learning centers may differ based on services, staffing, or location. Sometimes, the name of the space can give some insight into the main service provided. Learning centers may be centrally located, with only one location per institution, or there may be multiple locations specific to each subject area. Whether it is the Math Lab, Writing Center, Learning Commons, or Information Commons, each space has professional support to provide students the academic support to be successful. The definitions and missions of these learning spaces have similarities even if they do not provide the same services.

Potentially due to the open access mission at community and technical colleges, many students who attend these institutions and visit the learning center are underprepared. Nevertheless, the purpose of a learning center is to support everyone. Students are much more likely to enter spaces that are physically inviting and attractive (Andrews & Wright, 2015; Beckers, van der Voordt & DeWulf, 2016; Burgstahler, 2012; Marmot & Scottish Funding Council, 2006; Radcliffe, Wilson, Powell, & Tibbetts, 2009; Temple, 2008; White, 2004; Wilson & Randall, 2012). These spaces must contain ample, and flexible, space to accommodate the services necessary to meet the needs of the students being served (White, 2004).

Further, determining how the student experience is affected by physical space "is critical in order for designers to create spaces that work for the mobile, fast-paced, and multifaceted lives of university students" (Doshi, Kumar, & Whitmer, 2014, p. 1). According to White (2004), previous research determined the best practices of learning center facilities based on what learning center professionals believed should be true. As

this research from 2004 is almost two decades old, continuously searching for research-based practices to support student learning is central to the purpose of a learning center. White's (2004) study was the last time learning center professionals were directly asked about space, place, and design. Consequently, it would seem crucial to discover any best practices to include in the planning and creation of a learning center, as well as clarify why those practices are used.

Higher education professionals are becoming more aware of the importance of learning centers in supporting the success of diverse student populations. Professional associations, such as the National College Learning Center Association (NCLCA), have begun developing standards to ensure adequate space to support a diverse student population. The NCLCA (2018), in their Learning Centers of Excellence rubric, include an area to rate the physical aspects of learning centers. Researchers (Brooks, 2012; Lee & Tan, 2011; Temple, 2008; Temple & Fillippakou, 2007; White, 2004) have also described the evaluation, and importance, of learning center physical spaces. As more leaders of postsecondary institutions look to create, remodel, or redesign learning centers with ever shrinking budgets, determining research-based practices will be essential to the design and development of effective learning centers. How learning center administrators determine and include specific physical aspects in the design and development of learning centers will inform higher education practices in general. This area of research is still growing, and the need to study learning center spaces has become more pertinent due to the external (e.g., retirement of administration, technological advances), as well as internal (e.g., student needs, financial implications) factors.

Purpose of the Study

The purpose of this qualitative case study is to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. Though the goal of this study is to gain insight into the sites selected and not to generalize to all 2-year institutions, it is the intent of the researcher to have this study bring the needs of 2-year institutions to the foreground of learning center discussions. There are differences in how learning center administrators developed their designs, as well as the number and type of individuals who were involved in the construction project. Given the differences between the institutions, the similarity of being within the same state, and the same college system, this study should provide great insight regarding how to incorporate specific physical aspects into the final design and development of the learning center.

Significance of the Study

Due to the lack of research on learning spaces at 2-year institutions, this study will add to the developing literature base focused on the creation of physical learning centers in postsecondary education. The views and perspectives of those involved with learning spaces at 4-year institutions is important, but the demographics, mission, and perspectives of those involved at 2-year institutions may show differing needs regarding pedagogy, space, and technology. Even in conducting the literature review for this study, only two studies were found to focus on 2-year institutions. Developing and growing the literature to balance the views found at 2- versus 4-year institutions can only benefit the conversation surrounding learning center spaces in postsecondary education.

Further, sharing the findings of this study will support the professional development of learning center administrators as most do not have a wealth of experience or knowledge regarding the creation of physical spaces (Burruss, 2014). Also, sharing this study could be useful in creating professional development opportunities for others who are involved in the design and creation of learning spaces in postsecondary education. As the pedagogical and andragogical theories change to support underprepared student populations (no matter how that group will be defined in the future), the people who provide learning assistance will also need to change how they provide student support. Also, those assisting in designing and providing guidance in creating learning spaces (e.g., architects) can better understand the specific needs of those individuals who will inhabit the space and incorporate them into their sketches and architectural plans. Changing the way instruction and learning happens could be hampered by the current design of learning spaces. Providing guiding principles about learning space design and development, and putting those into practice within their own institutions, can only strengthen the ability to support student learning.

Finally, learning center administrators may not have considered questions required by architects and facilities managers for project completion (Burruss, 2014; Ellis & Goodyear, 2016). The qualitative nature of this study can provide rich data and insight into the types of questions raised by those involved in the design and development of learning center spaces. Though there may not be a single design of learning center spaces that is universal, and the work of instructors, students, architects, interior designers is dynamic and different, there is still merit in pursuing this study to build "collegial, self-managing, and participatory practices" (Ellis & Goodyear, 2016, p. 150) that could be

beneficial to any learning center space. As the needs of students change over time along with educational policy and building codes, keeping current on new trends is paramount to ensuring learning center administrator effectiveness. Most importantly, creating a set of research-based practices in learning center design can bolster the use of pedagogy, space, and technology to ensure a positive learning environment.

Conceptual Framework

Learning spaces are just that—spaces where people seek out learning, either alone or in groups, and may seek out professional support to accomplish their goal (Oblinger, 2006). A professional's choice of a particular pedagogic or andragogic style can be enhanced by the learning space (Marmot & Scottish Funding Council, 2006). For example, a group learning activity will not be as effective within a classroom with stadium seating, bolted tables, and non-swivel chairs. The same holds true for the choice of teaching style and the technology chosen. This has become truer as technology becomes an important link to student success (Long, 2017; Radcliffe, Wilson, Powell, & Tibbetts, 2008).

The Pedagogy-Space-Technology (PST) Framework developed by Radcliffe et al. (2008) was chosen as the conceptual framework for this study. Within this framework, the authors combined the concepts of pedagogy, learning space, and technology and described the interconnectivity of these factors to "create new teaching and learning spaces that will encourage student engagement and improve learning outcomes" (Radcliffe et al., 2008, p. 3). Their work was conducted with the support of the Australian Learning and Teaching Council, Ltd., which was an initiative of the Australian Government Department of Education, Employment, and Workplace Relations. Based

on published literature, direct observation of new and existing learning spaces internationally, and an assessment of three projects at the University of Queensland (Australia), the PST Framework was defined as a set of questions used to pinpoint fundamental requirements of pedagogy, space, and technology to be included in the design process for a new learning space.

The PST Framework can also be used to evaluate the functioning of current spaces. When considering the creation of a space, Radcliffe et al. (2008) suggested determining the motivation for such a project. Consideration of what types of teaching (i.e., pedagogy) and learning are to occur within the space is the next question. Another factor listed by the researchers is space, and the question of space connects to the pedagogy chosen. Those who are creating the space should consider how the space and furniture would help nurture the chosen pedagogy. Last, the choice of technology should intertwine with pedagogy and space by determining how the technology is used in support of the pedagogy and fits within the space.

Furthermore, Radcliffe et al. (2008) created questions to consider once the space is operational. The question posed for the overall focus could fit either prior to or after completion—"what does success look like" (p. 3). They then asked about pedagogy and the types of teaching and learning witnessed within the space. With space and technology, the authors also suggested asking whether the space and furniture choices accomplished the goals of the project, as well as noting whether the technology chosen was valuable.

Radcliffe et al. (2008) started with pedagogy deliberately. Knowing that each element of the PST Framework influences the other, the authors chose to start with

pedagogy because of the importance of learning within the physical space. As they noted, the physical space can create restrictions or opportunities to include specific technology or pedagogy within it. Thus, it would make sense to start with determining the pedagogy first, creating the space afterwards, and deciding the specific technologies to include at the end. Radcliffe et al. did offer a caveat: the choice of pedagogy as a place to start is a recommendation, not a requirement. The process should be iterative, and the framework is flexible enough to be rewritten to accommodate any number of decision points within a facility project. This is accomplished by splitting the columns and questions appropriate to the project.

The PST Framework was created to counter the notion that space design in higher education is a practical process of fitting as many people within a space as possible to accomplish the goal of education (Radcliffe et al., 2008). Usually, the goal of education was viewed as the dissemination of information in a traditional lecture-style fashion. However, constructivism, or active learning, is more challenging within a traditional lecture hall. Brown (2005) discussed the notion that the best outcomes for learning occur through active learning (e.g., role play, group work, experiments). Radcliffe et al. (2008) determined there is no explicit approach to create learning spaces, though some (e.g., JISC, 2006; Johnson & Lomas, 2005; Long & Ehrmann, 2005; Oblinger, 2006) have provided lists of principles. Yet, "there is really very little objective data based on well documented case studies or analysis that can be used to test these [lists or characteristics]" (Radcliffe et al., 2008, p. 11). Additionally, Radcliffe and colleagues wanted to create a model all stakeholders could comprehend—not just those who are experienced in facility planning. It was through this process that the Place for Learning

Spectrum was created and used to demonstrate how an institution can be viewed holistically, and each space can then be viewed as a place to support learning on a continuum as opposed to looking at places as a siloed location.

In 2009, Radcliffe et al. extended the PST Framework and created a more detailed PST Design and Evaluation Framework. This framework continued the same categories as the 2008 version; however, new questions were added to support the design and assessment of learning spaces moving forward. These new questions focused on the collection of data, data analysis, and ensuring multiple stakeholders are part of the discussions at each stage of the design and post-occupancy evaluation of learning spaces.

Radcliffe et al.'s (2008) PST Framework is an appropriate conceptual framework for this study, which will look at pedagogy, space, and technology considerations within the 2-year college system in the Midwest. Specifically, this research will describe how the planning of learning centers incorporated these components into the final design of the space, as well as the impact of those decisions. Each institution within the selected sample may have different ways to include these factors due to the student population, community needs, mission of the institution, and advocacy of the staff and administration. Better understanding how space design decisions are made and implemented can better aid those charged with supporting student success.

In addition, this framework has been referenced by other researchers (e.g., Fraser, 2014; Wilson & Randall, 2012) for similar studies. The framework has some validity within the learning space literature. Some studies (e.g., Bennett, 2003, 2006; Brooks, 2012; Oblinger, 2006; Oblinger & Oblinger, 2005; Marmot & Scottish Funding Council, 2006) mention all the components of the PST Framework even if the PST Framework

was not specifically noted within the study. Ellis and Goodyear (2016) even noted the heightened awareness of learning, space, and technology in their review of literature. The more detailed PST framework also provides a starting point in the creation of an interview protocol for this study.

Research Questions

The following research questions guide this study: (a) What process did learning center administrators use in the creation or remodeling of a learning center space at 2-year institutions? and (b) To what extent did learning center administrators consider the impact of pedagogy, space, and technology in the design of the learning center?

Definition of Terms

As terms can be defined in different ways depending on the researcher who conducts the study, the following list of definitions is provided to assist in the contextual understanding specific to this study.

Contextual design. *Contextual design* is a process of designing products based on an understanding of the customer's use (Somerville & Collins, 2008).

Cooperative design. *Cooperative design* is a phrase used in Sweden to describe a collaborative process where professional designers and space users work together to achieve a unified vision (Somerville & Collins, 2008).

Future-proofing. *Future-proofing* is a term used to describe the ability of people to design "flexible and adaptable" (Temple, 2008, p. 236) spaces which can incorporate future, unknown needs with minimal remodeling. It is space which can be rearranged and realigned (JISC, 2006).

Learning centers. There are several terms used to describe learning centers. Some are learning assistance center, learning commons, and information commons (Learning Support Centers in Higher Education, 2018b). The term learning centers will be used throughout this study. For the purpose of this study, *learning centers* are defined as centralized, physical places where all types of just-in-time academic support services are provided in different modalities and at times convenient to the learner.

Next Generation Learning Spaces (NGLS). The *NGLS* phrase refers to the new learning spaces being built in higher education which incorporate the real and virtual world and focus on space, pedagogy, and technology. The changes proposed stem from the Australian Learning and Teaching Council's 2006 Next Generation Learning Spaces Project (Wilson & Randall, 2010). *NGLS* is sometimes also referred to as *Net Generation Learning Spaces,* and *New Generation Learning Spaces* (Fraser, 2014).

Participatory design. *Participatory design* is the phrase used to describe *cooperative design* in the United States of America (Somerville & Collins, 2008).

Physical space. *Physical space* refers to the parts or the whole physical plant of an institution, including the facilities, grounds, buildings, and other components that define a campus (Strange & Banning, 2001).

Pod room. A *pod room* is a learning space with student groupings, one master area for the instructor, an informal seating area, and whiteboards (Wilson & Randall, 2012).

Space and place. *Space* refers to the meaning attributed to a location, whether social, cultural, or individual. *Place* refers to the constructed, physical location on campus (Gildersleeve & Kuntz, 2011; Hall, 1966).

Third space. *Third spaces* "exist on neutral ground… [and the] character [of these spaces] is determined most of all by its regular clientele and is marked by a playful mood, which contrasts with people's more serious involvement in other spheres" (Oldenburg, 1999, p. 42).

Delimitations

Delimitations define the parameters of the research study (Johnson & Christensen, 2014). This study was delimited to a 2-year college system in the Midwest. Of these colleges, the ones included either constructed or remodeled the learning center on campus within the last seven years. Further, the study involved learning center administrators who were instrumental in the planning and design of the new learning center and were still working at the same institution. The study also included other members of the design team, which consisted of three individuals who work in the facilities department, one individual from the information technology (IT) department, and one mid-level leader. Data were collected only through interviews.

Limitations

As in any given research, this study has some limitations. The data gathered will be self-reported. There is potential for bias inherent in self-reported data; people may provide responses that put their work in a more positive light. The amount of data gathered could impact the depth of the analysis. A longitudinal analysis may have provided a deeper perspective. The researcher, as the principal means of data collection, must rely on instinct and ability to ensure the data collection and analysis are trustworthy and unbiased. The researcher is also limited by the data, and the accuracy of the data, provided by the participants.

Further, personal bias may come to affect this study as the researcher has met, and sometimes worked in connection with, the administrators who oversaw the creation of their learning center. It is impossible to detect all the variables which can support the creation of an effective learning center space; some may be missed whereas others may be understated or overstated. The researcher is not trained in facility planning, architecture, or interior design. The ability of the college administration to increase the amount of tax levy imposed on the community being served could skew results as well. Finally, this study focused on a 2-year college system in the Midwest; 4-year institutions and other 2-year, public institutions across the United States of America may have differing experiences. Due to this, the results of this study may not be generalizable to other institutions.

Assumptions

Three assumptions undergird this study. The first assumption is that the participants of the study will answer honestly during the interview. This assumption allows for the accurate reporting of results based on the participant's experiences during the design and construction of their respective learning center physical space. The second assumption is that all data will remain confidential and anonymity will be guaranteed to the participants. Finally, the findings and implications of this study are assumed to accurately inform the field, adding to the literature regarding designing and developing effective learning center spaces in postsecondary settings.

Organization of the Proposal

  This dissertation proposal will follow a traditional format. This chapter provided an overview of the study, the background, the statement of the problem, significance and purpose of the study, the research questions, and the conceptual framework. Definitions of specific terms, delimitations, limitations, and assumptions are also included in this chapter. Chapter II provides a review of the literature related to learning center spaces in postsecondary education. Chapter III provides an overview of the research methods, selection of sites and participants, data collection and analysis, and a discussion regarding validation, trustworthiness, and the role of the researcher. In Chapter IV, the findings are presented by research question. Chapter V provides a discussion per research question, implications for practice, and recommendations for future research.

CHAPTER II

Review of the Literature

Education has changed over time, and the goal of educators has always been the improvement of academic outcomes. This was due to the work of educators and researchers determining the effect of specific instructional practices on student success. Through this work, research-based practices which support the academic success of students have been determined. The same holds true for the physical aspects of learning centers, though the research on learning spaces in higher education is not as prevalent. Especially in a time when higher education budgets are not as well supported, educational administrators look to implement research-based practices in the design and development of learning centers. The purpose of this qualitative case study is to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. This literature review presents the history of learning centers; current research-based practices in learning centers and affiliated spaces; and professional association learning space considerations.

The literature included in this review was found within the Sam Houston State University library search engine (i.e., Engine Orange), the Educational Research Information Clearinghouse (ERIC) database, ProQuest Dissertation and Theses Global, and Google Scholar. Search terms used to find literature pertinent to this study were *learning center spaces*, *space design*, *learning space*, *next generation learning spaces*, and *learning commons*. Further, reviewing the references for each article or book led to discovering other sources included in this review. Three authors were contacted (i.e.,

Lee, Radcliffe, and Wolff). One author, Radcliffe, provided three additional articles to review.

Within the literature review, specific terms and concepts came forward. For example, flexibility is a term used by different researchers (e.g., Bennett, 2007a; Brooks, 2012; Davies et al., 2013; Fraser, 2014; McMullen, 2007; Temple, 2008; Woolner, Hall, Higgins, McCaughey, and Wall, 2007) and considered to be an important aspect of physical space design in each of the areas reviewed. Creation of a *third space*—a communal gathering space—was discussed heavily by Oldenburg (1999) and referred to by McMullen (2008). Furthermore, the *third space* concept was found throughout the literature (e.g., Doshi, Kumar, & Whitmer, 2014; Dryden & Roseman, 2010; Wilson & Randall, 2012) and parts of the concept can also be found in certain NGLS designs. Literature in the different subsections were grouped into space and design considerations, which are discussed in more detail throughout this review. To better understand the importance of physical space in learning centers, understanding the history of learning centers is an important first step.

History of Learning Centers

Learning centers in postsecondary education have been pivotal in supporting student academic success. The first college in the United States of America, Harvard, was founded in 1624 and was the first to offer tutoring services to students as soon as the doors were opened in 1630 (Boylan & White, 1994). The purpose of the institution was to train future clergymen; however, all teaching and reading in academics at the time was in one language—Latin. The students who sought to attend Harvard were not prepared to start coursework in Latin because the primary goal of the community was to settle the

New World and survive. The administration, wanting to ensure the success of their new institution, decided to provide tutoring services prior to enrollment for those who wished to attend Harvard in the future. This was the start of developmental education and learning assistance in American higher education.

Where Harvard started the higher education landscape in the United States of America, numerous other institutions followed through the following three centuries (Thelin, 2004). *Jacksonian Democracy* referred to a time period in the 18th century between the presidencies of Andrew Jackson and Zachary Taylor (Boylan & White, 1994). During this time, there was a focus on supporting the needs of the commoners and improving their livelihood. Higher education was expanded during this time, with even more higher education institutions opening their doors. Yet, the most important criterion for admittance to these institutions was the ability of the student to pay the fees for attendance—not the level of academic preparation. Many students were underprepared for the scholastic rigor required to be successful.

The administrators of institutions founded within the first three centuries of American higher education needed student fees to survive; the need to enroll more and more students was a prerequisite for staying fiscally solvent (Brier, 1984). Individual tutoring was the predominant choice of administrators to support underprepared students; nevertheless, the number of tutors required to support the influx of students became inadequate. Arendale (2002) and Brier (1984) indicated the administration at one institution—the University of Wisconsin—required a novel solution to the issue of underprepared students being admitted. That solution became the creation of "the first modern developmental education program …in 1849" (Arendale, 2002, p. 8). This new

department provided courses in reading, writing, and arithmetic to students who were not educationally prepared for the level of rigor at the university.

Brier (1984) stated only Vassar College created a similar department within 40 years after the University of Wisconsin. Those that did not create preparatory departments still provided academic assistance in the form of tutoring. Students who were underprepared were required to meet set benchmarks and considered admitted "on condition" (p. 4). Those benchmarks could either be tutoring, extra class meetings, or preparatory classes. According to the author, the tutors were either students or faculty. One interesting phenomenon was "tutoring schools" (Brier, 1984, p. 4). The tutoring schools created were a blend of university and private business. Their purpose was to prepare students for college entrance examinations, much like some currently existing organizations. The tutoring schools benefitted students while providing faculty with extra income.

Casazza (1999) followed the work of Boylan and White (1994) in describing the past and current history of developmental education. She revealed 10% of the students at Harvard came from the working classes, and some of those students would pay their tuition by working. Even in 1871, the president at Harvard College grumbled about the number of students who were underprepared at his institution. Though the solution proposed was the creation of an entrance exam, half the students failed and led to more learning assistance being provided to prepare students for the demands of higher education.

Arendale (2004) described the history of learning assistance, particularly the learning center. He noted that the time period from the 1600s until the 1860s was a time

of serving only white males in higher education; the learning assistance method used predominantly was either tutoring or preparatory academies (Arendale, 2002, 2010). The next century of history saw other groups being served; however, mostly white males still dominated the higher education student population. During this time, developmental coursework (referred to in history as remedial coursework), tutoring, and preparatory programs were provided to underserved populations. It was not until the 1980s that the term learning assistance center came into vogue, which changed to learning center in the next decade.

Brown (2014) set out to determine the history of learning centers. He found the history of learning assistance and developmental education was intertwined. The author started his narrative in the 1930s when three institutions (i.e., Harvard University, New York University, and the University of Minnesota) began imparting courses in reading comprehension to support underprepared students. Activities such as reading clinics, remedial education coursework (now developmental education), and tutoring were provided within the learning center. Terms such as *Survey, Question, Read, Recite and Review (SQ3R)*, *study skills*, *time management*, and *Cornell notes* become part of the lexicon of learning assistance. The learning center became a location where reading, writing, study skills, and subject area tutoring support were provided. Brown (2014) was careful to note in his narrative that the term *university* only described 4-year institutions; 2-year institutions were left out. Anecdotally, the learning center became as important within the community and technical college systems as it did for the university system.

Learning centers defined in history. The Learning Support Centers in Higher Education (LSCHE) website was created to provide learning assistance staff and administrators a repository of information regarding learning assistance and learning centers. One of the co-founders was Frank Christ, who is credited with coining the term *learning assistance center* and is viewed as the founder of learning assistance. In 1971, Christ gave a paper presentation discussing the shift in thinking he experienced as his role changed from teaching reading and study skills to a staff member in learning assistance. During the presentation, he stated "learning assistance differs from content instruction in its emphasis, not on facts and information, but rather on the learning process and on the skills and attitudes of the individual learner" (Christ, 1971, p. 33). Terms with similar meanings during the 1960s and 1970s were remedial education, study skills, and variations of those terms that may include words such as corrective or developmental (Christ, 1971). It was also noted the term learning assistance included the worldview of the learner—both the affective and academic factors impacting learning. That worldview includes the physical space in which learning occurs—not just the classroom, but also the library, residential areas, and other places the student would interact with others in the pursuit of learning (Christ, 1971).

As acknowledged previously, learning assistance differs from content instruction. Whereas instruction focused on facts and the presentation of information, learning assistance supported the student in acquiring skills to understand the process of learning, as well as growing the skills and attitudes of a student to promote academic success. Christ (1971) defined the purpose of learning assistance as helping students "'beat the educational system'…by learning more in less time with greater ease and confidence" (p.

35). Five other components of learning assistance listed by Christ were (1) a tutoring

space, (2) a referral service to other non-academic supports, (3) a library of content

learning strategies, (4) a place to educate peer educators and other staff, and (5) an

agency to support faculty learning the latest trends and methodologies to support student

learning.

Regarding physical space, Christ (1971) asserted those building learning centers

should focus on the flexibility of space to provide students with options of learning

environments—individual, group, and mixed-use spaces. Keeping people at the heart of

the work in designing learning spaces was paramount to ensuring a space that is open to

all. In the end, Christ's definition became more well-defined in his final sentence of the

presentation—a learning center is "any place where learners, learner data, and learning

facilitators are interwoven into a sequential, cybernetic, individualized, people-oriented

system to service all students (learners) and faculty (learning facilitators) of any

institution for whom LEARNING by its students is important" (p. 39, emphasis in

original).

Ellison (1973) developed another definition of a learning center. At that time, the

author wrote about a new concept in higher education—the learning resource center. To

him, a learning resource center was "an administrative unit comprised of print, non-print

materials, and equipment for the purpose of facilitating learning by students" (Ellison,

1973, p. 1). At the time, it seemed community colleges were the ones experimenting the

most with this new concept. The change came from a shift in focus—one that moved to

facilitating student learning as opposed to faculty teaching. The learning center was a

rethinking of library spaces due to the increase of non-print materials being accumulated.

Librarians resisted the inclusion of these materials to the circulating collection, which created a need for audiovisual specialization. Potentially, this resistance was due to most librarians valuing non-print materials less than print resources due to their background in humanities and social science. The learning center was an answer to combining the audiovisual and library services into one location, with a shift in concept and theory so that it was neither library nor audiovisual center.

Ellison (1973) asserted learning center staff had to focus on eight items: (a) how large is the collection of materials; (b) how much faculty and student research is conducted; (c) how much money is budgeted; (d) where are the instructional materials in relation to the learning center; (e) how much interdepartmental cooperation exists; (f) the complexity of materials that students are reading and viewing; (g) the institutional mission, vision, and philosophy; and (h) the choice of learning theory in relation to student learning. The learning center should be a fundamental piece of the educational culture on campus. To lead this shift, the administrator cannot be either a librarian or an audiovisual expert. The researcher believed it should be a generalist—someone committed to the idea that the learning center is devoted to supporting student learning. If either a librarian or an audiovisual expert led the charge, he believed Parkinson's Law would be fulfilled: "It is a commonplace observation that work expands so as to fill the time available for its completion" (Parkinson, 1955, p. 635).

Enright (1975, 1995, 2000) believed the creation of a sense of place was the defining feature of a learning center. It is the physical space which distinguished a learning center from any other place on campus. Students who sought out academic support did not feel comfortable in the educational setting; the learning center was a place

where students felt safe and welcome, somewhere students could find refuge, emotional support, and a cup of coffee. Through her experiences, Enright first defined learning centers in a slightly different, but similar, way to Christ (1971)—"a place concerned with learning environment within and without, functioning primarily to enable students to learn more in less time with greater ease and confidence…" (Enright, 1975, p. 81). She later changed her definition when she described a learning center as a place that "welcomes all learners, pulls together and organizes necessary resources…and retains enough independence to address student issues fairly" (Enright, 2000, p. 2).

In 2005, Brown stated learning spaces are "those spaces which encompass the full range of places in which learning occurs, from real to virtual, from classroom to chat room" (p. 12.4). Technology enabled people from around the country, and the world, to interact and take advantages of learning opportunities from many different postsecondary institutions. Brown's (2005) definition broadened the scope of learning centers to include classrooms, academic wings, or entire institutions. Though his definition provided an advantage by including virtual spaces due to technological innovation, it did not centralize those resources within one place.

Another researcher (Brown, 2014) created his definition of a learning center after two decades of service in his learning assistance position. He defined the services provided by a learning center through a statement:

> When a ***student*** has an ***academic problem*** he can't resolve on his own, he ***voluntarily seeks help*** from the [learning center], where a staff member who is ***knowledgeable about resolving similar problems*** initiates ***a series of acts*** that are intended to help the learner overcome the problem, enabling him to continue

making progress in his chosen academic program. (Brown, 2014, p. 8, emphasis

in original)

Brown (2014) defined a learning center as a physical place specifically for

supporting students in academic endeavors. Also, he included the need for experienced

staff members who would support the student. Though there were specific criteria for the

hiring of an instructor within the higher education arena (e.g., completed graduate degree

in the subject area to be taught, professional licensure in certain fields, and professional

expertise), the qualifications for learning center staff were not as rigorous. Usually, staff

members had a minimum of a bachelor's degree, and the degree was not necessarily in

the field being tutored. Yet, according to Brown (2014), learning center staff had

required understanding of teaching principles to support the students who need academic

support. Hence, the understanding of pedagogy, and andragogy, was critical to success

as a learning center staff member. This understanding led to actions, such as lecturing,

questioning, directing, and demonstrating. These actions supported a student's

understanding of the subject matter and learning center staff could then guide the student

toward achieving whatever personal goals were set. The knowledge required by the staff

would then impact the space arrangement based on the services, equipment, and furniture

necessary to support the student population.

The LSCHE (2018a) website contains other definitions, including one from the

National College Learning Center Association (NCLCA, 2018), used on the Learning

Centers of Excellence application. The website points to two other articles where

learning center definitions can be found (Arendale, 2005, 2007). The history of learning

centers can be uncovered in the definitions—from being a place, no larger than a

bedroom, to a center which included a virtual component. The form and physical space of learning centers also evolved over time, which caused researchers to take notice.

Learning centers at 2-year institutions of higher education. Unlike 4-year institutions, 2-year institutions have an open-access admission policy. This concept of open-access has been at the heart of 2-year institutions since the 1960s (Arendale, 2004; Gerlaugh, Thompson, Boylan, & Davis, 2007). Arendale (2004) discussed the ways in which new groups of students, including more diverse students, were starting to access higher education (e.g., financial aid, GI Bill, Civil Rights Act of 1964). Many of these students were underprepared for higher education. At 4-year institutions with restrictive enrollment requirements, the need to enroll greater numbers of students increased due to the loss of college-age students after the Baby Boom generation graduated. These institutions enrolled "the more academically able students" (Arendale, 2004, p. 8) leaving community colleges, with their open-door admission policies, to serve more underprepared students. Thus, the need for academic support at community colleges increased dramatically. Roueche and Roueche (1993) described community colleges as being in a difficult position because of the need to maintain academic rigor while serving an increasing number of underprepared students. However, a developmental education sequence is not the only way to provide students with academic support.

Stern (2001) believed learning centers in postsecondary education support student learning by providing a wide range of academic assistance for all students. These centers are provided so students at any level of academic preparedness can obtain the tools necessary to be thriving learners. Arendale (2004) also described the learning center as an easily accessible place which has staff available to assist students with any academic

needs, including technology. Faculty viewed the learning center as an expansion of the classroom and providing an opportunity for students to better understand the course competencies.

Underprepared students may find the higher education environment to be uninviting unless they can find a way to become connected and part of the community. At 2-year institutions, learning centers provide students with a "sense of place" (Enright, 1995, para. 2). This sense of place is especially important due to the number of non-traditional (e.g., first-generation, adult, English Language Learner) students who enroll in 2-year institutions (Capps, 2012; Stern, 2001). These students have less familiarity with the systems in place in higher education and are less likely to see other students who are like them. The physical environment of a learning center can determine whether students find this sense of place at their 2-year institution or decide to stop out of the higher education sequence.

Considering the research noted in this subsection, learning centers are important to student success at community colleges. The way community colleges have focused on underprepared learners is by the inclusion of developmental education sequences (Arendale, 2002, 2004, 2010; Boylan, 2004; Brier, 1984; Gerlaugh et al., 2007; Perin, 2004; Rutschow & Schneider, 2011; Wurtz, 2015). Boylan, Bliss, and Bonham (1997) administered a national study within the United States of America to determine, among other things, what program elements and instructional practices influenced student success. They found tutoring programs, with tutor training, was one of the elements within a developmental education program highly related to ensuring student success. The research by Gerlaugh et al. (2007) sought to compare their results with the results

from Boylan et al. (1997) and focused only on community colleges. Most respondents (89.3%) maintained tutoring was a service, other than instruction, provided to students. This amount was 18.2% higher than the results from Boylan et al. (1997).

In 2007, Boroch et al. realized learning centers were the most widespread form of learning assistance and were found to be extremely valuable for students to persist in college. Other researchers (e.g., Demas, 2017; Perin, 2004; Stern, 2001) found similar results. To ensure learning centers in community colleges can balance the need to support student learning while being fiscally prudent in the delivery of appropriate services, the space and design of these centers cannot be understated. Thus, research-based practices for learning center physical spaces will be examined next.

Research-Based Practices for Learning Center Physical Spaces in Higher Education

Higher education has been challenged over time to support underprepared students (e.g., Arendale, 2002, 2004, 2010; Brier, 1984; Casazza, 1999; Christ, 1971; Enright, 1975). This may not be a new problem, but changes in the educational landscape, such as the ability of diverse students to be successful (Barbatis, 2010), and the focus on redesigning developmental education (Boylan, 2004; Jaggars, Edgecombe, & Stacey, 2014; Kulik & Kulik, 1991; The National Center for Academic Transformation, 2005a, 2005b, 2009), have continued to bring the discussion of learning assistance to the forefront. With more underprepared students entering college, higher education administrators are confronted with the question of how to support the needs of these students. The considerations for learning center spaces fall into three categories: space, design, and evaluation. Space considerations focus on how to accommodate the people and services within the physical area, which would also include how to include

natural lighting. Design considerations focus more on the aesthetic aspects of the space,

including furniture. Both considerations are discussed in the sections below.

      Space considerations. Smith (2000) shared her responses regarding space

furnishings and equipment found within a learning center. According to her, the first

consideration should be to determine the mission of the learning center. All other

considerations would then flow from the mission. For example, a learning center

supporting all students at a large research university would have different space needs

than a small college supporting a specific student population. To best use the current

space provided, she believed a determination of the population being served, services to

be provided, and whether a need existed for open tutoring space, computer labs, and

classrooms was necessary. Also, a determination as to the ability of using space in

multiple ways during the day could support more functions in limited space. If a

classroom will not be used the entire day, other services might potentially be offered

within the classroom space when not in use.

      Whether building a new space or retrofitting a current space for learning center

use, Smith (2000) believed all services should fit within the space given proper thought.

That may mean prioritizing the amount of space allocated to services by their importance

or need and considering the furnishings to be used within the space. According to the

author, keeping an eye toward flexibility would ensure a future-proofed space by

allowing versatility in rearranging based on services and needs. Plans ought to consider

how to rearrange the physical space in case of program growth. Having a plan for

flexible use of space will ensure space needs are adequate for current usage and provide

for future growth within the space.

If the services of an interior designer are used, Smith (2000) advised communicating the mission, vision, and goals of the learning center to that person. Interior designers and consultants are generalists. This may be the first learning center project assigned to the designer, so working collaboratively will ensure the best selections are made. Care should be taken in building a physical space that will be inviting and friendly. The provision of natural light and open space can support students feeling more confident and secure in choosing to seek out academic support.

Space and light are not the only physical aspects noted within the literature. White (2004) conducted a survey of 273 directors of learning centers within the United States of America and Canada to determine common practices within the physical environment of a learning center. Though he had previously conducted a literature review regarding what should be found within the physical environment of learning centers, this study focused on what was found within those centers at the time. From his literature review, White (2004) found the following to be considered research-based practices to include within a learning center: (a) the design, fixtures, furniture, and equipment are grounded in the mission, purpose, and role of the learning center, (b) extensive input in the design of the space by more than just architects or facility planners, especially those who use the space heavily, (c) an open concept space with an adaptable design, and (d) a centralized, easily accessible location which is relaxing and inviting.

For his study, White (2004) used a purposeful sample picked from the College Reading and Learning Association (CRLA), the Learning Support Centers in Higher Education (LSCHE), and National College Learning Center Association (NCLCA) websites or membership lists. Of the 273 directors who were sent the survey, 87 (32%)

responded. Of the 87 who responded, 31 states and provinces were represented. The sample included public and private 2- and 4-year institutions. The vast majority (84%) of respondents were directors overseeing a centralized learning center. The results were presented between centralized and decentralized learning centers.

Of those respondents who were in a centralized administrative structure, White (2004) found 71% were centrally located on campus. Within the physical environment, the vast majority had attractive interiors (85%) that were comfortable (96%) and inviting for student use (91.8%). Almost nine-tenths (88%) of the respondents affirmed the learning centers were housed in large, open, and flexible spaces. Most respondents verified furniture and equipment were purchased specifically for use within the learning center (e.g., bookcases, carrels, tables, computer equipment) and learning center personnel were involved in the purchasing decisions. White (2004) was concerned with the number of learning center personnel not involved in the purchase of computer equipment, as roughly one-quarter of respondents asserted they were not involved. He admitted his disappointment that so many were not involved in choosing "the most important learning technology in the [learning center]" (p. 22).

Educational adequacy refers to the size and student capacity of the learning center. Due to the responses provided to the survey, White (2004) concluded the size and capacity of the learning commons was not important so long as the space (a) is adequate for the number of students being served and (b) supports the mission of the learning center. Though 6% of respondents believed the space was enough for current and future needs, approximately one-third (32%) of respondents did not have the space required to meet educational adequacy. Thus, approximately two-thirds (63%) of the respondents

had adequate space for their present needs but not for future needs. Based on the data, learning centers were space challenged and the author was concerned the issue could become greater in the future. White (2004) also reviewed results for decentralized learning centers, but he recognized care should be taken in interpreting those results due to the minimal number of responses (only 14 out of 87 respondents). Nevertheless, the author was able to provide a sense of the state of learning centers and the progress made since the early 1990s.

Four years later, Temple (2008) discussed his concern with learning spaces literature. He asserted research regarding learning spaces within the higher education setting was one to be focused on by researchers. The author noted the United Kingdom schools sector (i.e., elementary and secondary education) had much more research completed in this regard. Further, the author found space was defined as a descriptor of how teaching and learning was conducted rather than the physical space. Temple (2008) believed space planning in higher education was more focused with only providing the minimum amount of space and maximizing it once provided. Little evidence was found that the decisions made by the people in charge of making facilities changes were based on the interconnection of space, teaching, and learning to occur within the space.

Temple (2008) explored whether the design of a space could support teaching and learning. He noted the University of York and University of Kent were designed to ensure different programs and interests were intermixed so that no one area was associated with one field of study. Refreshment places, places to gather in central locations, and semi-private locations to meet can provide those opportunities for informal learning. Higher education spaces included learning and community spaces where

faculty, staff, and students interact. Flexible spaces, like the concept of open office areas, allowed the people working within a space to rearrange it to their needs. Students interacting with other students was viewed as another method of learning which augmented faculty-led instruction. The designs of elementary school settings allowed for students to interact with their peers within the educational setting. Further, the record regarding purchasing space and materials, the architect chosen for construction, and the design for most institutions was heavily documented, but little was documented regarding how administrators expected the physical space and the teaching and learning to occur within the space to be affected. The cost of creating these spaces and the focus on space maximization "may have the unintended effect of reducing the opportunities for informal learning" (Temple, 2008, p. 232) because spontaneous interactions between instructors and students would be lessened.

Temple (2008) also mentioned the need for new design ideas for spaces within higher education. Most design concepts were focused more on the pedagogy which happens within the space rather than the physical environment, as most non-specialized spaces within the learning environment needed little more than tables, chairs, and a way to present information to the audience (e.g., projector, chalkboard). Comfort of the space, including comfortable seating, facility in rearranging the furniture, adjustability in temperature within the space, and availability of windows for natural light and outdoor observation were also items which the author listed as preferences of students and faculty. Temple (2008) listed seven distinct learning spaces that could be found within higher education:

- group teaching and learning, …preferably in square rather than rectangular rooms…;

- simulated environments;

- immersive environments;

- peer-to-peer environments;

- clusters;

- individual work areas; and

- external work areas. (p. 235)

The ability to include technology, especially in spaces focused on quantitative fields of study, was also mentioned by Temple (2008). As technology changed over time and required less physical space, the amount of technology has increased within the same space. This has allowed flexibility to embed technology within learning spaces. This technological change has also required planners to focus on *future-proofing*—spaces that are adaptable to accommodate future, and possibly unknown, needs.

This concept of adaptability was described in a study by Brooks (2012). He measured the difference between a traditional and an active learning classroom on instructor conduct, classroom actions, and on-task student conduct at the University of Minnesota. Using a mixed-methods approach, the researcher studied two sections of an introductory biology course in Fall 2008. Though meeting at the same time of day, the traditional course met on Mondays and Wednesdays and the active learning course met on Tuesdays and Thursdays. Though there were different students enrolled in each course section, the same instructor taught both course sections. All course components (e.g., materials, assignments, and exams) were the same for both courses as well.

The student demographics were all similar except for composite ACT, which the author affirmed "varied significantly" (Brooks, 2012, para. 5) but did not specify in what way. The only systematically variable element of the study was the learning space—a traditional classroom with a dedicated front and rows of tables and chairs versus the active learning classroom with round tables seating nine students each, technology allowing students to project to the classroom from their own laptop, and microphones at each table. Brooks (2012) focused on two aspects of learning spaces in his study—structure (i.e., the physical aspects of a space) and scale (i.e., the size of the space). The author declared scale and structure are integral to any space and are independent of any other dynamics initiated in the physical location. Due to this, he suggested it was theoretically plausible to assume different spaces will yield different results whether an individual tried to perform the same task within each space.

Using a self-developed observation instrument, Brooks (2012) collected data on 32 different variables regarding activities within the classroom (e.g., discussions, presentations), instructor and student actions, ambient settings in the room (e.g., lighting, acoustics), and chronicles of happenings within the teaching space. Four groups of variables were analyzed: activities within the classroom, delivery methods, instructor behavior, and student behavior. Due to the round table set up and flexible layout in the active learning classroom, he found the student-to-student, as well as student-to-instructor, interactions were statistically significantly higher than in a traditional setting (50.4% versus 2.4% in a traditional classroom), $t(386) = 11.858, p < .001$. Instructor behavior was also shown to be statistically significantly different. More instructor time was spent in the active learning classroom consulting with students than in the traditional

classroom. The layout in the traditional classroom may have hampered the ability of the instructor to consult with students. In the active learning classroom, with wide-open walkways and round tables, the instructor was able to spend less time at the podium and more time among the students. With this evidence, Brooks (2012) created a syllogism to describe the causal relationship found: if space influenced instructor behavior and the activities in the classroom, and the instructor behavior and activities in the classroom influence on-task student behavior, then the space will shape the on-task student behavior.

Two years later, Doshi et al. (2014) conducted a study to determine the lived experience of students in the Clough Commons at Georgia Tech University using qualitative and ethnographic methodologies. Specifically, the researchers considered digital ethnography, observations, interviews, and occupancy maps. There were 36 student participants in the study. Three research questions were proposed: determining what works in enhancing the student experience; where students spend their time, how they navigate, how long they spend in the space, the student's purpose for visiting, and the frequency of visiting; and whether the students work in groups, individually, or work alone but with a group of students. For digital ethnography, the authors used dScout software. The student tour guides, called scouts, submitted 10 short narratives and photos of students engaged in the space. Other volunteers conducted interviews and obtained data regarding occupancy maps, gate counts, and other statistics that provided information about usage.

Doshi et al. (2014) conducted four collaborative sessions to review and organize the data, which included 781 photographs and narratives, 62 hours of observations, and

transcripts from 39 interviews. The authors determined a student narrative within the Clough Commons by pairing the information gathered with heat maps created with the occupancy data. Two other researchers were brought in to review what had been done and reframed the student identities previously created. The modes of usage were created, which described the way in which the Clough Commons was used by students throughout the time spent within the space. Finally, the researchers came up with four questions to arrive at design recommendations: "(1) What is the theme?, (2) What is the Use Mode?, (3) How does this enhance learning?, and (4) What can we do about it?" (Doshi et al., 2014, p. 10).

The results by Doshi et al. (2014) had 11 modes of usage, which helped describe the student behaviors noticed during the research phase. The first mode, "alone together" (p. 10), described having students work alone but sitting with a group. These students usually had headphones on and stayed in this mode for much longer than in other modes. The second mode, "escape" (p. 10), described students who were stepping away from work to rejuvenate themselves. One place heavily used by students who were escaping was the roof garden. This led the researchers to wonder whether the *escape* time was an opportunity for students to return to nature, such as visiting the roof garden, or to take in entertainment, such as pop-up concerts that happened nearby.

Another mode, "hack and settle" (p. 11), explained the actions of students who staked out a location, usually near electricity, built a barrier of sorts (whether physical or visual), and ensconced themselves into a location for a long period of time (Doshi et al., 2014). For example, some students wheeled standing markerboards near a café table and took a nap. Another mode, "the meet up" (p. 11), would have students meeting with

other students, faculty, or graduate assistants. There were times students were just "passing through" (p. 11), whether individually or in groups, and they made some stops in between their location and their destination. This is somewhat akin to the students described as being a "grab n' go" (p. 10) participant—someone who was there to accomplish a single task before leaving. These students knew exactly where they were going and what needed to be accomplished; the "seek" (p. 11) mode would be a student who is like the *grab n' go* but is unsure of their destination. The students may know what they are looking for, but not where to find the information they seek.

Doshi et al. (2014) revealed the most common mode of usage by students was the "wait and anticipate" (p. 12). The name came from seeing many first-year students waiting for their classes to start within the Commons. Because the researchers believed students had the potential for doing something more than just sitting, the incorporation of whiteboard or glass walls where students could gather and share ideas was noted. The authors mentioned a deliberate attempt to add art and other cultural items within the Commons to make it a space for students to discover; thus, the "discover" (p. 12) mode of usage would have students come into the Commons to interact with new ideas or make new connections. Finally, the "explore" (p. 12) mode, which is like the *discover* mode, described students coming into the Commons for the first time and considering new experiences. The work done on describing the above modes helped create descriptors for the student lived experience. Descriptors were presented in a graphic and included: "co-experience, sensory inputs, mobility, destinations, and activities" (p. 13).

From these modes of usage and lived experiences, Doshi et al. (2014) created design recommendations. The first focused on initiating new and different experiences in

unexpected ways. These types of interactions helped forge new relationships with others. Creating anchor points supported students who are meeting others to have a place to be found and student understanding of the physical space. The building of alcoves where students could take a break from collegiate life was necessary for students to be refreshed and continue their journey. Because students do not use space in the same way, the authors believed an opportunity for students to have what they need and control it should be incorporated. Additionally, the space should be flexible enough to be arranged for different needs. Providing opportunities for directed experiences could turn idle time into activities that could present new and interesting ways to interact with people and space. Adding specific cues within the space to designate different zones supported students who were new, as well as those who were finding a different place within the space. Finally, ensuring students will have their needs met by providing resources in an easy to find location supported a positive experience.

The work by Doshi et al. (2014) focused on providing one example of a research-based and user-centered approach to design. The researchers had a partnership with a private firm and shared such a partnership could work if both parties recognized the importance of the institutional review board (IRB) process and did not deviate from those protocols. Interestingly, the authors acknowledged "this type of work is both an art and a science. There is no best practice that will lead to the ideal outcome" (Doshi et al., 2014, p. 15). However, having the right tools with a thoroughly thought out methodology could provide the insight necessary for the best results and newer questions to consider.

Harrington (2014) studied the effect of the campus physical environment on a student's experience of campus community in college using a qualitative, ethnographic

methodology at a public university in the southeast. Ten participants, selected using purposive sampling, gathered photographs of places on campus students spend time and places the students avoided. The participants had two weeks to gather the photographs. Once collected, the researcher had students set up a time to have a 60- to 90-minute semi-structured, individual interview. The interviews were recorded. The students were asked to talk about the photographs, splitting them up into areas they enjoy and avoid, and answered questions from the interview protocol. The ability for follow-up questions did exist. Students who completed the study were provided a gift card for their time. The researcher also kept a reflexive journal of her experiences throughout the study.

In response to the principal research inquiry, the role the campus physical environment has on a student's experience of community, two themes emerged. Those themes were "making connections in campus spaces" and "enjoying solitude in campus spaces" (Harrington, 2014, p. 45). The students were content being in places which afforded the paradoxically possible—the opportunity to choose to be alone among a group while still being able to meet others and build connections. Some students may seek out an exterior location whereas others look for a small, interior room for isolation. There were three types of places which inhibited interaction. Those spaces either lacked in both space or seating, had a large amount of space but minimal seating (e.g., large hallways with a handful of chairs), or were locations that became congested with people moving between classes.

Phillips (2014) shared two stories about the physical space of classrooms. In the first story, a high school teacher in rural Appalachia was trying to build community with her students, but nothing she tried was working. When the author came to visit the

classroom, he was directed to the unfinished basement of the school. Instead of focusing on teaching practices, the author decided to have the teacher focus on the physical environment. Using leftover carpet and paint from local businesses, and using donated or student-made decorations, the class spent six weeks changing the physical environment. In that time, the students built a new physical space and a community of trust. The author determined the physical environment was a crucial component affecting a student's confidence and learning. Also, students being allowed to build their learning environment can be empowering and cultivate community.

In another story, Phillips (2014) described a professor at the University of Massachusetts who completed a doctorate in classroom environments. For a short time, the professor was hired as a head custodian to better understand the physical environment within schools. The professor found the classroom was usually arranged to the benefit of the custodian instead of student learning. The author had a similar experience occurring in his own classroom. Phillips (2014) documented four guidelines he believed should be contemplated in the construction of learning spaces: (a) the physical environment can affect student confidence and learning; (b) the physical environment should complement the teaching and learning objectives in regard to interaction and instructional approach, (c) how seating is arranged is a prominent consideration, and (d) including student input in the arrangement of the physical environment can increase student empowerment and community.

Design considerations. Wolff (2001) studied the creation of learning space designs for collaborative, project-based learning (PBL) at community colleges in the United States of America. Her phenomenological study consisted of three phases. In Phase I, she expanded her comprehension of design features which would support collaborative PBL spaces by visiting educational spaces and completing an architectural internship focused on community college facilities. Phase II was the gathering of data specific to the design of these environments. Wolff gained greater insight into the specific design features used and the reason why they were chosen in Phase III. Thirty-two features were determined to support the creation of collaborative, PBL environments. The features pertinent to the current study were spaces to congregate, to obtain information or resources, to provide instruction directly or indirectly, and to provide contemplation. The most exceptional aspect of the physical environment in creating collaborative, PBL environments was "the need to create a system of relationships among people and learning spaces" (Wolff, 2001, p. 211).

A study by Long and Ehrmann (2005) described reasons why classroom design must change, provided suggestions for change, and proposed concepts design teams should consider in creating innovative spaces. They questioned which designs best support student learning in higher education. The reason for questioning these designs was to ensure the life-expectancy of all aspects of space design was considered. They also found technology was usually requested and important in an active learning space because technology has the shortest lifespan (less than five years) of any physical features. In contrast, the authors said the building itself could survive for a century or more. Thus, it was found that ample consideration must be placed in the ideas of space

design that can then incorporate multiple changes to other components, with the shortest lifespan item potentially changing at least 15 times within the lifespan of the building itself.

Recommendations based on the authors' own shifting beliefs of learning space design were offered (Long & Ehrmann, 2005). They imagined new spaces that would support formal and informal learning; allow collaborative teaching methods; support research, subject matter learning, and community engagement; allow users, not specialists, to design the new space; and change the idea of a space being fixed in time to seeing space design as an iterative process which is altered with the changing educational landscape. This evolution begins with consideration of three questions: (a) what are the users of the space doing currently, (b) how can current spaces support ideal teaching practices in a holistic way, and (c) how can space be improved and reorganized to support ideal teaching and learning practices.

To this end, Long and Ehrmann (2005) provided their thoughts on the characteristics of future learning spaces. First, the classroom should be designed for the users instead of the newest technology. The technology of today will be different in the near-term and have shrunk in size while growing in capacity. Thus, ensuring comfort of people in a space would not be constrained by the technology chosen. Second, the classroom should be adjusted to certain learning activities conducive to the specific discipline of study. This provides students with an opportunity to practice the actions needed when they join the workforce. Next, the design of the space should allow for users to bring their own devices with them. Students may be more comfortable with personally-owned technology. Flexible use of a space could support classroom

scheduling, as it was challenging to schedule enough classrooms in most institutions of

higher education. Flexible spaces also meant an opportunity to provide students with

informal learning spaces when not in use as a classroom by allowing the use of space at

all hours of the day and week. An emphasis on soft spaces would support student

learning because students would be more focused on the content and less on their

discomfort sitting for long periods of time. Finally, consideration of space usage would

allow the design team to ensure the proper acoustics were included (e.g., sound

dampening or projection).

Four years later, another study on design considerations at community colleges

came forward. Perkinson (2009) studied whether the use of active learning by

developmental educators was supported by the design of the learning space, as well as

determined whether faculty were involved in the space design. Her mixed-methods study

used a cluster sampling technique to determine the chosen participants. She used a self-

created instrument, which consisted of a survey and sketch of the space. The population

included developmental education instructors who attended the 1998 Kellogg Institute

and any attendees of the Advanced Kellogg Institute between 1998 and 2007.

Ninety-three candidates were determined to fit the criteria to be included in the

study (Perkinson, 2009). The author noted a final return rate of 30%. There were three

key aspects from the study, but only two are relevant to the current study. Perkinson

(2009) found the design of the learning space influenced the teaching and learning

strategies used within the space. Also, she noted the models of determining cost for

facility design should be reconsidered. This is because decisions made regarding design

and cost rarely involve those who are users of the space; the inclusion of those who will use the space in design discussions can decrease concerns of affordability.

Hedestig and Söderström (2012) conducted a pilot study in Fall 2008 where 33 students and 12 administrators were involved. The students were both undergraduate and graduate students, and several different subjects were included (e.g., engineering, business administration). They found both groups of people included in the study were looking for spaces different than the current spaces offered. Students, especially, were looking for places where they can study alone, meet up with friends and other students, and space for group study. Though the researchers did not evaluate the spaces themselves, they noted evaluation of learning spaces as a complex process.

Over the course of time, technology-enhanced learning has grown to provide instructors with new and innovative ways to engage students in learning. Hedestig and Söderström (2012) noted this in their article, and they realized the design of learning spaces became more challenging due to technological improvements, financial considerations, incorporation of learning theory, and preferences for learning by students. The way learning spaces were configured could support exploration of new teaching practices. However, users of the space bring previous experiences with them, which can cause them to try to fit old habits in new spaces. Thus, "when evaluating the use of learning spaces, it is essential to understand users' practices, their needs and goals, and their use of learning resources" (Hedestig & Söderström, 2012, "Concluding Discussion," para. 2).

Wilson and Randall (2012) conducted a qualitative study at Bond University (Australia) over two teaching terms to review "the user-centered design and flexibility of

the Pod Room space in relation to three areas of technology, space, and pedagogy" (p. 5).

The *pod room* was defined as a learning space with student pods, one instructor pod, a

casual seating area, and whiteboards. The student pods were areas that sat six students

which included a computer connected to the internet, dual-mounted monitors, cabling to

attach laptops or tablets, and lighting controls. The master pod was the instructor's

station which included controls for lighting, dual projectors, image switching capability

to show different images from each of the pods, a document camera, a video player, a

stylus for making annotations on the screen, and external inputs. The instructor could

override any settings throughout the entire room. The informal area was used as a

breakout area with more informal furniture (e.g., couches). This allowed the instructor to

bring the class together away from the pods. There were also whiteboards located in

strategic locations to allow students room for working together and investigating

problems. This study incorporated the Pedagogy-Space-Technology Design and

Evaluation Framework by Radcliffe et al. (2009) to explain the design and usage of pod

rooms within Bond University.

The researchers (Wilson & Randall, 2012) conducted an observation of one class

period for each of the seven instructors participating in the study. After the observation

was concluded, they interviewed the instructor for a 30-minute period regarding the

observation. The interviews were transcribed and reviewed by the instructors for

accuracy. The interviews focused on one to two issues which arose out of the

observation. Instructors were asked to record their ideas or concerns on a blog within the

learning management system used at the time. Then, a survey was administered via

email at the end of the semester.

Wilson and Randall (2012) analyzed the results of the study based upon the PST Framework. Overall, regarding pedagogy, students and staff described an increase in engagement within the pod room due to the greater ability to provide tasks that were collaborative or role-play in nature. Instructors described the need to conduct self-reflection about their teaching, as well as consideration regarding how to use the space to its full potential. A blend of work using technology, individual effort, and face-to-face discussion were used the most. Students were appreciative of the opportunity for greater interaction with peers, which created deeper and improved relationships in student-to-student and student-to-teacher interactions. There were some negative comments made by students regarding technology; the bulk of those comments were related to the reliability of the technology and the ability of faculty and students having technology training prior to using the space. The idea of an instructor's perspective being important to the design of the space was prominently considered in a study three years later.

In 2015, Folkins, Friberg, and Cesarini wrote an article to focus on classroom design principles and to discuss them from an instructor's point of view. The authors wanted to have instructors become more active in the learning space design process by gaining an awareness of which classroom designs support specific learning based on instructor techniques, realizing which space design methods support ideal learning outcomes, and make changes to learning spaces to increase cutting-edge learning methods. This was prescient as it is the instructor who must make the best use of space within any given classroom. One interesting concept noted by the authors was the finding by Bloom (1984) which was called the 2-sigma problem. This problem was about the ability for teachers and researchers to find any method of teaching which would

compare to tutoring, in which students who received tutoring were two standard deviations above those who were receiving group instruction. Active learning approaches still have group instruction at heart; however, these approaches allowed for more one-on-one opportunities to learn between students and instructor and student-to-student.

Folkins et al. (2015) found group seating was an important aspect of active learning classrooms, especially with seating that is flexible and can be rearranged into different configurations. Having aisles to walk around and through the classroom was important to the active learning environment. Access to technology was another consideration raised. In this new century, the move to wireless technology has grown along with the advantages and disadvantages such as cost, flexibility, and the challenge of connecting personal technology to institutional configurations. Of course, low-level technology, such as huddle boards and whiteboard tabletops, were another method of supporting the presentation of student work with minimal cost.

The acoustics of the room were also important. This concern must be addressed based on the Americans with Disabilities Act (ADA), as those with hearing issues are covered under this federal law. Working with architects to determine appropriate acoustic levels within a space could provide new ideas and suggestions for flexibility. The size of the space was important acoustically, but also to provide enough space for students and instructor. Folkins et al. (2015) found that active learning classrooms were being built and assigning 20 to 35 net assignable square feet per student where traditional classroom range between 15 and 20 net assignable square feet. Lighting was another consideration for classroom spaces. Too much light can cause a glare when using

technology, such as projectors and computer monitors. Too little light can cause students to feel tired. Zoned lighting could ameliorate the concern, but it must be planned within the design due to the cost of changing lighting post-occupancy and lighting controls should be easily accessible to the instructor.

Evaluation considerations. Lee and Tan (2011) developed an evaluation model for learning spaces based on available literature, conducted trials of the evaluation model at three Australian institutions (i.e., Swinburne University of Technology, Victoria University, and The University of Queensland), and studied the perspectives of specific stakeholders. The authors believed there was more research centered on the design of learning spaces rather than on a formal method to evaluate those spaces. This was a concern because of the amount of money spent in renovation or construction within the higher education sector. Expending large amounts of financial resources to support the staff and students within the space without a specific, formal process to evaluate learning spaces seemed counterintuitive to Lee and Tan (2011); thus, the authors proceeded with the assumption that the creation of an evaluation model was valuable for the higher education sector. They sought to obtain "case-based examples of evaluations, and where available, the instruments that had been used [to evaluate the spaces]" (Lee & Tan, 2011, p. 2).

To start, Lee and Tan (2011) contacted other institutions asking for a short summary of how each institution evaluated learning spaces, including the context, purpose, and methods used. The authors noted the challenge of finding learning space design contacts at each institution, the willingness of institutional contacts to share the evaluation process due to confidentiality of the methods or results, and the informal

nature of evaluation used while maintaining minimal documentation. Four themes were used to guide the study: "imagining the process," "measuring," "critiquing," and "closing the loop" (Lee & Tan, 2011, p. 6), with sub-questions for each theme. The researchers noted few evaluations were evidence-based and comprehensive, but those involved in evaluating learning centers were using a range of quantitative and qualitative methods to seek the best way to answer research questions. This was positive for the field; however, it meant an evaluation may have been used in only one setting, or only one time. Evaluation of learning spaces is multifaceted, which also meant an evaluation created for one space may not be the best way to measure results in another space.

Research-Based Practices for Affiliated Learning Center Spaces

Research-based practices that inform other educational spaces such as libraries and P-12 settings can support current practices within higher education learning center spaces. Several researchers (e.g., Bennett, 2003, 2006, 2007a, 2007b; Dryden & Roseman, 2010; McMullen, 2007, 2008; Somerville & Collins, 2008) have focused on the importance of space within libraries, which shifted from physical collections to student learning and accommodation of non-academic needs. In the P-12 school systems, research in different countries (e.g., United States of America, and the United Kingdom) concentrated on similar concepts from classrooms to entire buildings—how to create spaces supporting pedagogy, space, and technology. This section provides more detail for both libraries and P-12 education.

Libraries and learning commons in higher education. Literature regarding libraries and learning commons has mainly focused on space and design considerations. Space and design of libraries has made major changes from information repositories to

more active learning spaces, and the trend will continue (Andrews & Wright, 2015). This

change has created a hybrid of a learning center and a library called a *learning commons*.

These spaces are not unlike learning centers; however, there are different considerations

due to the combining of spaces. Researchers (e.g., Somerville & Collins, 2008) noted the

challenge in creating these spaces without balancing the needs of each constituent part.

Space and design considerations specific to libraries and learning commons in higher

education are presented in the following section.

   Space considerations. Over time, people have sought out spaces suitable for

studying (e.g., learning centers, computer labs, coffee shops, and libraries). Like learning

centers, libraries are viewed as places to seek academic support—the library holds the

physical materials whereas learning centers have peer or professional consultants in

specific course content. Realizing that librarians are also specialists in obtaining

information from various sources, it is not difficult to understand why combining

libraries and learning centers makes sense.

   In recent years, there seems to be a trend of combining learning centers and

libraries. There are many ways to name a learning center (LSCHE, 2018b); one such

phrase used is *learning commons*. McMullen (2008) provided a description of a learning

commons from a librarian's perspective. She argued the new concept of a learning

commons required a space which heightened a student's ability to collaborate, discuss

among peers, and provide the opportunity for consultation with faculty and others.

Additionally, the author claimed the creation of such a space would require an enormous

effort beginning with the cooperation of external stakeholders. Somerville and Collins

(2008) believed having only librarians creating a new vision for the library would not

work. This is due to the focus being completely on library services instead of the creation of the learning commons. The shift should move away from strictly library services to supporting student learning.

Within the library setting, space usage is an important concept and has changed over time. Oldenburg (1999) used the term *third space* as a descriptor for libraries. He believed the third place was a community gathering space, distinct from the *first place* (i.e., home) and the *second place* (i.e., work). Some central characteristics of a *third space* are: (a) freedom for people to enter and leave at will; (b) social position is not considered; (c) dialogue is the predominant endeavor; (d) open longer than typical, close to home, and activities within the space are not planned; (e) full of people that are well-known by the individual; (f) people who have never been before are welcomed; (g) full of life and delight; (h) a compassionate environment.

In 2003, Bennett first described the historic concept of the commons room—a place where the academic community would gather, usually after a meal, and participate in informal discussion and deliberation. He saw this concept of a commons move into the library where people came together around a shared purpose (i.e., academic work). Also, he remarked on the difference between the *information commons*, which was the name of the first iteration of changes, to the second iteration of a *learning commons*. Whereas an information commons was geared toward how to gather and use information, a learning commons provided a space for people to take information and create knowledge through social interaction. The author concluded the creation of knowledge was through the work of the learner; therefore, the learners must own the space. As

library spaces morphed into this new concept of a learning commons, there were similarities observed.

Applegate (2009) conducted a study at Indiana University Purdue University Indianapolis (IUPUI) to determine how student usage within the library compared to other, newly built areas of the campus. Using space maps, the researcher gathered usage and person counts in the space, whether students worked individually or in groups, laptop usage, and gender data during two different afternoon times (i.e., 12:00 pm to 1:00 pm and 3:00 pm to 4:00 pm). No identifying information was obtained as the Applegate only counted those individuals who used the space without conversation with the participant.

Unlike other research findings which discussed the need for flexible space (e.g., Dennis, 2011; Radcliffe et al., 2009; Temple; 2008; Temple & Fillippakou, 2007; White, 2004), Applegate (2009) found students had a predilection for study rooms and carrels, whether the students were working in a group or individually—spaces considered less flexible and not as social. She claimed students may prefer areas that created a more social dynamic, but they may not "prefer to listen to others around them also talking" (Applegate, 2009, p. 346). Flexibility, though, was critical in a space knowing usage increased over the course of the term. Having an area congested early on could signal overcrowding in the future, which would agree with Bennett's (2007a) theory of designing for a wide range of needs and not particular services.

Design considerations. McMullen (2008) described design elements of a learning commons shared by institutions. Those items included: (a) computer access, (b) an integrated, single service desk, (c) collaboration spaces, (d) digital studios, (e) instructional support areas for faculty, (f) classrooms for instruction, (g) tutoring or

academic support areas, (h) community space for programs and events, and (i) food and lounge space. She recommended completing renovations in a phased approach, as trying to anticipate future needs of library users would require modification over time. Such a strategy could allow for the opportunity to experiment with different designs at a smaller scale prior to attempting large-scale changes. Future-proofing this new space also required those who develop it to create an image of what the new space should contain and then change it to add new areas. Flexibility was important to ensure new areas could be added by reconfiguring the current elements.

Similarly, Somerville and Collins (2008) conducted a review of current literature and described what they termed a collaborative design process. The authors focused on progressive evolution of the *learning commons*. In keeping with the concept of the original commons used by Bennett (2003), they encouraged the building of a café or other way for students to purchase food. The work of the library, then, became the building of collaborative partnerships between groups such as the library and tutoring staff, faculty, and instructional designers. Somerville and Collins (2008) also described the third iteration of this idea of a commons—transforming areas not usually considered as spaces for learning and changing them into a learning commons (e.g., hallways, dining areas, and living spaces)—similar to Oldenburg's (1999) definition of a *third space*. Using Bennett's (2003) definition, it is not difficult to envision a coffee shop as a learning commons.

The language used to describe the creation of *third spaces* is different depending on country. Somerville and Collins (2008) described three terms used within the international context—*cooperative, participatory, and contextual design*. In Sweden,

cooperative design described a collaborative process whereby professional designers and users of the space worked together to achieve a unified vision. In North America, the term used is *participatory design*. *Contextual design* is a process of designing products based on an understanding of the customer's use of the product. Quantitative methods could be used to gather data for each of these designs, but the predominant methodology used was qualitative (e.g., surveys, interviews, observation). Being able to use iteration was essential as it allowed designers to quickly produce a solution, gather feedback, and make necessary changes before a second implementation. This cycle created a feedback loop between end user and designer, using the best research and data to drive the changes made.

Somerville and Collins' (2008) first reviewed the work completed at California Polytechnic University. This university was the site of an 18-month study which used the collaborative design process in renovating the second floor of the library. Ten experts in either library studies, information technology (IT), or pedagogy served as the team to reimagine the library space as a learning commons. The group had two goals: (1) support faculty and curriculum improvement and regeneration through the provision of technology resources, as well as technological and pedagogical expertise, and (2) support constructivist approaches to learning principles which, in turn, support student aptitude with information, communication, and technology. Students, supervised by faculty, conducted research to determine how their peers learn, use technology, and create content.

Through this process, student researchers determined the purpose of the learning commons should also include two other notions: (1) promote discussion between

disciplines, and (2) create a community of learners that value inclusivity and interaction

(Somerville & Collins, 2008). These findings were comparable to the descriptions of

building community and collaboration by Bennett (2003) and McMullen (2008). The

student respondents requested co-location of other academic services, such as writing and

study skills services and software experts. These additions went beyond the beliefs the

planning team had considered at the beginning of the project. Finally, the student

respondents also pushed for consideration of a virtual commons and informal gathering

places to be included within the physical space. Spaces such as a hypermedia café and

virtual collaboration rooms were also called out by the students. The building of these

spaces would have been akin to the space one found in chain bookstores—a blend of

formal and informal space which allowed the user to decide how to interact with the

space.

Similar results were reported by Dryden and Roseman (2010) who conducted a

case study at the University of Connecticut's five regional libraries. The remote location

libraries catered to a mostly commuter population. The decision was made to change the

libraries into a learning commons at each location. The locations varied from urban,

suburban, and rural with each campus having a different focus of major course of study.

Some of the campuses offered graduate degrees as well. There were approximately 7,000

total (5,000 undergraduate and 2,100 graduate) students enrolled at the regional

campuses. Student services and library staff were involved in the study. A 30-question

survey with five sections (i.e., library, writing center, tutoring services, studying space,

and technology provided) was administered. About 5,800 students received the survey

link with a chance to win a prize with the submission of a completed survey. The response rate was 17%.

The respondents in the Dryden and Roseman (2010) study preferred longer hours, generous food policies, and collaborative learning spaces. A question regarding the improvement of the learning environment had 454 open-ended responses. About half wanted more study rooms and elimination of excess noise. Just under one in five respondents wanted more computers and electrical connections. One in 10 wanted to see better furniture and lighting. The authors noticed commuter students viewed the library as a location to complete academic work. Of the changes made, the ones that were similar at each campus were: weeding of the library collection to create more space; more lenient food and drink policies; one central service desk; better signage; new furnishings; enhancing the use of space without considerable renovation; and collaboration between tutoring, library, and writing staff.

Dennis (2011) reported comparable outcomes to the Dryden and Roseman (2010) study. She asserted a learning commons would have a combination of spaces to support the academic needs of students. The researcher found students wanted support from staff without searching it out. They also wanted a space to be social, but also required quiet space for individual work. To support their academic work, students desired ample technology and large surfaces for working. The surroundings needed to feel comfortable and have quick accessibility to food. Key to her findings was that a learning commons is reinvented on a continual basis; flexibility and constant input from users were the greatest needs when creating a physical space.

In 2015, Houston discussed how to balance the priorities of physical space using a core purpose statement and focusing on the mission of the library. From her perspective, she viewed the shift of the library from a physical collection storage to a focus on meeting the needs of those who visit the library. Part of the shift was due to the technological retrieval of the same or similar materials libraries kept for use in a physical form. The learning commons concept was a shift to provide an experience to users whereby services were flawlessly consolidated in one location. These services usually included technology, tutoring, and career services incorporated within the typical library services. With this new availability of space, librarians were asked to consider the idea of "scope creep" (Houston, 2015, p. 84)—is the library trying to do too many things and be all things to everyone? How does one decide the appropriate services to provide without losing focus? How does one choose even after gathering data from the users? Going back to the core purpose—"the organization's reason for being" (Houston, 2015, p. 85)—was the best guide. This was different than a mission statement, which articulated what an organization does.

Houston (2015) asked the users of the space for their input by using surveys and focus groups. Questions such as what users expected from visiting the space and the services sought were prominent. Typical responses from users were seeking information, access to quiet study spaces, or to use technology. Users looked for meeting rooms or space which allowed users to be alone yet together.

Speaking strictly about academic libraries, Houston (2015) settled on a core purpose for her physical space as aiding the retrieval and usage of knowledge devoid of any impediments. Though services, such as cafés and tutoring, have been co-located with

the library, she cautioned on the addition of these services without consideration of what it meant to the core purpose of the library. It would be sensible to include a café as an extension of the learning space. Tutoring services not interwoven with the collaboration of reference services can be detrimental to fulfilling the core purpose. Providing these different services would support student success; yet, serious consideration should be given to how those co-located services support the holistic core purpose of the space.

P-12 education. Unlike the literature for libraries in postsecondary institutions, the literature to describe learning spaces within the P-12 arena is not as extensive. Specifically, Woolner et al. (2007) noted a dearth of replicable studies. However, the literature reviewed for this study provided a well-rounded perspective on what effect the physical aspects of the learning environment can have on student achievement and success, even though each researcher may define these terms differently. In addition, the results of the studies do not necessarily coincide nor provide a definitive direction for educational administrators to pursue. Even so, it is possible "the most successful [design solutions] are likely to be those which are seen as interim solutions and which have within them elements of flexibility and adaptability" (Woolner et al., 2007, p. 64).

Cash (1993) aimed to determine the relationship between facility condition and student achievement and behavior within small, rural high schools in the state of Virginia. She noted several aspects of the physical environment which impacted student success. Those items were lighting, acoustics, climate control, color, age, and the population density within the building. The aesthetics of the building (e.g., maintenance) was another important consideration, though not necessarily as tangible as the other items listed. Forty-seven school districts fit the parameters to be included in the study (Cash,

1993). One of the criteria for inclusion was the completion of the Commonwealth Assessment of Physical Environment (CAPE) instrument (Cash, 1993). The CAPE assessment was a self-created assessment to determine the condition of the building and to measure student achievement. The response rate of the completed CAPE assessment was 91%.

Cash (1993) noted student achievement was scored higher in higher quality buildings. She also found buildings with higher quality cosmetic conditions had higher student achievement, while no difference was found between student achievement and structural ratings. Of all the physical aspects which were measured, building age, windows, air conditioning, and furniture condition had a greater effect on student achievement and behavior. Dividing the buildings by structural and cosmetic conditions, higher student achievement was noted when the cosmetic ratings were higher (Cash, 1993).

Earthman, Cash, and Van Berkum (1995) used the same methodology as Cash (1993) but did a statewide analysis in North Dakota. In their study, a 29-question survey was sent to 199 high schools in North Dakota to determine how the school building condition affected specific student achievement and behavior measures. The school populations ranged from 65 to 1200 students. The return rate of the surveys was 60%. North Dakota was chosen due to students scoring high on the Scholastic Achievement Test (SAT) and the predominantly homogenous and rural population. This population was very similar to the population in Cash's (1993) study, but the "comparisons in this study were not as strong" (Earthman et al., 1995, p. 13). The results were compared with the Comprehensive Test of Basic Skills (CTBS), which was used to provide a

quantitative measure of student achievement. In comparing the building condition survey results with the 13 components of the CTBS, 11 of the 13 components showed students in above standard schools scored higher than students in substandard schools. When compared to cosmetic condition, 12 out of 13 components of the CTBS showed students in above standard schools scoring higher than those in substandard schools.

A study by Hines (1996) used the same methods and instrument as Cash (1993) but studied whether building condition affected specific student achievement and behavior measures in 88 chosen urban high schools in Virginia. The selected schools were in urban areas with a population of over 100,000. Each school had a student population between and 148 and 2866. The findings showed better building condition did positively affect student achievement. When comparing his results with Cash's (1993) results, there was higher achievement in urban versus rural schools, even though the building condition was rated the same (i.e., substandard, standard, or above standard). Nevertheless, student test scores improved with a better rated building condition in both studies.

Several years later, Lackney (2000) considered what principles could support student learning. He created a set of 33 design principles for both school and community learning centers. Fundamental to these principles was the notion that the learning environment is "learner-centered, developmentally- and age-appropriate, safe, comfortable, accessible, flexible, and equitable" (p. 2). He also recognized all 33 principles may not be implemented for any number of reasons (e.g., cost efficiency, not appropriate for the age group or location). As such, only those principles pertinent to the current study are referenced below.

Lackney (2000) found it was necessary to maximize collaboration between all affected by the learning center. The careful planning of project objectives should happen after gathering input from as many stakeholders as possible, which can support the discovery of barriers early in the process. It was also important to build a sense of home within a learning center, which supported a feeling of warmth, caring, and community. The researcher described this sense of home was best found when people would enter a space and be recognized and known by name. Merging physical and virtual learning spaces was a prominent feature for future-proofing. He believed natural light and air quality were as important to a learning center as the correct furniture, temperature, and lighting. Appropriate acoustics within a space helped with focus and clarity.

Earthman (2011) explained the importance of two-way communication between those who will use the space and those who will design it. He believed the school staff should determine how things would occur within the space; the architects and designers then create the physical space based on what the school staff needed. When the architects and designers provided new concept drawings, the educational staff reviewed the drawings to ensure educational adequacy. One underutilized aspect of construction noted was the evaluation of the planning process, which should occur once the space is completed. However, this rarely occurs in practice because evaluation was not usually considered part of the whole process.

Barrett, Davies, Zhang, and Barrett (2015) conducted a quantitative study focused on the learning progress of students at 27 schools in Blackpool, Hampshire, and Ealing in London using an environment-behavior factors model. This model was based on three design elements—"naturalness", "individualization", and "stimulation" (p. 119). Within

these schools, data from 153 classes and 3,766 students were gathered. Naturalness accounted for 49% of the increase in student overall progress, which suggested the built environment was an important factor to consider in supporting student learning. Statistically significant design parameters in supporting student learning pertinent to this study were: light (either daylight or electric), temperature (sunlight or controlled heat), air quality, flexibility of space and size, complexity of displays within the space, and color.

Professional Association Learning and Physical Space Considerations

As the literature for learning centers has grown over the years, professional associations have started to provide input into standard items which should be included in the design and development of learning centers within the educational setting. The amount of available literature is minimal and recent (i.e., within the last five years). Nevertheless, it is necessary to provide the perspective of these associations, as it is usually the noted experts in the field who are tasked with the creation of standards to be adhered to by practitioners. The education-related associations reviewed for this study are the JISC (previously known as the Joint Information Systems Committee), the National College Learning Center Association (NCLCA), the Association of University Interior Designers (AUID), and the Scottish Funding Council (SFC). The JISC and SFC are based in the United Kingdom whereas the other two organizations are based in the United States of America. During the review of literature, only one author sought information from the membership of an association of interior designers whose focus of work is higher education. This section provides greater detail about the insight of these associations and how the items of pedagogy, space, and technology are integrated when a learning space is being either created or remodeled.

Pedagogy considerations. Over a decade ago, the JISC (2006) warned educators to consider how technology would affect their pedagogy and the way they teach. Though some of the technology listed by the JISC has become obsolete (e.g., personal digital assistant [PDA]), the types of technological learning named in their work are still in vogue: "mobile," "connected," and "visual and interactive," (p. 6-7). Thus, ascertainment of the pedagogic objectives for learning spaces was the first step listed in the transformation of the learning experience for students. The JISC noted the change in pedagogy from teacher-centered, or passive learning, to student-centered, or active learning, was happening. However, the design of classrooms and the skills of educators had not shifted to this new paradigm. Educators were cautioned to begin conversations regarding what modifications would be necessitated, set aside funds for professional development, and to take ownership of any adjustments made to their teaching as well as the learning spaces to support student learning. The JISC (2006) articulated it very clearly:

> What is essential, whatever the choices made, is that the adopted design [of a learning space] is influenced more by clearly defined pedagogic goals, articulated by both managers and staff, rather than by other considerations, such as a desire for innovation or efficiency gains. (p. 11)

In the same year, Marmot and SFC (2006) described the trends in teaching and learning from their perspective and how those trends impact learning spaces. They concurred that teacher-centered paradigms were being replaced with student-centered learning, and this was due to the move to a knowledge economy. Students of the future would need to be critical thinkers and be able to find solutions to intricate challenges.

Marmot and SFC (2006) specifically noted social constructivist theory—"all meaning and knowledge is created through social interaction… [and] learning is a process of identifying, challenging, and changing" (p. 6) belief systems. Learning using reflection, action, and discussion were noted as having a large knowledge base in literature but little in the way of empirical studies which link these styles with the learning environment.

Marmot and SFC (2006) observed people who sought higher education were starting to acclimatize to environments where real and virtual learning environments were co-located. Even with this monumental change in the learning environment, the researchers believed the learning space of the time, with some changes made to include flexible technology and seating, would be adequate. It was also mentioned schools will still retain their physical place, and the flexibility of that space will increase, even with the move to more technological methods of educational delivery. Additionally, educators would stay a primary part of education but should expect their responsibilities to be altered.

Though only JISC (2006) and Marmot and SFC (2006) discussed pedagogical considerations, it was a small part of their analysis. What is clear, and cannot be minimized, is both professional associations were touting the need to make pedagogical changes to a more active learning environment, and those changes would be essential to the creation or remodeling of a learning space. Their analysis was based on the rise of technology and the ability of more people to access learning through mobile solutions. Over a decade later, both professional associations seem to have been right—active learning and mobile devices have permeated the educational landscape, but the learning spaces have not changed to match this new era of education.

Space considerations. Just as Bennett (2003) expressed the original concept of a commons, JISC (2006) described how to take social spaces and create learning spaces. The authors contended there are underutilized spaces within institutions; and using those spaces to create social hubs for learning would allow administrators to maximize the use of space within buildings while also fostering a learning community feel—one encouraging students to seek out learning assistance. This is due to social spaces usually not having a hierarchy between the users of the space. All users can utilize the space equally without judgment. Also, they believed the provision of food, drink, and seating can be a catalyst for learning support, but the input of the students would be necessary to create the proper design and amenities to encourage student usage.

Faculty being encouraged to spend time in this social space can allow connections between faculty and students, which stands apart from the classroom context. Consideration should also be given to hallways and other walkways through buildings. The JISC (2006) provided a narrative of Telford College in Edinburgh, Scotland, which described the concept of learning streets—hallways with built-in recesses as touchdown points for students. Space plans describing the usage of different areas, or zones, were necessary to ensure users are not confused within the learning space. They also asserted the building of space for virtual learning opportunities was as important as the tangible space and flexibility of usage. Though administrators wanted students to own the learning space, students may not have felt encouraged to change the space configuration (JISC, 2006).

In 2006, Marmot and SFC created a document reviewing trends for learning spaces in higher education. At the time of writing, many building projects were in

progress at Scottish postsecondary institutions. The purpose of the document was to begin a conversation about learning spaces and the use of funds in creating spaces which support student learning. Due to the change in the economy, where more critical thinking is required in the workforce, a need to move towards a student-centered teaching philosophy was necessary. Traditional classroom settings did not fit within this paradigm and were unable to support the change in pedagogy or andragogy nor the rapid change in technology. One challenge found was the difficulty in evaluating learning spaces without consideration of other variables (e.g., teaching techniques, learning styles, technological differences).

There were 12 items listed which can support the creation of effective learning spaces. Within those items, Marmot and SFC (2006) expressed involvement of all interested parties, learning from visiting other locations, experimentation, integration of technology, flexibility, professional development of users, gathering of feedback, and publication of findings as needed components. Within what the authors described as the "fourth phase in the evolution of buildings for tertiary education" (Marmot & SFC, 2006, p. 4), which is an era of educational accessibility and change from teacher-centered to student-centered teaching styles, discussion of learning space must focus on the coevolution of real and virtual spaces.

Changing the traditional seating in group learning from being focused on the instructor to being focused on students learning from one another required a change from rectangular to more square-shaped tables in a banquet-style seating arrangement (Marmot & SFC, 2006). Chairs which swivel between the instructor and the student workspace were also supportive of more student-centered learning. The technology would require

the movement away from a specific wall designated as the front of the room. The use of multiple projectors or screens and whiteboards provided access for viewing by all students. Internet access for students' personal devices supported learning at their own pace.

Simulated environments allow students to learn within a space similar to the real-world (Marmot & SFC, 2006). Having simulation rooms be flexible enough to be used for other purposes when not in use supported keeping costs at a minimum. Some simulation rooms may require more space than typical rooms due to the need of the program. These spaces required greater technology infrastructure than regular classrooms, such as cameras, simulation aides, and workstations. The furniture within simulation classrooms may not be as flexible as others (e.g., hospital beds, automotive parts). Some simulated environments can also be considered immersive, where augmented or virtual reality was used to support learning.

Spaces for social learning were akin to learning centers (Marmot & SFC, 2006). These spaces made it easier to allow for students to learn from one another, which built the opportunity for learning communities. Internet cafés, group study areas, and fine arts studios were provided as examples of this type of space. These spaces were found near lecture halls and centrally located areas of campus. The location provided opportunities for faculty and students to interact in a more organic way. The authors believed the offering of computers would lessen over time, but ensuring the wiring infrastructure, as well as hardware and software, were available to students was important. Furniture in such a space was for short-term use, which created an opportunity to provide standing height tables.

Marmot and SFC (2006) determined suggestions to support the creation of improved learning spaces. For administrators and faculty at colleges and universities, the authors suggested determining what pedagogies were already being used in the current space. Then, when renovation or construction projects came forward, the new spaces could incorporate the pedagogies not able to be used before. This meant striving for faculty to experiment with different pedagogies to understand whether they would be beneficial to the students served. Assurances should be made to allow dialogue between all stakeholders prior to the start of a construction project. This dialogue would focus on those teaching and learning strategies deemed most beneficial. Feedback from those who use the space most would support keeping the learning space dynamic and supportive. This was in line with the idea of providing post-occupancy surveys to review what went well and what could be learned for future projects.

Design considerations. Formerly known as the Joint Information Systems Committee until 2012, the JISC supports tertiary education within the United Kingdom by providing support with technology, as well as providing research-based solutions to issues. In 2006, one issue JISC researchers focused on was designing learning spaces within higher education, with a specific focus on how technology supports the creation of a 21st century learning environment. The researchers started with describing the design of an individual space within an educational environment. The six descriptors used were

- Flexible—to accommodate both current and evolving pedagogies

- Future-proofed—to enable space to be re-allocated and reconfigured

- Bold—to look beyond tried and tested technologies and methodologies

- Creative—to energize and inspire learners and tutors

- Supportive—to develop the potential of all learners

- Enterprising—to make each space capable of supporting different

  purposes. (JISC, 2006, p. 3)

These descriptors are similar to results from other researchers (e.g., Lee & Tan, 2011; Oblinger, 2006; Oblinger & Oblinger, 2005; Radcliffe et al., 2009; Temple, 2008; Temple & Fillippakou, 2007). The JISC researchers described different ways to alter the learning experience. According to them, having administrators determine the type of pedagogy to be used within a space is a first step in deciding how to incorporate technology. Whether the design of the space will be for teaching, vocational education, learning centers, or third spaces, each space can implement the use of technology in a more particular way. Access to technology increased, and the need for connectivity became greater as well (JISC, 2006). Thus, the JISC colleagues trusted educators could harness this drive for connection and include it within any learning space.

JISC (2006) believed the concept of learning centers was still developing and melding with other areas (e.g., libraries) to create a new center for social and academic activity. The organization provided guidance for administrators who are preparing for a remodel project. Most important is recognition that there is no one set of conditions in the creation of learning spaces; the design of a space will be affected as much by the those who will inhabit the space, as well as the mission, vision, and purpose of the institution. For learning spaces, student success should be primarily considered, and it may require a high-ranking administrator to lead the team to ensure the institutional strategic vision was carried out in the creation of this new space. This team should consist of representation from across the institution (e.g., finance, student services,

academic services, and information technology). It was also prudent to test pilot the proposed design more than once prior to implementing the final project. The purpose of these test pilots was to determine what potential challenges there would be and determine appropriate solutions.

The National College Learning Center Association (NCLCA) is an organization dedicated to supporting learning assistance professionals in creating or maintaining learning assistance centers, programs, and services. Using the list of best practices for learning centers created by Christ (2009) as a foundation, the NCLCA created the Learning Centers of Excellence (LCE) designation. The NCLCA (2018) maintains an LCE checklist for administrators to complete as part of the application process. The LCE program is one which recognizes the learning center staff for exceeding the standards set by NCLCA for learning center effectiveness, though all learning center administrators are encouraged to review these standards and work toward them. The fourth major section of the LCE checklist is the only one related to this study. This section requires administrators to respond regarding funding, resources, and design. This section accounts for 10% of the final score.

The "Technology, Space, and Universal Design" (NCLCA, 2018, p. 10) subsection has three criteria: technology use, physical setting, and virtual setting. Administrators are required to address how technology was used beyond the typical technology of computers for staff. Within the narrative, discussion of how technology was used to provide or enhance learning center services and programs was required, including teaching, training, advertising, and online support. Of course, technological

support of online student learning is critically tied to the physical and virtual environment.

Administrators must describe the physical environment of the learning center, including the location, accessibility, usability of, and furniture within, the learning center. The narrative should explain the use of Universal Design (UD) principles. The NCLCA listed an article by Burgstahler (2012) to define the UD principles to support persons of all abilities being able to access all programs and services, not unlike the Americans with Disabilities Act requirements of the United States of America federal government. The seven principles listed in the document by Burgstahler (2012) were: the ability of use by all, the space is flexible, the space is easily understood, information is easily accessible, minimization of errors which could cause accidents, minimization of physical effort in use, and the use by individuals allows freedom of movement. These same UD criteria can also be implemented in virtual spaces. The NCLCA (2018) requires administrators applying for the LCE designation to describe any virtual items being used (e.g., social media, websites, online platforms for tutoring) and how those aspects follow the UD guidelines, as well as the 2018 World Wide Web Consortia (W3C) standards for accessibility of virtual environments.

Using a descriptive design, Burruss (2014), studied the important factors Association of University Interior Designers (AUID) members used to create space design for adult learners. The membership of AUID were all trained interior designers who only worked in higher education, including teaching hospitals. The author used a self-created questionnaire to gather data from AUID members (i.e., interior designers). These members were overwhelmingly requested to create flexible room designs by

administrators and faculty. Rooms with a traditional arrangement of tables in rows were a predominant request as well. When it came to designers choosing their own preferred learning space design, just under half (49.7%) chose flexible, comfortable seating in groups. Color was another consideration studied, but one-third of AUID members verified administrators and faculty had no inclination toward any specific color choice. Neutral (either warmer or cooler colors) and cool colors were the most preferred choices. Burruss (2014) considered lighting and color as interconnected. The choice of lighting can affect how people view the color used. AUID members reported having almost all administrators (97%) and about half the faculty (46%) request fluorescent lighting.

Burruss (2014) stated two findings, which may be viewed controversially by administrators and faculty: (a) "Designers are more aware of the needs of the adult learner in designing an adult learning space than are faculty and administrators," and (b) "Designers are more collaborative than faculty and administrators when designing learning space" (p. 125). Further, he asserted designers (i.e., AUID members) were better equipped to select design elements and felt as though administrators and faculty were not in agreement with the choices made by the designers. The author highlighted the deciding factor in choosing design elements may be something other than whether design features support student learning (e.g., financial impact). The choices made in designing a learning space communicate the value placed on learning by those charged with its creation. The importance of this study was the provision of a perspective from those who are not necessarily trained in educational practice yet consider the design of learning spaces important to student learning.

Summary of Chapter II

In this chapter, studies regarding learning spaces in higher education, P-12 schools, libraries, and professional associations were reviewed. Only two of the studies included in this review (Perkinson, 2009; Wolff, 2001) were focused on space or design considerations at 2-year institutions of higher education; the perspectives at 4-year institutions dominate the learning space literature currently. The previous literature reviewed in this chapter considered space design, the experience of students who predominantly use the space, and how to support positive learning environments no matter the space chosen. It was noted in the literature that educational administrators in postsecondary institutions are challenged in implementing researched-based practices due to the lack of replicable studies (Lee & Tan, 2011).

Learning centers are becoming more intertwined with libraries, and P-12 education is also searching out how to change physical learning environments (e.g., Bennett, 2003, 2007a, 2007b; Cash, 1993; Lackney, 2000; McMullen, 2007, 2008). The authors of the studies focused on libraries described how the work within a combined space could intersect and support student learning. Though the literature describing learning spaces within the P-12 arena is not as extensive as the literature for libraries, the authors of the P-12 education studies did have some similar findings, especially regarding flexible space, lighting, and acoustics. However, the results of the studies did not necessarily provide a definitive direction for educational administrators to pursue. There was more description provided for a step-by-step process of creating new learning spaces, and one quantitative study (Barrett et al., 2015) was found to describe the effect of physical features on student success using statistical analyses.

The perspectives of architects and interior designers are also important to the creation of physical spaces (e.g., Radcliffe et al., 2008, 2009; Temple, 2008; White, 2004). The professional associations included in this literature review (i.e., AUID, JISC, Marmot and SFC, and NCLCA) valued different aspects of the design and space development. Nevertheless, all the professional associations did agree on specific considerations. Flexibility in design, supportive of student learning (such as Universal Design), and the inclusion of multiple voices for the most effective learning center design were highlighted. However, as JISC (2006) averred, the concept of learning centers is still in development. No one set of conditions can be used to create learning spaces; the people who inhabit the space will affect the design and should have primary consideration due to their nuanced understanding of the mission, vision, and purpose of the institution. As the postsecondary educational landscape changes, the need to consider the impact of learning spaces on student achievement will continue to evolve. Space combinations, such as libraries and tutoring centers to form learning commons spaces, may be necessary. Thus, it is vital to continuously look for what the current practices in design and development of learning centers are and how those practices impact student success, especially regarding pedagogy, space, and technology (Oblinger, 2006).

CHAPTER III

Methods

The purpose of this qualitative case study was to better understand the process

learning center administrators used in the creation or remodeling of a learning center

space at three institutions, which are part of a 2-year college system in the Midwest. Two

research questions guided this study: (a) What process did learning center administrators

use in the creation or remodeling of a learning center space at four institutions within a 2-

year college system in the Midwest? and (b) To what extent did learning center

administrators consider the impact of pedagogy, space, and technology in the design of

the learning center?

This study included personal interviews with learning center administrators and,

at most, two other members of the remodel or design committee. The following chapter

outlines the research design; selection of participants and research sites; and data

collection and analysis procedures.

Research Design

As Creswell and Poth (2018) suggested, case study research should include "in-

depth data collection involving multiple sources of information" (p. 96). Interviews were

used as the tool for data collection. Each of the individuals that participated in this study

shared the experience of recently creating or renovating a learning center at their

institution; thus, the participants have gone through the process of incorporating specific

physical aspects within the learning center design. A multisite case study allows the

researcher to investigate "clearly identifiable cases with boundaries and seeks to provide

an in-depth understanding of the cases or a comparison of several cases" (Creswell &
Poth, 2018, p. 100).

The learning center administrators had different perspectives on the research-
based practices used. The sites chosen, though part of the same college system, allowed
for comparison between different community population areas (i.e., urban, suburban,
rural) and student populations to determine if there were similarities or differences
between the themes. A qualitative case study analysis provides a rich data set and greater
insight than a quantitative study. The use of thick description in describing each site
helped discover nuances between the different sites that may be missed otherwise.
Therefore, a multisite case study approach was selected because I aimed to probe "the
particularity and complexity of a single case, coming to understand its activity within
important circumstances" (Stake, 1995, p. xi).

Research Site and Participant Selection

A case study analysis should not include more than four or five cases within a
study (Yin, 2014). This study included three 2-year, public colleges, which are part of
the same college system in the Midwest and have created or remodeled their learning
center within the last seven years. The college system included 16 individual colleges
across the state with a total student enrollment of approximately 308,000 in Fiscal Year
2019. These colleges were in either urban, suburban, or rural settings. There were
several reported data about the students served by the system. About 49% of the student
population were female, approximately 21% reported being a race other than white or not
reported, and the average age of the student population taking all credit types was
approximately 32. Approximately 15% of students were listed as academically

disadvantaged (e.g., enrolled in basic education coursework or do not meet the criteria to be successful in a program). Almost 19% of the student population was considered economically disadvantaged (e.g., at or below the federal poverty level or receive need-based financial assistance). Just under 3% of students were of limited English proficiency. The college system also served students who were incarcerated; about 2% of the student population fall into this category. Just over 11% of the student population was enrolled in basic skills courses (i.e., courses that are at or below the high school level, including English Language Learning coursework). Also, the system offered certificate, technical diploma, transfer, and associate degree programs.

Criterion sampling was applied in selecting the learning centers to be included in the study. Each learning center was selected based on the following four criteria: (a) the institution must have been an institution within the same college system, (b) the learning center must have been constructed or remodeled within the last seven years, (c) the current learning center administrator must have been directly involved in the design and development of the new or remodeled learning center, and (d) my own institution could not be included in this study. As stated earlier, this study included personal interviews with the learning center administrators and, at most, two other members of the remodel or design committee. The specific institutions were located across the state in a variety of settings (e.g., affluent suburb, rural, urban). Table 1 shows the total student enrollments in Fiscal Year 2019 at each institution included in the study:

Table 1

Total Student Enrollments for Sites Included in the Study

Institution	Total Student Enrollment
College #1	27,984
College #2	20,146
College #3	33,360

Note. Total student enrollment was reported as headcount and not full-time equivalent (FTE) students.

Data Collection

I obtained Institutional Review Board (IRB) approvals from each of the participant colleges and Sam Houston State University (SHSU) prior to conducting this study. Data were collected through structured interviews. Stake (1995) believed the researcher must know "what leads to significant understanding, recognizing good sources of data, and consciously and unconsciously testing out the veracity of their eyes and robustness of their interpretations. It requires sensitivity and skepticism" (p. 50). Further, he stressed the researcher needs a set of sharpened questions to help "structure the observation, interviews, and document review" (p. 20).

Spradley (1979) provided a list of possible types of open-ended questions for an interview to draw rich and detailed information from the participants, and Kvale (1996) included seven stages of an interview. This study combined both approaches in the creation of the interview protocol and collection of data. The interview protocol (see Appendix A) was created based upon the research questions which guided this study, and the descriptive questions guidance from Spradley (1979). The specific questions were

based on the personal experience of the researcher, discussions with other learning center administrators across the United States of America, and the information gathered from the College Reading and Learning Association (CRLA) and the National College Learning Center Association (NCLCA).

Yin (2014) recommended pilot testing an interview protocol with selected cases based on being convenient, accessible, and located geographically nearby. The pilot test also helped the researcher ensure the questions were relevant and defined the method of data collection. The interview protocol was pretested with two learning center administrators at 2-year colleges within the same state that did not meet the criteria for inclusion. Whether those administrators were considering constructing or remodeling new learning centers, or if the construction project falls outside the scope of this study, it was helpful to have other colleagues review the interview protocol and provide suggestions for improvement.

The administrators at the institutions meeting the sampling criteria were contacted via email. After agreeing to participate in the study, the administrators signed a consent form. Once consent was provided, each candidate was asked to complete at least one interview and, if needed, a follow-up interview. However, no follow-up interviews were needed. Due to the global pandemic, the interviews were held via phone or videoconferencing. The participant selected the interview time to ensure maximum flexibility for participation. The interviews were no longer than 60 minutes in length. The length depended on the depth of the responses from the participants. Each interview was recorded on two different devices (i.e., a digital recorder and smartphone) ensuring a

back-up recording in case one failed. Recorded interviews were stored on a password-protected computer kept at my home.

Once I completed the transcription of each interview, participants were provided their own interview transcript to review for accuracy. This process afforded the participant an opportunity to review statements made, provide more information, if needed, and edit any statements, as necessary. No substantive changes to the transcripts were requested by the participants.

Data Analysis

Creswell and Poth (2018) indicated "[d]ata analysis is not off-the-shelf; rather, it is custom-built" (p. 185). They were referring to the data analysis spiral, which I used, along with Yin's (2014) cross-case analysis, to analyze the data. The data analysis spiral began with managing and organizing the data to ensure ease of use, security, and whether the data were to be analyzed via software, by hand, or a combination of the two. I recorded and transcribed the interviews. Once all the transcriptions were completed, I imported the full transcripts into Dedoose, a data analysis software, to complete the *in vivo* coding process. I conducted a within-case analysis by coding the transcriptions, by institution, using first and second cycle coding (Saldaña, 2016). The first cycle of coding allowed the researcher to determine initial ideas and create codes, or meaningful units. In the second cycle of coding, I took the codes and worked to determine categories, or larger units of meaning. Both first and second cycles of coding took multiple rounds of analysis. Analytic memo writing was a crucial component of the data analysis as it allowed me to reflect on the "coding process and code choices; how the process of inquiry [was] taking shape; and the emergent patterns, categories, and subcategories,

themes, and concepts" (Saldaña, 2016, p. 44) of the data. These memos were typed and stored within the Dedoose software during the data analysis process. Further, Creswell and Poth (2018) suggested using thick description to provide context and description for each case.

Using the results from the within-case theme analysis, a cross-case analysis was performed to determine similarities and differences between each case. The cross-case analysis showed similar themes which emerged through each within-case analysis. Throughout the analysis, reference to the research questions supported focusing the analysis of the data and determining the appropriate visual representation. This led to the creation of "naturalistic generalizations…that people can learn from the case for themselves, apply learnings to a population of cases, or transfer them to another similar context" (Creswell & Poth, 2018, p. 206).

Validation and Trustworthiness

Stake (1995) provided guidelines to ensure validation and trustworthiness in a case study. The researcher must focus on particularizing the individual cases before looking for patterns across the cases. The use of thick description provides the reader an experience akin to being in the moment. Finally, the researcher should draw parallels of the actual experience so naturally occurring generalizations help focus understanding. Each one of these methods (i.e., particularization, thick description, multisite case study, triangulation, member checking, and researcher reflexivity) was used in this study.

Merriam (1998) also agreed with using thick description and multisite case studies to help the *external validity* and trustworthiness of the study. A thick description provides the reader with the detailed description of the participants or setting being

studied (Creswell & Poth, 2018). Creswell and Poth (2018) believed it was necessary to tie general themes with interconnecting details, and having the researcher take time soon after collecting the data to add further specifics supporting data analysis. Stake (1995) defined thick description as the specific insights of the participants. He also considered the role of the researcher's narrative was to help the reader build empathy with the participants.

Triangulation of data was highlighted by Merriam (1998), Stake (1995), and Yin (2014). Triangulation refers to the work of ensuring what is claimed is, in fact, accurate. During the interviews, participants used their memory to recollect actions and decisions which occurred over one year ago. The researcher used the participant interview transcriptions to determine the validity of statements made. Yin (2014) averred case studies should use more than one type of evidence, and those that do are viewed to be of higher quality. This is because the researcher can provide a more in-depth analysis when using multiple sources. Also, he discussed the concept of *converging lines of inquiry*— where different pieces of evidence point to the same results. Yin (2014) argued triangulation led to *construct validity*, which ensures the methods chosen are correct for the topic studied.

Because I did not seek to ascertain causal relationships, *internal validity* is not necessarily a concern (Yin, 2014). Nevertheless, ensuring any patterns found were described based on research findings, predicted patterns, and rival explanations helped ensure internal validity was established. Merriam (1998) believed triangulation itself ensured the *internal validity* of the study. She also expressed the need to use member checking and disclosing of researcher bias for assurance of internal validity. Member

checking is the act of having the participant provide input regarding the results of the study to determine whether the findings were accurate (Merriam, 1998). Stake (1995) believed member checking to be invaluable to case study research, and researchers should be asking participants to review drafts to ensure their own experiences are captured correctly. Using Lincoln and Guba's (1985) description of formal and informal member checking, I conducted informal member checking in this study.

Creswell and Poth (2018) described researcher reflexivity as the positioning of the researcher by conveying "their background…, how it informs their interpretation of the information in a study, and what they have to gain from the study" (p. 44). The researcher should provide their background and experiences to the reader to be transparent about the point of view taken during the study. The authors listed several questions for a researcher to consider in determining positionality. Qualitative research cannot be separated from the person conducting the study; thus, reflexivity ensures the researcher can bracket past experiences, biases, and background. In the next section, I provide greater detail regarding my own reflexivity.

Role of the Researcher

I pursued this area of study because of my own professional background. When I was hired to be the learning center administrator at my current institution, I had no prior history regarding learning centers (other than as a peer tutor) or in facility planning. Yet, I was tasked with leading the planning of the learning center remodel project. The first thing I started to do was look for as much information regarding learning center best practices, especially when it came to the physical aspects of the environment. I realized the area which would house the new learning center had not been touched since its

construction in 1996. Temple (2008) considered the physical aspects of learning centers an under-researched topic. More research existed for learning spaces, such as libraries, than for learning centers.

I wanted this research to begin a trend to advocate for and help illuminate the needs of 2-year institutions. A case study can only describe the specific aspects of those institutions studied. As a pragmatist, defined by Creswell and Poth (2018) as "focus[ing] on the outcomes of the research—the actions, situations, and consequences of inquiry— rather than the antecedent conditions" (p. 26), my attention as a researcher was on determining what worked and how the applications of the solution could solve real-world problems. There was less of a focus on the methods of research and more on "the problem being studied and the questions asked about this problem" (Creswell & Poth, 2018, p. 27). From 2014 through 2018, I tried to build a learning center at my institution and wanted to see positive results; however, I have enough perspective to allow the story to be told by those who have lived the experiences within the learning assistance areas.

Reflexivity is an important concept in qualitative studies, and my goal was to minimize my own bias in this research. Reflexivity requires the researcher to "stand outside the research process and critically reflect on that process" (O'Leary, 2004, p. 11). There are two ways in which I practiced reflexivity. One way was the creation of a reflexive journal. This type of journal was a personal diary which detailed the specifics of why decisions were made, logistics of the research, and writing down my feelings and perceptions as the research occurred.

Another practice used for reflexivity was to call out my own biases and perceptions in the narrative. Epoché, or bracketing, is the process used to minimize "the

inevitable transmission of…preconceptions" (Tufford & Newman, 2010, p. 81) and better understand the experiences of the participants. The researchers also maintained bracketing is critical because it allows the researcher to gain a deeper level of consideration at all stages of the research process. Creswell and Poth (2018) acknowledged the challenge a researcher has in bracketing personal experiences because researchers are required to interpret data, which will always integrate the researcher's preconceptions. Knowing bracketing will be difficult, I focused on the advice of Creswell and Poth (2018)—to decide whether I would incorporate my own understanding of the topic without bias or influence. This was described as checking personal understanding to invite curiosity.

My beliefs were grounded in the belief that one is forever changed by the tiniest interactions with others. A personal perspective is valuable and important, but there are three sides to any story—yours, mine, and the truth. Yet *truth* cannot be known because it requires perfection, and perfection is a goal rather than a destination. Perception cannot distort facts. When change happens in an organization, it is not because the organization changed. Rather, change happens because the individual's world view has been changed. In the end, though, the research and evaluation of real-world problems increases understanding of the world in which we live.

Summary of Chapter III

This chapter included a detailed description of the research design stages. The research design, research site, participant selection, data collection procedures, and data analysis were presented. The researcher also considered how to validate and ensure trustworthiness of the data collection procedures, as well as giving thought to the role of

the researcher in a qualitative, multi-site case study design. This consideration was vital

to ensuring the credibility and reliability of the study.

CHAPTER IV

Findings

The purpose of this study was to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. Three directors of learning centers, three individuals who work in the facilities department, one individual from the information technology (IT) department, and one mid-level leader were interviewed regarding their experiences with their learning center remodel project. Verbatim transcripts were created from the verbal interviews and analyzed using Saldaña's (2016) first and second cycle coding. Several themes emerged from the analysis, which are presented in this chapter.

Findings for Research Question One

The purpose of the first research question was to identify the process learning center administrators used in the creation or remodeling of a learning center space at select 2-year colleges. Participants from three institutions were asked to provide their unique perspective regarding all aspects of the project. After multiple rounds of first and second cycle coding, a within-case analysis was completed for each institution. Afterwards, a cross-case analysis was conducted to determine the emergent themes, sub-themes, and codes. Though there were some differences in the relevant codes found during each within-case analysis, the emergent themes and sub-themes were similar. The themes and sub-themes for the first research question are presented in Table 2.

Table 2

Emergent Themes and Sub-Themes for Research Question One

Emergent Themes	College #1 Sub-themes	College #2 Sub-themes	College #3 Sub-themes
Needs assessment	Pre-planning	Pre-planning	Pre-planning
	Mission	Mission	Mission
	Combining services	Combining services	Combining services
		New leadership	New leadership
Coalition	Stakeholder input	Stakeholder input	Stakeholder input
	Challenges	Challenges	Challenges
Implementation	Post-assessment	Post-assessment	Post-assessment
	Security	Security	
	Utilization	Utilization	Utilization
Additional Changes			

Needs assessment. The first theme, *needs assessment*, emerged from the participants' responses regarding the process for determining the first steps taken to create or remodel their learning centers. All participants described a process for establishing the purpose and scope of the learning center project. Though they shared unique ways of moving forward at each institution, the emergent subthemes were very similar. Those subthemes included *pre-planning*, *mission*, *combining services*, and *new leadership*.

Pre-planning. At one institution, the project began by collecting internal data about the student services areas to possibly be combined in the new learning center. A participant from College #2 stated the data were based on information from two years ago. At that time, the English as a Second Language (ESL) population was not utilizing

the learning center as much. Because of this, the learning center director was pushed to recognize the need for a smaller space, though the change caused an issue once the project was completed. Also, the internal data gathered was coupled with research done by the project team. The learning center director noted, "Before we even started the design process, we did tour quite a few places." Of those places toured, the director specifically mentioned one public and two private, 4-year universities, and one institution also included in this study. He also revealed there was no research done on best practices prior to starting the learning center project.

Participants at two institutions described the amount of time they had to prepare for this project. At College #2, the main project team met for three years to come up with the learning center project plan. Their plan encompassed a main project team and many different sub-teams, which met numerous times over those three years. At College #3, the learning center project was part of a much larger facilities referendum at the institution. This shift was beneficial for the learning center director, allowing people the "opportunity to really start to think about [the learning center project]." Another participant remembered this project well and shared the work on the learning center project was done early "because our planning…and construction process that we have to go through. So, it was probably…six years in the making."

Some of the pre-planning work at two institutions was centered around modernizing the learning center space. A representative from College #3 remembered when students had come to him about space concerns.

Students had come to us asking or requesting—demanding—that the college address a number of space needs. They were sitting on the floor in the hallways.

The library was overcrowded. They had no place to gather. …They felt things were old, dated, and so on.

This interaction between the participant and the students was the impetus for the commissioning of a student-led task force. "One of the areas that came out [of the task force] was the issue of better space within the…academic support envelope, around tutoring in particular," said the same participant. Once the task force had completed their work, a sub-team of instructors was created and charged to determine the type of space which would engender, and be conducive to, student success. Like College #2, the project team at College #3 explored best practices used within the Midwest, as well as conducted site visits of other institutions. Institutions specifically mentioned by this participant were a public, 2-year college within the Midwest and a public, 4-year university outside of the Midwest region. Also, listening sessions amongst the faculty and students were conducted to determine how students learned and how they supported their learning through the academic supports provided at the institution.

The College #3 learning center director mentioned a team, including her, would go to learning center conferences and attend webinars to better understand what needs should be considered in this type of project. Some of the sessions attended by the team included a focus on technology. The administrator representative would advise any learning center leader to consider, "What is the profile of the student that was coming through the center?" Determining that student profile, he further stressed, can provide insight into how to best serve the student population at the institution.

The participants from College #1 also were looking to modernize their space. The learning center director, who started as the library director, noted, "When I arrived here

[in 1999], our library was the same as it was in 1972…. It had a high school 70s vibe. The furniture was all the same." In 2002, she was permitted to update many aspects of the library, such as furniture, shelving, and the addition of a computer lab. Then, over a decade later, a facilities referendum to construct new buildings was sought out, which would include a new Student Success Center. At the time, this new center was to be attached to the library. When she was excitedly asked about being able to make some changes to the space, her curt response was, "Well, we like our library just the way it is, thank you very much." However, also being a researcher by background, she began to review the literature surrounding libraries, especially larger libraries, and noted, "At that time, there was a lot of talk about a student success center model where you would actually have your academic coaching right inside your library. You'd be very closely connected with your services for students…." Quickly, she realized her recently remodeled library was not as modern as she had originally believed. When the learning center director was asked to participate in the referendum project and have the library be an integral part, she agreed due to the research she had conducted and her belief the space was not meeting student needs. She also said, jokingly, "That, and the fact that the carpeting was ugly made us say okay." Plus, it allowed her to think about what the new space could become.

> This project was different in that walls were going to be knocked down, our hallway was going to be moved to the side of the building instead of the middle…. So, we were able to look at new shapes of what our library could be and look at what could live inside the library…. Really, when you take a hallway and you move it to a different part of the building, everything changes. And that

was freeing…. We can do architecturally interesting things and improve the services.

Mission. As reported by a participant at College #3, a faculty member shared during a conversation what became questions posed at each institution, though not necessarily explicitly—"What do we want? What is the purpose of this space? And how does it work?" These questions led the learning center project teams to determine the mission, which was another component of the needs assessment work. At all three institutions, comments by the participants centered on the creation of a vision for learning assistance, the concept of a "one-stop shop" for academic supports, and how to keep students on campus. College #3 also included a sub-theme of community in the creation of their mission. None of the college representatives denoted a specific mission statement for the project. Nevertheless, there was a definite focus for the work to be done at each institution.

For College #1, one of the participants noted two important items for the project—the learning center would become a focal point of the entire institution, as well as "the flagship of where students can go to get good information." The learning center director also viewed the purpose of the project as an opportunity "to really improve our space so that it felt very connected with our academic coaching." These three concepts would assist students in locating learning assistance support to meet their needs. Added to this, the participant noted a collaborative, open concept design was a change identified immediately by the project team. This was due to student survey responses received by the learning center director and her team noticing students were embracing collaboration. She also mentioned the architect would lead sessions with the project team to help in

designing the space and consider what feeling the students would have in the space, stating

> Some of the areas we wanted a very exciting, welcoming feeling. Other areas, like the library, we wanted to have it feel like a quiet space [that is] very professional, very [technology] heavy. Very, very much that the students own that space.

> For the participants at College #2, the question, "What is the new way of [creating] learning centers" was pondered by the project team. A participant who worked in facilities described spaces for learning assistance were dispersed throughout the institution. In the new space, the project team wanted "this open, welcoming environment where students would want to participate." This quickly described process became more involved once the conversation shifted to more specific items in response to the question posed.

> College #3 also considered how to build their vision for a learning center by building in collaborative space, increasing the amount of technology available, and having students own the learning center space. Regarding technology, College #3 was unique in that the library also served as the technology help desk for students, which included software, hardware, and learning management system support. Because of this, the focus on technology was vital to ensuring a continuation of services in the new space. This was the only college where a participant confirmed a mission statement was created, sharing "[The project team was] doing some of that visioning [and they did] develop a mission statement before any work started. I don't have that, so I apologize."

One key concept related to the vision for College #3 was the concept of community. "Community and family…were important words to us," shared one participant. This participant discussed an item heard throughout all the surveys and focus groups conducted for the project which cemented this idea of community and family being important. "Individuals always commented on their learning as they were growing up [being] around the kitchen table at home. Brothers, sisters, [or parents] helping them learn." Another participant commented the importance of the kitchen table has carried over to other projects at the institution ever since. No matter what ended up being included or how it was laid out physically, it required the ability for students to gather around a table, pull chairs together to create pairs or small groups, or supplemental spaces where groups could gather. The learning center director also chimed in during the interview regarding the building of community and family given the current global pandemic.

> I know it sound hokey and it might sound old school today, but I still believe in it, …and more today based on what we're going through, is that sense of community-building and that sense of comfort and knowing there's this place to go. And I think it really helps [all] students.

To provide students an opportunity to own the space and collaborate with their peers would require keeping students on campus. Each institution described, in one way or another, what a participant from College #3 alluded to—"It was really about having students come to our campus and stay there." Although participants at two colleges stated the purpose was decided prior to their involvement, the rest of the participants did share the idea of creating one space where all academic supports were provided. "What

is the one-stop shop mentality," asked the learning center director from College #2. At each institution, participants were centered around finding ways to keep students on campus. Before the learning center project began, students would use one academic resource space and leave rather than go to multiple locations. At College #3, participants noted students needed access to technology along with academic support as the current space was the largest computer lab on campus. The focus at College #1 was on a whole building to house academic support, which required the co-location of student services within that building. Ensuring similar services were on the same floor would support students finding what they needed effortlessly. The ease of finding services would also increase student usage. One participant from College #3 stated, "The goal…was to create a space that students would use because…if they're not using it, then what did you [accomplish]?"

Combining services. All participants underscored the necessity of considering what services should be combined in creating the "one-stop shop" for learning assistance. At each institution, the services students would need were described as "scattered," "disjointed," or "on multiple levels." The learning center director (College #3) was excited for the project and stated, "The opportunity arose [to combine disjointed services]." Nevertheless, there was still great discussion about which services to allow into the project. She continued by sharing, "We really went back and forth about not combining this space with a zillion different things and to really focus on what happens in the learning centers, what happens with tutoring, what happens in the library, and that type of thing."

Each institution finally determined those services which fit within the mission of their project and proceeded to start creating draft floor plans. College #1 had the smallest list of services to be combined within the Student Success Center, which included "course support, General Education Diploma (GED) instruction, library, math center, peer tutoring, and writing center." Except for GED instruction, College #2 had the exact same list of services, and included "English as a Second Language support and Reading Center." For College #3, the list of areas to be combined included all the areas noted by College #1 adding "English as a Second Language support, Reading Center, and Science Center." College #3, though, was the only institution for which the project team decided to separate the library from the other services. As the learning center director noted, "We felt [the library and all the other services] really deserve to have their own space. And I don't regret that to this day. I know many people have downsized the library to stick them in the Learning Center."

Once the determination of which areas were to be included in the new space, the project teams began the process of fitting them into the floor plans. For College #1, the architect would bring forward a draft floor plan design to start conversation amongst the project team. The IT representative expressed the architect would use "bubble diagramming" to help the team decide how to fit the previously separate locations into the new space based on the conversations. College #2 was very explicit in determining the effect of the scattered services on students to support the new configuration using "step mapping." As the learning center director described:

> We had all these different scenarios, and this map, and how may steps this person
> will have to take, and how much it broke up their day, and how many students we

lost…. One [board of directors member said] 'This is nothing. We don't need to change.' And then we gave them a survey of students [stating] 'I'm not going there. I'm not going to walk all the way across campus when I got to be at work in 20 minutes.'"

The participants from all three institutions also described intangible, or perceived, barriers either students, staff, or administration were concerned about. They described students having a negative perception associated with seeking out academic support. The comfort of students in seeking out services was paramount at College #1. The learning center at College #2 mainly had students with disabilities seeking support. Other students would walk in and quickly leave because they did not have a disability and did not believe they belonged in the space. One participant (College #3) shared, "We wanted a blended approach, where it didn't matter who you were and there was no way of identifying that, and that all students would help all students."

Though participants at all three institutions believed they were going to build a space that would be comfortable for students, the responses from representatives from two institutions showed differences in student wants and needs. The learning center director for College #1 revealed, "[Students] wanted the design to be that no one would know if they were going to academic coaching. They would just think they were going to the library. So, that made it easy to decide that the library had to be the first thing they walked into." Yet, a different participant (College #3) shared students felt the space needed to be prominent. "The other thing that resonated was…they said, 'Don't tuck this back somewhere where it will be lost. It needs to be at the forefront and seen. Otherwise, students won't use it.'"

The decision to move the hallway within the learning center at College #1 was critical to the layout of the space. The learning center director mentioned how the project team struggled to determine how people could maneuver through the space seamlessly. "It was a very awkward shape at first, so it's hard to determine how we…get it to be a nice, cohesive spot for the three services that went in." Once the decision to move the hallway was made, the team was relieved as they now had a workable layout. Finally having a visual layout helped move the project forward.

New leadership. At two institutions, leadership changes occurred either before or during the learning center project, which impacted the pre-planning process. A new president was hired at College #3 just as the discussions regarding the new learning center project were beginning. The change at the presidential level caused the project to grow, as well as the scope of the work of one participant. The participant explained he was able to have conversations with the new president, and those discussions allowed him to move into higher levels of administration. He shared, "I moved from just the Director of Student Life to a Dean of Student Services and…then became the Dean of this Alternative Learning Division." The Alternative Learning Division was an area of the college responsible for GED, Adult Basic Education, and developmental education courses. Many of these courses were contained in the library, which he began to oversee as part of his new responsibilities.

At College #2, the learning center director shared the leadership changes meant there were people with limited administrative experience leading the learning center project. He was in his first year when the project was begun. The reporting structure of the learning center staff shifted from Academic Affairs to Student Affairs. Furthermore,

the director of the library and the Vice President of Student Services were new to their positions as well. The director expressed feeling overwhelmed by the project when he said, "So three of us were brand new [and] you can imagine the amount of decisions you have to make [with this type of project]."

Coalition. The second emergent theme was coalition. There were two subthemes which arose from the participant interviews: *stakeholder input* and *challenges*. At each institution, the participants discussed building a coalition of individuals who would be impacted by the learning center project to ensure their voices were heard from the beginning.

Stakeholder input. When participants were asked about the stakeholders who were involved in the project, each mentioned the input of the administration at the college. The administrators involved included the managers of the following: each student support area to be combined (e.g., tutoring center, bookstore, library), IT, and facilities. Deans and upper management (e.g., vice president, president) were included as well. In addition, through the director of facilities, there were external individuals who were involved but were not actual members of college administration (e.g., furniture vendors, architects).

A participant (College #3) described that, due to his relationship with the new president, he "was able to be in a position with the president to really say, 'No. This is a non-negotiable for me'" when issues arose. The participant understood how important it was to be "able to get the ear of the President and the Board." Another participant at the same college described the president as the person making the final decision; however, she stated, "…all stakeholders were included at those very early stages. Then, it became

even more inclusive as things [evolved]." A representative from College #1 mentioned

"it was always a dean that represented every department" on the project team, as well as a

member of the Executive Leadership Team (ELT), which would be individuals at the

vice-presidential level and above. It was important to have an ELT member on the team

to secure buy-in from the other senior leaders and ensure the process would proceed

smoothly. Middle-management was represented on the project team at College #2, but

one participant specifically called out the Director of Facilities as "a huge part of [the

project]. I'd say he was one of the main leaders."

Though each institution referenced the involvement of the College's Board of

Directors, only College #2 described how important the input of the board members was

to the project. One of their board members was also a local P-12 school district

superintendent. The board member had created a learning center within the high school

and stated, "We're doing it. I am all about this. It works for our school district." Also,

the participant had created a step map—actual scenarios for the upper administration to

walk through to help visualize the student experience. It included "how many steps this

person will have to take" between different student services "and how much it broke up

their day, and how many students we lost." After this information was presented to the

board, the participant stated a different board member commented, "Well, I never thought

of it that way." These board members helped solidify the support of the Board of

Directors.

Discussions at two institutions included obtaining input from the community. A

representative from College #1 mentioned "if there are businesses that wanted to give

their input [to the project], we held a community meeting as well." Though less specifics

were provided, one participant from College #3 mentioned community involvement as the remodel was part of a larger referendum project at the institution. Within the state, referenda are placed on the ballot for the electors to pass or fail. Part of the process included holding listening sessions with the community.

Faculty and staff were also brought forward by all the participants as integral collaborators to the remodel project. The category of faculty and staff included content-area faculty, learning center staff (including support personnel in reading, writing, mathematics, and developmental education), library personnel, IT representatives, and facilities staff (sometimes referred to as capital project team members). College #2 included members of the security team, as well as staff from the career services area. For College #1, the involvement of IT staff was essential due to wanting to become "very tech heavy" within the new space.

Participants from College #1 described a very detailed information-gathering process to obtain faculty and staff feedback. As ideas and designs were changing, the main project team members would go back to their respective department colleagues to discuss new changes being proposed. At this time, the staff members would provide their input to the project team representatives to discuss with the larger team. One representative stated "the thing we're most worried about is that we'd be making plans and then not bringing everyone else along. Not getting [their] input."

In some cases, the input from the faculty and staff was requested prior to the creation of a learning center project team. For example, a representative from College #3 noted the input from faculty and staff was sought out after the vice president and dean noticed the disjointed nature of learning assistance at the institution. Another

representative clarified that a small group of faculty were charged with "starting to understand what would be needed in a [learning center] space." This group was referred to as "the exploration team." Some of the efforts of this team led to conducting focus groups, as well as surveys of their faculty and staff colleagues.

Student collaboration was also part of the process, which took different forms at each institution. One participant (College #1) stated students from the different divisions on campus would be brought together to have a question-and-answer session to gather input. Another participant discussed how important the learning center director was in conducting student satisfaction surveys throughout the process, which helped in making student-centered decisions. As he stated, "The opinions of the students are always reflected in pretty much anything the college does. It's just the method of how we gather that information." The learning center director did clarify the students were involved in the general visioning of the project, but that occurred prior to her involvement. However, as she also oversaw the library, she gathered student input in other ways. "Hey! Changes are coming to the library" would show up on whiteboards to allow students to write what they would want to see in the new space. Surveys were sent out to students as well. The director of the learning center was a little dismayed by the input gathered by the surveys, believing the feedback was not visionary and maintained the status quo. However, no students served on the main project team.

Not only was student input and insight gathered at College #2—they had students participating on the main project team. These students were enrolled in the interior design program at the institution. Construction or remodel projects were used by faculty as a practicum or capstone project for students. The participants also noted student

representatives were on each sub-team. "Our Student Government Association (SGA) also played a big role in this," said one of the participants. If a student needed to leave a project team, for whatever reason, new students were recruited through the SGA. This deep involvement of SGA came about due to student surveys as well, receiving almost 500 student responses. The participant continued, "The [SGA] president was very vocal. She was great. She would say, 'No, this is not what the survey said. We don't want this. This is for students, not for you, faculty.'"

One of the participants from College #3 was a leader who was committed to obtaining student participation and feedback. Starting his career in student affairs, he stated his perspective of student input came from "what my professional upbringing was." He was adamant to include the student voice and "tried to make sure that we heard the voice of students." From the moment students had come to him (as Director of Student Life at the time) regarding space concerns, he created a task force primarily led by students to specifically review the concerns raised. The participant also ensured students were part of the project team. Listening sessions, focus groups, and surveys were conducted. The main question, as another participant shared, was "What do you want, students, and what would you like to see in that space?" The learning center director would provide updates to the Student Senate on the project and obtain feedback from the group.

Challenges. Participants described the challenges they encountered during the project. All three learning center director participants shared their own perspective on the challenges. At College #2, the director lamented about the territorial nature of the individuals on the project team, though they stayed professional throughout the project.

At College #1, the director had a similar experience as College #2 when she described the determination of service locations as "an unfun time. It was a land grab! It was very tense!" Representatives at two institutions specifically commented on the project team size. One representative (College #2) discussed how having a large team was valuable but "not in timing as much because, sometimes, larger groups take you longer to get to the final answer. But the product, I think, was pretty good because we had such a large, diverse group…." An individual from College #3 also agreed the result was positive, although she believed "it was tricky because there were a lot of stakeholders. …[E]verybody was skeptical and you were throwing a lot of new people together, and I think we did the best we could."

The previous quote foreshadowed what all learning center director representatives shared—whether working with a large or small group, there was a dichotomy regarding teamwork and partnership. At College #2, the director expressed the final product was positive because of "including all the people we did and having those hard conversations. There wasn't many yes people, which is great." One representative (College #3) discussed getting the architect on the same page and explaining how important the voice of the students was to the project However, once the participant found out there was a shared, social connection between him and the architect, it helped "because he and I got on the same page real quick and, then, he told his people…this is the way it's going to be." The learning center director (College #3) enjoyed the challenge of working with a larger group; the biggest challenge was if someone in upper administration made dramatic changes to something for which agreement of the project team had been achieved. She declared, "There were a lot of changes made along the way by other

people, but we were able to…fight for our cause…. It took a while, and it took a lot of feedback that took a lot of iterations."

From participant's responses, it seemed decisions regarding how much square footage an area would be allowed caused the most dysfunction for the project teams. At College #3, the decision was to separate the library from the learning center, which took "a little convincing of the upper echelon that [the library and learning center] really deserve to have their own space. And I don't regret that to this day." However, even convincing her own staff was difficult. As the project progressed, the library staff would become frustrated because the feeling was the learning center would compete for space and supporting students. Though there were times the director felt the staff had good points of contention, she continually asked her staff, "[H]ow do you think differently? How do you think out of the box? How [do you] to break down…the silos that exist?"

The sketches at College #1 shifted multiple times due to each project team participant wanting to grab as much space as possible for their own area. These actions started to strain relationships between the project team members. There was arguing between the different area leaders, and the director did feel bad pushing as hard as she did to maintain focus on what students wanted. Having a scope for the project, as well as always returning to the input from students, helped the project team make better decisions.

Within College #2, faculty and staff wanted to continue services as they have existed without change. The conversations at the project team level would be tense, and each project team member would come into the conversation with their own sketch of how the new space should encompass each student service area. Finally, the Vice

President of Student Services stepped into the conversation and used a process called

"Design Thinking." The vice president was well-versed in this process, and it brought

the team together to focus on specific questions. Project team members would visit areas

they did not work in daily and ask those staff members, "If you had a learning space,

what would it be? What would you want in the learning space?" Gathering that data and

bringing it back to the project team supported their move forward in designing the new

space.

As described above, challenges and roadblocks were encountered at each

institution due to the size of the project team, as well as each area wanting to change the

focus of the project to support why their area should receive a greater apportionment of

space and place. Nevertheless, the representatives specifically called out the support they

received from their supervisors as a necessary component of success. Specifically, the

director (College #2) shared, "That was the nicest thing with all management. It didn't

matter what level you're at. It was what students wanted. [The upper administration] got

it." The director (College #1) was concerned because of all the arguing she was doing,

afraid she was being too oppositional. However, both her vice president and dean told

her to push as hard as she needed to accomplish the goals for the project. "That

permission was very freeing. I felt like I had people backing me up" even when she felt

she was constantly repeating the goals of the project to the project team. The director at

College #3 started questioning her knowledge of each area to be combined and, therefore,

her ability to lead the project to completion. Her supervisor would reminder her to think

about the similarities between the services, that the services may just approach supporting

student differently. She would return to that advice when conversations became difficult.

She also shared a piece of advice for future learning center administrators looking to start a remodel project:

> I would just probably warn them that putting a lot of stakeholders together is not necessarily going to be easy, but it's going to make you better and keep that main goal out there that we are all serving the students to be successful…. That was hard. I knew it was going to be a challenge, but it was harder than I thought, to be honest with you.

Implementation. The third theme was *implementation*. The subthemes included in this theme were *post-assessment*, *security*, and *utilization*. Having completed the project, the team looked to determine whether the new learning center met the goals and purpose they decided were important to student success.

Post-assessment. The participants engaged in various post-assessment activities, although none of them were formal. The learning center director at College #1 noted her process as being "intentionally anecdotal," which she described as requesting staff to focus their observation on certain areas. After asking her staff if they have noticed more people in a certain area, she would then ask them to conduct intentional observations of student use patterns within areas and report back to her in two weeks. Sometimes, the staff were requested to ask students for their candid thoughts and feelings. The learning center director was very clear the staff cannot always assume to know what students think.

Students were asked for their insight at College #1 via surveys. There is one open-ended question in the survey for students to comment on the environment of the space, which the learning center director felt provided great information. The facilities

representative from College #3 mentioned the use of surveys by the learning center

director as well. The surveys were sent via email to students after they have visited the

center, which asked them about their satisfaction within the space and recommendations

for improvement. Additionally, presentations were done to the Student Senate and

feedback was gathered at the same time. Moreover, an analysis after one year was

conducted by asking for input from all stakeholders.

The learning center director (College #2) shared attendance is the predominant

method for post-assessment. Additionally, staff measured the usage of specific furniture,

computers, the coffee shop, as well as other measures. These data were shared

throughout the space using infographics. The director at College #3 also employed usage

data to determine how successful the project was in achieving the stated goals and

mission. Participants at two different institutions did not know how data was collected

for post-assessment. A participant from College #1 noted the great work by the learning

center director in gathering metrics on usage. However, he felt post-assessment is

something the institution does not do well. He shared

> I look at that from the perspective of being a project manager and my education in
>
> project management. We never do that well, and that always…makes my skin
>
> crawl a little bit…. Lessons learned, gathering the metrics of what we should
>
> have done. It's not always done well. That always can be an improvement.

This participant also had many different ideas for how to improve the data

collection, and felt those tools (e.g., software monitoring) are not leveraged due to the

potential of conflict with other staff based on the assessment result.

On the other hand, the learning center director (College #3) continued to find other ways to measure success. One way she found was analyzing how student attendance was tied to academic success by connecting student login data to student grades. The analysis was successful, and she could determine how many student visits can equate to a one-half letter grade increase with 95% certainty. As the learning center staff have become more comfortable analyzing data, they have now started to do a similar analysis and disaggregating by specific student populations (e.g., students of color).

Security. Theft of library materials was raised by the learning center directors at two institutions. "During that project planning, the library was dismissed early on our three main concerns," insisted the College #1 learning center director. The way she ensured security within the library services area was by having only one entrance to the area and installing a radio-frequency identification (RFID) self-checkout and security gate. Also, computers were installed in the hallway outside of the learning center, causing the learning center director to be concerned people would steal the computers. The facilities participant shared the security department on campus had no issues with having the computers in the hallway; however, security cameras were installed to ease the concerns of the learning center director.

At College #2, there were also concerns about security; however, multiple entrances to the learning center were added after the remodel was completed. The learning center director, who was not a librarian by training, did mention there were discussions about adding security gates at all entrances. The decision was made to install the existing library security gate in the back, corner entrance to the learning center due to the stealing of some expensive texts. The addition of security cameras throughout the

space helped deter theft. However, he also joked about the security gate in the back corner, "If it [does signal an alarm], it's one of our faculty who actually had a book." The hours of operation were an issue as different areas would close at different times. He remarked, "We close at 7:30 p.m. with our academic support. [The library] is open until 8:00 p.m. [The other areas] close at a certain time. We always want to say, 'Okay, we all close together.' Well, that didn't work." The installation of metal gates which closed off each area deterred any theft from those areas. Another security issue was brought forward by the staff in the Writing Center. Within the new Writing Center was a huddle, or study, room. The purpose of the huddle room was to allow students to be in a separate area for one-on-one editing of student written assignments. As shared by the learning center director, "We have all female writing instructors, and they got a little bit worried. I wouldn't say creeped out, but they're in the back corner." He quickly stated nothing ever happened in that area, but the staff did not feel comfortable in the corner.

Utilization. The post-assessment work was predominantly conducted at each institution to determine changes in usage after the project concluded. The space usage among students, faculty, and leadership increased over time. One participant at College #1 remarked, "We made it so easy for them to actually commit to stay on campus…. All the services being on one level made it easier just for the flow, as well as giving students…[the] latest technology." Another representative stated, "Well, the [learning center] areas really, really ramped up, and they're highly leveraged…. Students that are active in learning…can come down to that area…and it's not hard for them." A second participant commented on the student usage increasing because the space became observable from the hallways. She remarked, "People could see us in a way they

couldn't before…. It made it feel more like it's [the student's] space. It's their [learning center]." Although there was an increase in student usage after the completion of the learning center project, a participant did note a decrease in student full-time equivalency; however, external factors impacted the decrease (e.g., lower institutional enrollments, global pandemic).

A representative from College #2 noted the same concern at his institution, as well as across the country. Nevertheless, student usage still increased compared to before the learning center project. Another participant described leveraging the IT department to track which computers were being used, including computers checked out to students. The coffee shop would track the increase in usage over time due to it being moved inside the learning center. The learning center director mentioned his belief that student usage would increase by 20%, and shared that metric was surpassed within the first year.

A participant (College #3) mentioned the noticeable increase in student usage, which has been maintained over time. The learning center director served about 6,000 unique students and provided approximately 104,000 hours of tutoring support within the first year. Another participant described a third measure of success by stating, "The place was packed. And we had students in there even at two o'clock on a Friday! I don't have to tell you that doesn't happen [at the 2-year institutions] often." He also mentioned the learning center had not seen a drop off in usage even years after the learning center project was completed.

A participant from College #2 shared there was an increase in space utilization not only by students but by the senior leadership. "Our president comes through, our vice presidents come in and they'll have a meeting in there…. I'm really super excited that

they're visible in that space." There was an increase in the use of learning center space by faculty at College #3. The faculty must dedicate a few hours per week toward volunteer activities. "Many devoted those hours to the [learning center] and they just loved it…. I think that first year…we had 65 faculty volunteer," said a representative. One other participant noticed the faculty were paying attention to where the students were getting help. Once it was ascertained that the space was the learning center, faculty started being more present in the space by holding their office hours within the learning center.

Additional changes. Once the remodel project was concluded, and each of the participants described it as a success due to the increase in student usage, there was still more to be done. The learning center directors immediately sought out more feedback from external stakeholders to determine if there were any changes requested by students or staff. Participants at all three institutions shared the same feeling of accomplishment—no major changes were requested. At College #1, the follow-up surveys were sent out after one year. One participant exclaimed, "And nothing! We got nothing back at all! And we did this year after year." Similar comments were shared by participants at the other two colleges.

Though it seemed the external stakeholders were pleased with the result, there were varied requests from the internal stakeholders. The observations done at two institutions yielded noticeable issues requiring some adaptation. The facilities representative (College #1) shared the discomfort felt by learning center staff in two separate areas. As more technology was to be added within the space, construction issues did not allow all the computers requested to be added within the space right away. The

solution was to install them in the hallway outside the learning center. The learning

center director thought, "No one's going to want to study in the hallway!" Though

feeling bad the students would be inconvenienced, she decided to acquiesce to the

temporary installation of the computers in the hallway but wanted them moved as soon as

possible for security purposes. Both the learning center director and the facilities

representative were shocked at the result. The library director agreed this was the biggest

surprise of the whole project.

> They loved it so much that when half the computers came back in the library, they
>
> still use the computers in the hallway. So that was just eye opening. And, to this
>
> day, the computers that we put in the hallway are used more than anything…. I
>
> mean, the reach of the library is going through all the hallways around us….
>
> That's your more social computer space…. We just laugh about it now that we
>
> thought we knew what students wanted. And then you go and you find out that,
>
> no, that was us saying that we wouldn't want to work on computers in the
>
> hallway, but the students loved it.

Another concern came from having the tutoring space in the back of the learning

center, just past the library area. The facilities representative had concerns from the

beginning about this layout because the library is a quieter area, and the tutoring space is

more social and continued to determine a solution to this problem. After six months, she

noted the staff in both areas learned to mesh with one another and recognized the need for

quiet and active space within the learning center. Other changes shared by the

participants revolved around slight modifications to furniture and rooms within the new

space.

The learning center director at College #2 described a quiet space in the back of the learning center as "an epic fail." From the input received during the needs assessment, students had specifically requested quiet study space. Thus, he was very surprised to find the lack of usage, with only one or two students using the area per hour. The facilities representative also mentioned, "It's one of those ideas that you think may be useful but reality didn't work out that way." That space was changed into an ESL area. The bookstore and an Apple store were moved within the learning center due to declining enrollment at the institution and to minimize student travel between obtaining materials and receiving support. The huddle room within the Writing Center was changed into a storage area due to the security concerns raised by the staff. Additionally, the need for virtual Writing Center support was necessary, and the learning center director was able to add virtual support from 5:00 p.m. until 9:00 p.m. on Sundays. Other changes raised by the participants centered on making slight modifications to room sizes within the space to accommodate student usage.

Representatives from College #3 also had internally suggested changes. One of the first items brought forward by both the facilities representative and the learning center director was using whiteboard paint on walls. At the time of the project, it was new and innovative to use whiteboard paint. The facilities participant adamantly stated, "Do not do the whiteboard paint. Don't let anyone talk you into it. It's horrible…." She also noted the need for larger tables for student use. Keeping to the mission and the visual of the kitchen table, the learning center director observed an area with soft seating was not being used. That same area would be able to fit a larger, square table for at least a dozen students to sit together. Once the table was installed, it was immediately used. Other

items raised were more huddle rooms, whiteboards, adding a creative space, and slight

modifications to rooms.

A rare occurrence happened at two of the institutions included in this study—the

ability to participate in multiple remodel projects. As the learning center director from

College #1 shared, "I, at the time, thought that [the library remodel completed prior to

this project] was the only time I was going to be remodeling," and was surprised to be

afforded an opportunity to remodel the learning center a decade after the first project.

She ultimately completed three different remodel projects after the learning center

project. Two of those projects brought the learning center concept to the satellite, or

regional, campuses. The third allowed her the opportunity to make changes to the main

campus again. All the remodel projects happened within five years after the completion

of the main learning center project. She shared, "When you're doing all of these

remodels within a short period of time, you learn quite a bit as you go." She described

learning from each project and implementing what she learned in subsequent remodel

projects. Finally, she came back to the main campus and reviewed her space based on

her newer experiences. The one item that changed on the main campus after all the

remodels was the addition of computers within the huddle rooms. She noted making this

change at one satellite campus made a difference for students. The IT representative also

agreed with the impact of multiple remodel projects and the implementation of the same

ideas but at a smaller scale as the satellite campuses have a much smaller student

population accessing the services. He took the knowledge learned, or the "effective

lessons learned from a project management standpoint," and applied them to the rest of

the referendum projects being completed.

The learning center director (College #3) also had the opportunity to remodel the satellite campuses. However, she had an opportunity to remodel a satellite campus prior to the project at the main campus. "We did a smaller pilot prior to any of the [main] campus being built…. And we got rid of the learning center but put them all in the library. Well, that was a bit of a disaster." The satellite campuses being smaller was one reason to combine the spaces. However, students immediately started complaining about the loss of quiet space for studying. This pilot project influenced the decision to maintain separate locations for the library and the other services, and it was the impetus for the learning center director to be as adamant as she was to upper administration. Once the opportunity arose to conduct a remodel at another satellite location, she changed the model to an adjacency model where the two locations are in separate spaces within one larger room.

> There's these automatic doors that open and close for the library space, and it's quiet in there. And then, on the other side, is [all the other services] which also has these doors that open and close. In the middle of those two spaces, however, is the desk…that serves both spaces…a combined desk with a librarian [as well as tutoring staff and student workers] and they direct students, as appropriate, to both sides of the house…. The [enclosed] spaces are 100% student spaces. No staff except for the tutors, of course.

Findings for Research Question Two

The purpose of the second research question was to determine whether the impact of pedagogy, space, and technology was considered at all during the learning center project. Multiple rounds of first and second cycle coding, a within-case analysis, and a

cross-case analysis were conducted to determine emergent themes, sub-themes, and codes. The emergent themes and sub-themes for all three institutions were similar. The themes and sub-themes for the second research question are presented in Table 3.

Table 3

Emergent Themes and Sub-Themes for Research Question Two

Emergent Themes	College #1 Sub-themes	College #2 Sub-themes	College #3 Sub-themes
Instructional considerations	Stakeholder input	Stakeholder input	Stakeholder input
	Faculty implications	Faculty implications	Faculty implications
Space considerations	Stakeholder input	Stakeholder input	Stakeholder input
	Ambient aspects	Ambient aspects	Ambient aspects
	Physical aspects	Physical aspects	Physical aspects
	Future-proof	Future-proof	Future-proof
Technology considerations	Access	Access	Access
	Budgetary implications	Budgetary implications	Budgetary implications
	Delivery mode	Delivery mode	Delivery mode
			Future-proof

Instructional Considerations. The first theme that surfaced from the participant interviews was *instructional considerations*. Within this theme, two subthemes were found to be appropriate: *stakeholder input* and *faculty implications*. Overall, the participants at each institution believed instructional considerations were important to the design of the learning center. This is because the change to the physical space would

have an impact on the way staff would be able to support student learning, which required input from all stakeholders.

   Stakeholder input.   Informal research was conducted to seek out trends and how to implement new ways of teaching and learning within the new space. Participants from all institutions visited other institutions within the same college system to view the changes made there; only one group visited institutions outside of the region. At two institutions, surveys were leveraged to gather information from a broader group of people. The facilities participant from College #2 specifically recalled surveys between the managers and a vice president to determine what was needed to support how faculty wanted to teach in the new learning center. The other participant (College #3) recalled the input being received from a larger group of stakeholders, which included faculty and staff who would be working in the new space. One institution did review one journal article regarding how one institution in Colorado had redesigned developmental education to better understand how to change the teaching and learning used within the new learning center.

   The representatives at each institution discussed creating sub-teams, conducting some informal research, and obtaining input from faculty and students. Each institution created at least one sub-team to focus discussions on the type of pedagogy needed within the new learning center. Instructors were on those sub-teams; however, only College #2 ensured students were part of any sub-team created, including the sub-team determining the pedagogy to be used. A representative noted the addition of students to all aspects of a construction or remodel project was central to the culture of the institution. Though participants at only one institution included students on sub-teams, all described

obtaining input from students in some way. Collaboration, the opportunity to attend on-demand workshops, and access to peer tutors were the top student considerations.

At two institutions, participants noted the instructional considerations did not change from the start of the project. This was due to the work of the project team during the design phase. One participant (College #1) remembered having discussions of the instructional considerations for almost 18 months during the planning phase and "felt that we shook out every question [and] concern." Another participant (College #3) described that, to the present day, the instructional considerations became foundational to the project and "we spent a lot of time on the front end…and setting that mission or that vision for the space."

Faculty implications. As the College #1 IT representative stated, it was important to determine what type of pedagogy was to be used first; then, the work could begin to determine how to physically make that happen. One change identified right away was the move to an open concept area suited for more collaborative work, which moved away from having a specific front of the room. This idea came from visiting other institutions and noticing the collaborative dynamic between staff and students, as well as students with one another. The project team wrestled with trying to ensure students would leverage collaborative opportunities within a new physical environment. The learning center director conducted research on Supplemental Instruction (SI) as the team determined this learning center dynamic made the most sense and best supported student learning. The decision then required the creation of separate walk-in lab areas for writing and mathematics, a room for one-to-one tutoring, and classrooms to accommodate a section of SI for the science area. These suggested changes occurred with the input from

the faculty; the facilities representative also discussed how the purchase of furniture required faculty training in the proper use and rearrangement within a space. She felt the training provided to faculty had an impact in ensuring ease and comfort when finally working within the space with students. The IT representative felt the same way when it came to the new technology added within the space. Training the faculty in the use of the technology would support faculty incorporation of technology into their student support modalities.

Not only were there changes to the academic coaching supports, but the library services area also changed. The reduction to one main desk area within the new learning commons required cross-training of staff. The learning center director from College #1 was appreciative of the opportunity to cross-train the staff, and revealed it was "super important…for getting it down so that students didn't have to make any decisions when they walked in. You walk in, there's the desk of people who are going to help you. You don't have to know what they do."

The learning center director from College #3 also discussed the open concept and how to enhance instruction. One way to do that is by not focusing on instruction, but on the creation of what she described as "a sense of community-building and that sense of comfort, and knowing there's this place to go." This environment, in her mind, supports all students, not just those who struggle academically, and helped build leadership and confidence within all students. The dynamic environment also drove faculty to discard the traditional office hour environment and spend their time within the learning center, with approximately 65 faculty choosing to hold office hours in the learning center within the first year. The learning center director described the increase in student and staff

usage as very organic, with no one student believing getting support in the learning center had any attached stigma.

The administrator participant mentioned the importance of having faculty provide input into the physical space and the type of pedagogy to be conducted within it. The facilities participant described how the project team worked together to accomplish the vision of a collaborative learning environment. She created images of the new space for the team to view and discuss how the technology and furniture interfaced together to support the collaborative learning the faculty were seeking. She disclosed there have been times, with different projects and project managers at her institution, where the voice of those who will be using the space is not sought out, having disastrous consequences for all involved. She did acknowledge having too many people involved in the design can also be challenging; however, she noted "communication and having folks involved because it's such a dynamic space…has the potential to be so successful." She even remembered her time as a student and recognized she was helping design something that was non-existent in her past. Nevertheless, she knew the learning center was an important space within an institution of higher learning, and better learning happens in learning center-type spaces.

The learning center director at College #2 described the largest instructional changes of any participant, and admitted the changes made were not based on any research being conducted. Though a learning center existed prior to the remodel project, he shared the services as being traditional—a reading center, a separate writing center, and a math center were provided within the space along with peer tutoring. Through visiting other institutions, including College #3, he saw drop-in services were no longer

beneficial. He described what he called *enhanced instruction*, or ensuring the services needed are provided in the appropriate location. For example, developmental education support was moved into the classroom instead of the learning center. The faculty office hours were moved to the coffee shop area to provide an informal environment for students to meet with faculty. The office hour schedule was posted and available for students so they could meet with their own instructor to get extra support. The writing center moved from providing developmental education support to becoming a full editing service for students, staffed by writing faculty. He also shared all these changes to pedagogy did not occur until after the learning center opened, which he acknowledged was not a good approach. The facilities director, though not involved in the discussions on academic impact, did feel the space reflected those discussions and the academic changes requested by the project team.

The faculty and staff from College #2 had to incorporate more technology into their academic supports, including different software applications. The inclusion of more mobile technology, such as tablets, allowed faculty to bring in more online learning opportunities and supports students can access from anywhere. The writing support was one example he noted where this occurred. Online support was also being provided to students even before the changes required due to the global pandemic.

Even with the input from the faculty, there was still resistance to the changes being implemented. One of the challenges with changing the pedagogy was instructors were not comfortable with the change and had to adapt. One representative (College #2) noticed the faculty wanted to continue what had been done previously. The faculty and staff believed the student retention rate was decent, so there was no need to change any

practices. Thus, they advocated for taking the student services and moving the spaces into the new learning center without any adjustment to instructional practices. The learning center director noted "we weren't getting new clientele, so we had to do something different." It took taking a team to visit other institutions to obtain buy-in from the faculty and staff on the new enhanced instruction concept.

Two of the three participants from College #3 mentioned the resistance of faculty in canceling their office hours and holding them within the new learning center. The faculty were required to complete a couple of hours of volunteer work per week. Once the learning center opened, one participant shared the space was "jam-packed with students" within one month. As the students navigated to the new space, faculty noticed how busy the learning center was—and students were enjoying being in the space. It was only after faculty noticed this change that they canceled their office hours and moved those hours into the learning center. However, another participant did state those who changed were "the progressive-thinking faculty, not the traditional."

Space Considerations. Space considerations was the second theme which coalesced from the input of the participants. The subthemes which fall under this theme are: *stakeholder input*, *ambient aspects*, *physical aspects, and future-proof.* There are many variables to consider when looking at changing a physical space and place, and each institution found different variables which they deemed important.

Stakeholder input. Collaboration from different stakeholders was important to the participants, and they focused on ensuring all stakeholders had a voice in the design of the space. At each institution, sub-teams of the main project team divided the work and focused conversations on specific aspects of the project. Though not specified by

any of the participants, the sub-teams at College #1 included administration and faculty; however, the design team did not include students. Their input only came through surveys. Conversations regarding space intertwined with conversations on pedagogy and technology. This was due to changes in pedagogical or technological needs which would impact the design of the space, including walls, lighting, and colors. For example, one participant described the need to determine technology as the conversations about walls began "because we wanted a lot of glass. So, we had to make sure that we had enough non-glass walls…" for technology needs. Students shared wanting collaborative learning and group spaces; they also did not want others to know they were seeking out academic support. Thus, the team had to design the space to accommodate this need. Another participant disclosed the assistance of an outside engineering firm to support the layout of the space and come up with ideas to provide to the teams. This participant also pointed out the three constraints, from his perspective, when working on a facilities project: "can we do it, can we get it in here, [and] what's the cost." The description of the stakeholders and discussions that ensued were similar at College #3, except students were more involved throughout the project.

Participants at both institutions (i.e., College #1 and #3) also described facing challenges to come to agreement on a final plan throughout the process. A College #1 representative did comment the facilities department was always "in between the architect, the furniture vendor, [and] the end user" and was the point person to provide progress reports to the senior leadership at the college. Another representative from College #1 believed the facilities and IT department representatives had the challenge of "getting [the team] what they're asking for, suggesting what can and can't work…" yet

be viewed as supportive of all. The biggest challenge at College #3 was having changes passed down to the project team from the college president or another senior leader who was not present for any of the project team conversations. As the participant said, "We'd get the next floor plan and there would be dramatic changes." However, the participant also pushed back on those changes to "fight for our cause." She shared they were able to successfully push back on a number of these types of changes; nevertheless, the success came from time, feedback, iterations of different plans, and "it took a lot of understanding of what we were actually trying to do for students."

Participants from College #2 were more descriptive of the stakeholder process. Again, the input and participation of administration, faculty, staff, and students on the sub-teams created was important to the project team. Some of the sub-teams mentioned were audio-visual, academic support, furniture, interior design, and Design Thinking. One participant noted the project team struggled for almost a whole year in determining how to design the space. "We'd have people bringing in their own blueprints," said the participant, with each person pushing their specific blueprint by asking the team to "think outside the box" as evidence their blueprint was the best. The learning center director asked the team, "Don't we have an architect," as more and more debate ensued about the proper placement of services.

Eight students in the interior design program were intimately involved in all aspects of the learning center project. They wanted a space which included collaborative learning and group spaces, the opportunity for students to move around instead of having to sit in one space, and provided input on the color scheme and furniture. Their ideas were revised by the other members of the project team. The learning center director also

chuckled as he remembered a couple of ideas students had that did not make it through—

a "game room" and a "gaming room." The gaming room would have a predominant

focus on video console games whereas the game room would include table, board, and

other games for student enjoyment. Though students thought these spaces would be

beneficial to students, the learning center director reminded the group about the budget

implications and space requirements for all the required services. As the team reviewed

the space needs and budget, there was no way to include these areas.

The reason the decision to remove the game and gaming room came easier to the

team was due to their use of Design Thinking. Specifically, project team members

visited service areas where they did not predominantly work, as well as different

businesses and industries within the area gathering data over the course of two weeks.

The main team considered the information (i.e., physical and ambient aspects of the

spaces) and how they could impact the new learning center. As the learning center

director shared, the team "really got an idea of what we needed to have in this space."

Ambient aspects. The learning center project teams at all institutions considered

how to take noise levels into account in the new space. Whereas library services would

need a quieter area, areas where students would collaborate with each other or faculty

would not be as quiet. College #1 implemented noise zones—areas within the learning

center for different levels of noise. The facilities person described the installation of

approximately 20 huddle, or study, rooms in different sizes so students could either work

one-on-one or in larger groups; the noise of the group would be contained within the

huddle room. The design of the space had the library services area at the front entrance.

Access to the tutoring services area required people to walk through the quiet area. The

addition of computers to the hallways caused the noise level within the hallways to lessen. The learning center director continued, "They saw studying students, so they all got quieter….now everyone thinks of the hallways as part of the library as well." She was adamant about creating quiet space because that was what students desired based on the feedback received.

Due to student input, the plan included color-coded noise zones at College #2. The green zone was an area where normal conversation could happen, and televisions were on. This area served the student need for "hang out space" and "collaborative group spaces." The yellow zone was an area for quieter conversation. Based on surveys, students wanted "quiet study space." The red zone, which later was eliminated, was for quiet, but not silent, interaction and study. Even five years after construction, the learning center director lamented the challenge of the staff in maintaining the level of noise in each zone. The faculty and staff, focused on supporting students academically, forgot to ascertain in which noise zone they were seated. He was also very clear that total silence would never occur, so those who were looking for complete silence would be frustrated. College #3 did implement noise zones within their library services area. The circulation desk was located near the entrance; as people would walk toward the back of the space, the noise level lessened. Signs reminded visitors they were entering a quiet area, though it was not completely silent.

Nevertheless, there were challenges with noise at College #1. The facilities representative shared the challenge in space layout. She was concerned about people walking through the quiet library space to get to the tutoring space beyond it. She declared, "I knew it was going to be difficult right from the beginning because [tutoring]

you need to instruct so there's a lot…of communication happening. And the library, in one sense, prior to the project, was a complete quiet area." The shift into the new space was not easy—for the staff. As the facilities representative shared, "I think the staff had a hard time accepting the concept. Not the students." The students had no issues, from the facilities participant's point of view, adjusting to the noise zones. She also disagreed with the learning center director's idea of students wanting quiet space. The facilities person countered, "They don't have it when they're at home…. People aren't used to total quiet." In the end, the learning center director did agree "this two-tiered computer thing that I had not really planned on" became well-received by students. She learned students wanted as much quiet space as space for them to have conversations with others.

A separate printer area was the one area where the learning center director would not compromise. She wanted plenty of printers within the space, added in such a way as to still maintain a quiet environment. She received pushback from others as many believed printers are not very noisy. She was able to win the argument, and a soundproof printer room was created where all the printers and copiers would be located. Proudly, she said, "Every time I give a tour, that was one of the things that other librarians just were so impressed with." The IT participant agreed the separate printer room was "a good payoff" to reduce the noise level within the space.

Though participants from all institutions described items regarding noise within the new learning commons, only one institution did so without sharing concerns. This was due to the pilot remodel, which was the impetus to keep the learning center and library separate at College #3. Returning to the sense of community-building meant to permeate the learning center, the director believed the ability to create a space where

students could "hang out and learn and help each other," would increase the noise level. Nevertheless, even before the global pandemic, she steadfastly believed in the need for students to have a "sense of community-building and that sense of comfort and knowing there's this place to go." Of course, for those students who needed more of a quiet space, another participant noted the ability for students to use huddle rooms. She also commented on the noise in the space drawing her in, sharing "It's always busy and …it's fun…. I get energized when I go in there."

For two institutions, lighting was a predominant factor raised during the planning process. One participant (College #3) shared students, during the focus groups sessions, were adamant to "[l]et us see the sunlight. Let the sunlight come in the space." He continued by stating one of the design elements was brightness. A second individual was also clear she wanted to exhibit the beauty of natural light "given where we had come from as a college and…looking like an army bunker." Light filtering through the space was very important to this institution. For the other institution (College #2), students would share, via surveys during the Design Thinking process, they wanted to have natural light coming into the space. Though natural lighting was requested by students, one participant described the quiet area in their space as having "really beautiful, natural lighting." This quiet area was later remodeled due to lack of use; however, there was no mention whether lighting was a detractor for students being present in the space.

College #2 was the only institution where participants discussed color considerations for their learning center project, other than the color-coded zones within the learning center. One participant described the color scheme as something akin to what is found within a typical coffee shop—"Colectivo…and Starbucks were the…colors

we wanted. The neutral colors." Each learning center service area also had their own color. For example, one participant described the use of green for the instruction area. When students find that color, the participant noted students would know it is an area for academic support. The team considered the color choice for the carpeting as well. Described by the participant as being "almost like the Wizard of Oz," the carpeting acted as a path which would direct you to each of the different student service areas without becoming lost. He concluded by stating the approximately eight interior design program students made the final choice of the colors.

Physical aspects. All participants noted physical space was paramount to the completion of the learning center. The director from College #1 remembered asking the question, "How do we make this feel comfortable and use the space efficiently?" A challenge to this was what she described as an awkward shape. Originally, there was a hallway which made the physical layout challenging to create a cohesive and open space for students. Through numerous conversations and review, the hallway was moved to another location. Additionally, the desire for flexible, and movable, furniture would require additional square footage per student, according to the facilities participant. There was also a challenge in bringing different services together, with staff being concerned about how much space would be afforded to them. The learning center director was very detailed in her memory of those conversations, which included having the architects create a report based on a visioning process the project team participated in. The architect created the report and provided information on how to combine the services in the best way possible without a floor plan layout of the services. This process was described by the IT representative as *bubble diagramming*. The managers in these

meetings would go back to discuss with their staff and return with their ideas and concerns. This process repeated multiple times, which the director appreciated because "the thing we're most worried about is that we'd be making plans and, then, not bringing everyone else along."

Both participants from College #2 shared the importance of square footage for the new learning center. As the facilities director remarked, "We have a lot of rules we have to follow here regarding remodeling and adding square footage, so we couldn't add any square footage." In all, approximately 30,000 square feet were allotted to this project. Yet, this project was to combine different areas together into the new learning center, and the space allotted was smaller. Those areas were the computer lab (approximately 5,000 square feet), the former learning center (approximately 14,000 square feet), and the library (approximately 16,000 square feet). The new space needed to include, based on survey data collected, a hang out location to meet with people informally, as well as space to study without any barriers. Movable walls were a consideration for the space. Though students wanted to include other areas, and the amount of square feet allotted seemed large, there was not enough space for all the areas desired by students and staff. Further, the challenge was not knowing how many students were going to use the space and ensure enough space was available for growth. Key to the creation of the new learning center was the input students provided, and how important student voice was in the creation of the physical space. The facilities representative (College #1) noted the need for more space per student to provide the furniture mobility desired. She shared, "You need more square footage per student when it's all mobile versus just [a] front line or front of room concept."

The administrator participant (College #3) believed in ensuring an open learning environment in the new space. He believed this concept came to fruition because of the number of conversations at the beginning of the project and setting the overall mission and vision. As he said, "That became a foundational piece, and the architects did a fabulous job of picking up on that." The concept, discussed by both the administrative and facilities participants, was open, free-flowing, and allowed a *kitchen table* dynamic— the opportunity to gather around a table or using soft seating. Student surveys specifically pointed out the need for openness; the administrator representative noted, "[Students] questioned why there had to be doors in the spaces because doors indicate that it's closed off. In other words, if someone goes and shuts the door, now I'm not welcome in those spaces." The free-flowing notion was based on the ability to reconfigure the space, if needed. For example, the administrative and facilities participants discussed the need to expand or contract the size of one area (e.g., math) when student demand warranted, which would not happen if the limitations of doors and walls were present.   The facilities representative was passionate about the learning center project, energetically sharing, "It's welcoming and it's not overwhelming."

Huddle rooms, more commonly referred to as study rooms, were a large aspect of the new learning center project at each institution. The IT representative from College #1 remembered the learning center director seeing a trend of student collaborative work becoming the norm, and the director pushed to create as many huddle rooms as possible. Besides, the director noted, huddle rooms were popular with students. The new space included 14 new rooms using glass walls, two of which were created in the hallway. The use of glass walls was important for the learning center director as it allowed people to

see students at work, especially in the hallway. She said one side effect of these glass huddle rooms in the hallway was the hallways got quieter because they saw students at work. In contrast, she also noted students working within the huddle rooms thought the glass walls were soundproof. She ended up putting signs up inside the huddle rooms reminding students the walls are not soundproof. Even so, she shared, "it's the most soundproof that you can get glass." Also, she shared the glass huddle rooms served a larger purpose for the institution—the president wanted to create opportunities to have people see students studying which was not possible in the previous learning center. The director also felt this scenario also helped drive an increase in usage of the new learning center. The success of the huddle rooms in this project meant a subsequent project at a relatively smaller, regional campus included just under 20 huddle rooms in the project plan. The IT representative noted, "Even struggling with enrollments, any time I visit [the regional campus] there are students" within the huddle rooms.

The popularity of huddle rooms was also evident at College #2, with the learning center director noting students using them constantly. However, he also noted the faculty found them popular, and was concerned. He noted, "It was tricky in the beginning. Faculty wanted to use them for office hours. They wanted to use them just to work in. We had to say no because it was for students." He did share he would allow a faculty member to use the huddle room for a short time if they needed to work with a student or group of students. The faculty member could not reserve the room for that purpose—a student needed to make the reservation. At his institution, 13 separate huddle rooms were created, each with its own set of unique furniture. Though happy to have the new rooms, he lamented they could not add 50 huddle rooms because of their popularity.

Participants from each institution described a change paramount to their remodel project—mobile furniture. The IT participant from College #1 was resolute in his belief that the whole project centered on what the academic staff needed to support students. In larger, open concept areas, he described the furniture chosen gave the academic staff latitude to move furniture to accommodate the gathered student group size. The facilities participant from the same college felt her role became "the person that's in between the architect, the furniture vendor, the end user," and the one required to present to the senior leaders at the institution for updates. Due to that unique position, she felt it was important to remind the architects and furniture vendors about the importance of mobility. Her advocacy was different than what the College #3 administrative participant had encountered at his institution. He was glad to see all stakeholders were aligned with wanting mobile furniture. His experience with mobile furniture was whatever arrangement the facilities staff required; in other words, furniture had to be returned to its original location if changed in any way. Luckily, once this project moved forward with the facilities partners at the time, he felt the furniture was designed with true mobility in mind. He described the vision of mobility as having individuals "gathering around the board," or clustered around the kitchen table. He also kept in mind this advice when participating in any remodel project— "There's always battles, and you have to pick and choose those battles." The learning center director at College #2 shared the desire for mobile furniture. He would notice times when one area was busier than another and vice-versa. For example, "if my math center is really busy but reading [is] not, just take a table out of [the math center]" and move it over.

Not only was mobility important; so, too, was fitting all the furniture within the new space. Within College #1, once the decision was made on the technology needed within the space, the designers set out to find the best furniture arrangement. The learning center director remembered about a dozen different furniture arrangements being presented to fit all the requirements. Additionally, the workstations were also designed to fit as many computers within the space as possible without the feeling of being crowded.

Another major change was the main desk area of the learning center. Previously, in the library space, there were three different desk areas—reference, circulation, and lab technician. In the new space, that was reduced to one desk and an alcove for the lab technician. Though it made cross-training a requirement, it made it easier for students to obtain the help they sought. As the learning center director for College #1 shared, "You walk in, there's a desk of people who are going to help you. And you don't have to know what they do."

The director from College #3 also needed to ensure there was plenty of computer access based on student demand. Working with the facilities department, she described the specific items she needed (e.g., tables with one computer and monitor arms, but allowing two people to sit comfortably). Using a Virtual Desktop Interface (VDI) allowed the removal of desktop towers from being present at the workspace, providing more room for students to work. The facilities representative also remembered the importance of working together with the learning center staff to find the right way to configure the furniture within the space. She would give suggestions of potential layouts given the space constraints (e.g., wiring access, lighting) and how furniture can accentuate the type of instruction happening within the area. She also noted her

involvement in facilities projects across the college is important to success because many on the project team may not have intimate knowledge of facilities or interior design.

Soft seating was also important to each project team. While at College #1, participants described the *people pockets*—soft seating areas within the corridors—as a necessity to keep students from leaving campus and to gather as a group without being concerned about the noise level, participants at College #3 saw the soft seating areas within the space as vital to obtaining a home-like feel. Nevertheless, participants from both institutions felt the same way about these areas as captured by a quote from the facilities participant (College #1): "It was really about having students come to our campus and stay there."

Participants from College #2 described situations unique to their institution. The interior design program students also helped choose the furniture included in the space. No other project team decided to have different types of furniture in different areas of the remodeled learning center. The staff would keep data on the usage of the furniture, which helped determine whether students would spend time in certain huddle rooms because of the furniture or the location of the huddle room. Students provided positive remarks regarding the different types of furniture. Though *The Quiet Area*—the space within the learning center meant to provide fully quiet space for work which was later removed and remodeled—did include comfortable furniture, it was hardly used within the first year.

College #3 differed only in the layout, which did not have the learning center within the library. However, the responses from the participants were similar to those from Colleges #1 and #2. One participant did note something not shared by participants

at either of the colleges—the need to have easy access from the outside of the building.
In trying to ensure the new learning center was centrally located, the College #2
administrator participant asked the project team to ensure it was open "like a library
during non-standard time[s]." Because of this request, the project team moved the
learning center to the front of the building for ease of access during the evening and
weekend times.

 Future-proof. The concept of *future-proofing* the space was important, especially
to the participants. The facilities director at College #2 was explicit in letting the team
know about this concept. He revealed he asks project teams to think 15 years into the
future because

> …nobody's going to want to spend money to come back and remodel this in the
> next couple of years. So, think it through, plan properly, but be ready for the next
> 15 years. Whether it's forward thinking or just the financial reality of it, it's one
> of those where you only get so much money to remodel every year, and everyone
> wants their piece of that pie. So, by the time it comes back around to you, it's
> going to be 15 years.

 Another participant shared that the Design Thinking process really helped ensure
only those student service areas which were necessary and could fit given the space
constraints and budget were included.

 A representative from College #2 mentioned student feedback as well. Because
students were part of the design team and sub-teams, the feedback was immediate. As
the facilities manager made clear, the interior design program students "actually got
involved with the floorplan, layouts, and everything—what they felt would be beneficial

to the student population…." The designs were driven by this insight. The number of students who would end up using the learning center after the project was completed was unknown. However, the learning center director described the increase of students as "incredible." It is possible the increase in users was due to community patrons visiting— and the fact a coffee shop and Apple store were all within the same location. All this was unclear to the participant. Still, he continued, "There was thinking behind pretty much everything that was put into that space."

Technology Considerations. The final theme for this research question was *technology considerations*. There were four subthemes which emerged within this theme: *access*, *budgetary implications*, *delivery mode*, and *future-proof*. Representatives from each institution shared they had technology needs. Some of the technology solutions used were similar; others were not. Yet, there were similarities in how the participants determined the appropriate solutions given their unique situations.

Access. All participants found access to electricity to be of paramount importance to students in a new space. One participant from College #3 also noted a trend change— students bringing their own technology instead. Thus, the project team focused on ensuring there were enough opportunities for students to access electricity. The choice of location of the new space for College #1 made providing electricity easier—part of the location used to be a media center with multiple electrical access points. The facilities participant felt it was challenging to provide all the access being requested. One identified change was to connect the tables together with electricity. However, the faculty found it extremely cumbersome to move the tables apart. This was because they needed to separate the tables by unplugging each electrical harness, reconfigure the room,

and connecting the harnesses again. As the facilities participant noted, faculty were sending in work orders to have facilities staff make the changes, which increased their workload. A decision was made to remove the harnesses from the tables and add a power pack instead, which increased the flexibility of the space. The learning center director from College #2 also shared the difficulty in providing outlets everywhere even though students were heavily requesting it. Staff were requesting electrical access as well due to the use of the new Aquos boards, which were electric screens on carts to be used for individual or group tutoring throughout the space. He also shared the facilities participant at his institution did whatever he could to provide the electrical access, noting "it's not great, but I think it's adequate. We had to work together on it."

Participants from College #3 also discussed the importance of being able to use mobile technology within the space. However, the facilities representative also looked to the future regarding providing electric connectivity and its purpose. Part of that vision included providing electric access to personal technology devices (i.e., phones, tablets, laptops). She was awed when considering how much technology has changed just from the completion of the new learning center. Thinking about what she might suggest for furniture and electric solutions, she shared "If we were [remodeling] now, what would we bring into it now [for] connectivity and charging? For example, you can get tables [now] with just a charging pad on it."

Providing access to the internet was another consideration for the participants. With the work done to provide electrical access, wiring for the internet was next. Within College #1, this job was easier due to the data closet located within the space. This made for shorter wiring runs, which meant better, and faster, access to the internet for users.

The creation of pods of computers located throughout the hallway outside the learning center made access to the internet easier as well. No longer did users need to travel within a space to seek out computers. Students at College #2 listed access to the internet as an important request, and access points were included throughout the new learning center as well. The VDI at College #3 provided a mobile-type environment, so access to the internet was paramount to the project. Nevertheless, wireless access to the internet for user-owned items (e.g., laptops, smartphones) was incorporated. The facilities participant remembered the project team wanting computer and internet access without the space feeling like a computer lab. With the addition of electrical outlets to the work surfaces throughout the space, students could use their own technology and plug into electricity when needed. As she remembered, "It gave people more flexibility in how they wanted to work." If students did not have their own technology available, there would still be plenty of options throughout the space.

Budgetary implications. The participants at all institutions described the balance between wanting to fulfill all the project requests and the budget constraints of the project. The IT representative from College #1 shared three constraints for the learning center project: "can we do it, can we get it in here, [and] what's the cost." However, he also suggested the role of the IT representative on a project team was to obtain what the team wanted while providing suggestions for solutions or explanations when a solution is not available. This is all done with an eye toward the budget. The facilities participant from College #3 concurred with this assessment and shared her IT representatives were very involved in conversations and were always looking for "the best, and easiest, way" to provide solutions. One example shared by the facilities participant (College #1) was

the addition of a laptop cart versus desktop computers. This required conversations regarding how many outlets would be added to each room, including wall and floor outlets, to ensure flexibility of use within the space. However, as she continued, "Just from the cost aspect, we had to realize…we couldn't give them exactly what they wanted." Nevertheless, the team was able to determine options that would provide some measure of flexibility. The students at College #1 shared that more electrical access was important through their survey feedback. This feedback was invaluable to the learning center director because of the high cost of core drilling (i.e., drilling holes through concrete to provide access for wiring, etc.). As she stated, "It was going to be a lot of expense to drill through the floor every time for more outlets. But, hey! Look! The students said they wanted it. So that was helpful." Even with the backing of student feedback, there were still budget implications to consider. As the facilities representative described, they tried to provide all the options for electricity that faculty and staff wanted; however, just from a cost aspect, they had to limit the options provided. The facilities representative from College #2 also concurred with trying to provide the best solutions given the budgetary constraints by ensuring the faculty had conversations with the IT team to determine what was needed in each space. Once that information was provided, the facilities representative ensured the spaces were "designed and built around those dynamics."

Not all solutions discussed ended up being the most appropriate for the project. An example provided by the facilities participant at College #1 was one where budgetary funds were spent to provide what she called "the latest and greatest [technology] within the spaces." However, some technology was not used to its full extent, such as

smartboards and smart monitors. After further discussion, it was determined to pare down after seeing how the faculty used the provided technology. The IT participant noted, due to the experience in this project, rules were added for future projects to ensure things like this do not happen in the future.

Another example from College #2 had constraints put on the technology chosen because wiring could not be provided in certain locations. For example, staff wanted to have electric monitors throughout the space to use as signage or information screens. However, as the learning center director shared, "At the time, monitors weren't that expensive…but it was adding the wire…which is expensive." The team took advantage of areas where there was existing wiring and placed monitors in those areas.

Each learning center leader sought to increase the services and attendance of students within the new space. Whether that meant adding computers to the hallways to keep the internal space from becoming overcrowded (College #1), adding mobile technology (e.g., laptops, tablets) for students to have flexibility in their learning environment (College #2), or adding whiteboards (College #3), each institution noticed there was a need to continue to purchase to grow. Except for College #1, all other institutions needed to grow within the given space parameters.

Though there was some discussion regarding items that were overlooked, the perspective differed by institution. When talking with the facilities representative for College #1, she noted there were some items that could have been modified, such as furniture and technology. There was an unforeseen issue of needing to give up space for a data closet due to cost. However, all three participants believed their learning center is still current and could not think of any overlooked items.

Participants at College #2 completely forgot to include signage for the new learning center within their budget. The learning center director reminisced, "Signage, in the beginning, was more…hard cardstock…because it missed the budget. So, we had our graphics area do it." Though the director felt the signage looked great, it was still changed over time to become electronic. The facilities participant from College #3 also shared a technological change that occurred—distance learning classrooms. There was a distance learning room added within the new learning center. She felt a good part of the budget was spent in obtaining the best technology for the room. However, as she stated, technology is "always ever-changing." At the time of the interview, the Cisco TelePresence technology was being changed to WebEx. She felt the addition of the most current technology ended up being something that was overlooked because of the need to budget additional funding when the technology becomes obsolete. "It changes so fast, you know, and you really have to have people that stay on the cutting edge of all of that," she shared.

Though not electronic technology, another item the facilities participant (College #3) shared was the use of whiteboard paint on walls. At a college where the whiteboard walls were used constantly, there were issues with erasing due to the non-smooth finish of the paint. It would also chip, and the erasure leftovers would clog the holes and were difficult to remove. It is one item both the facilities and learning center director participants were looking into replacing by painting over those walls and mounting glass dry-erase boards. The facilities representative gave tours of the learning center for remodeling ideas and shared her advice on whiteboard paint. She showed the visitors the

consequence of adding whiteboard paint in the learning center. She said, almost always, the visitors would strike the addition of whiteboard paint from their project list.

Delivery mode. As discussed previously, the predominant choice for all participants is mobility. Whether mobility regarding movement of furniture or access to technology, each participant was committed to adding mobile solutions to the new learning center space. One participant at each institution specifically mentioned the importance of mobility. The learning center director at College #2 was looking to ensure convenience for students when accessing services in the new learning center space. The director noted students wanted the ability to "grab and go"—retrieve a laptop and move to any space they chose. One way that was achieved was by adding a *vending machine* of laptops. Though the director used the phrase vending machine, he described a large, electronic cart where students could swipe their institutional identification, agree to specific terms and conditions for use of the laptops, and then a laptop would pop out and be provided to the student. The machine could hold approximately 30 laptops, which allowed students to access the needed technology without waiting in line for assistance. The machine did not provide a mouse or charging cable; thus, the only way a student could recharge the laptop was to return it to the machine and check-out another one. The director felt it was an ingenious solution to support flexibility for students, and students use it constantly. Nevertheless, the machine was purchased over five years ago and has stopped charging the laptops as it should. Sadly, though the director acknowledged the machine is still working, "We're back to the drawing board with that one."

One tool that was purchased for College #2 to help support learning was Aquos Boards. Placing those electronic boards on carts to wheel around the space was useful

because, as the facilities participant shared, "they can write on these boards [and] move them around" in the new, open concept space and create small group areas to work together. The purchase of tablets also helped change the way staff approached learning. Prior to the remodel, the learning center director explained, many processes were done "traditionally" with paper and pencil. The purchase of mobile and flexible solutions for technology "enhanced our instruction," continued the director, allowing them to do new and different things that could not be done in a traditional format.

At another institution (College #3), the facilities representative remembered the discussion of adding laptops within the new space. However, she noted laptops are a "sticky wicket"—they provide flexibility, but it requires a staff person to ensure the laptops are charged and receiving updates for the next day. The issue is lessened if only one staff member is using the cart. She did share situations where laptops were not charged and, when students and staff returned from winter break, none of the laptops were operable. Thus, she preferred to provide more outlet access so students could bring their own personal devices if they wanted mobility. Furthermore, the VDI still provided the mobile-type of environment students were seeking.

The IT participant (College #1) followed the learning center director's lead as "she saw the trends and…what [students] were doing" with technology. One of the trends the director noted was allowing students to check-out laptops from the learning center. The IT participant found that decision to be prescient as he described the steps the institutional leadership took during the global pandemic. The project team wanted the learning center to be a focal point of the institution. Having the learning center easily accessible from the parking lot and well-marked with signage, he continued

We were bringing the students right into that area to pick up technology and, of course, complying with social distancing as we were doing that. The technicians brought everything to that area to get it configured and work on it because we have the network connectivity…and we can distribute it out very quickly…. I think we put out at least 350 to 400 laptops.

Though most of the focus was on mobility, there were also situations needing a stationary solution. This was specifically noted by participants at each institution when discussing huddle rooms. The technology ranged from computers with monitors to just a whiteboard. The provision of computer pods, group spaces, or coffee shops was also the opportunity to allow students to be stationary if they so desired. Only representatives from College #1 spoke of adding a cyber zone within the hallways adjacent to the learning center, which students frequently used. The popularity of the huddle rooms required purchasing scheduling software at College #2, as well as limiting huddle room use to only students and for a limited period (e.g., one to two hours).

Future-proof. Only College #3 had participants discuss future-proofing as being connected to technology. The learning center director focused on the technology needs for the new space. She started attending conferences and webinars and was considered the most knowledgeable participant regarding technology. The technology team for the institution, along with the technology team for the learning center "got together and thought about what does the future look like," said the director. The group came up with using a virtual desktop infrastructure (VDI) for all computer access within the learning center. The VDI software allowed the students to have the capability of a desktop computer without an attached computer tower being required. Having a more open,

mobile environment was something students wanted and ended up appreciating while improving the quality of student computer use. It also lessened the need for electrical cords that could get tangled with student belongings. The team also ensured adaptive technology was compatible with the VDI software. Along with the flexibility the VDI software brought to the space, the learning center director also ensured larger screens and mobile technology solutions were purchased. As she stated, "we tried to think futuristic…, but the VDI thing was really, at that time, a winner for us." At the time of the VDI implementation, a global pandemic was not a remote possibility; however, as the director noted, "the VDI has been a godsend in this remote learning environment."

Summary

The findings for both research questions were provided in this chapter. The aim of the first research question was to identify the process learning center administrators used in the creation or remodeling of a learning center space at select 2-year colleges. The themes which evolved from the interviews seemed to follow the overall process described at each institution. First, a *needs assessment* was conducted, and a *coalition* of stakeholders was built. Then, the *implementation* of the project followed. Finally, *additional changes* were pondered and, sometimes, implemented. The aim of the second research question was to determine whether the impact of pedagogy, space, and technology was considered at all during the learning center project. The themes that grew out of the interviews were *instructional*, *space*, and *technology considerations*. These themes were intertwined. Instructional considerations were impacted by the physical space, which can support or hinder a chosen pedagogical or andragogical practice. The physical space also supported including or precluding certain technology

solutions from being considered. There were similarities in how participants finalized the

appropriate technology solutions given their unique situations, targeting the instructional

practices to be used within each learning center space. Chapter V will provide a

discussion of the findings for each research question, implications for practice, and

recommendations for future research.

CHAPTER V

Discussion

The purpose of this study was to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. The intent of the researcher was to have the needs of 2-year institutions brought to the foreground of learning center discussions. Two research questions guided this study: (a) What process did learning center administrators use in the creation or remodeling of a learning center space at 2-year institutions? and (b) To what extent did learning center administrators consider the impact of pedagogy, space, and technology in the design of the learning center? This multisite case study, including three 2-year, public colleges in the Midwest, used personal interviews with learning center administrators and, at most, two other members of the remodel or design committee. The researcher used criterion sampling to select the learning centers to include in the study. Due to the global pandemic, phone or videoconference interviews were conducted and recorded on two different devices. Transcripts were analyzed using first and second cycle coding, with multiple rounds of analysis conducted in each round. Both a within- and cross-case analysis were performed to determine similarities and differences between each case.

The aim of the first research question was to identify the process learning center administrators used in the creation or remodeling of a learning center at select 2-year colleges. There was similarity in the emergent themes sub-themes, and codes. The emergent themes mirrored the overall process described at each institution. A *needs assessment* was conducted. Then, a *coalition* of stakeholders was built. Afterwards, the

implementation of the remodel project began. Finally, *additional changes* were brought forward and, at times, executed. The aim of the second research question was to determine whether the impact of pedagogy, space, and technology was considered at all during the learning center project. The participants described the emergent themes (i.e., *instructional*, *space*, and *technology considerations*) as intertwined. Instructional considerations were impacted by physical space design and the technology chosen.

In this chapter, the findings for both research questions are discussed. Implications for practice are provided, which could be used to inform future practices in the creation or remodeling of learning centers. Finally, recommendations for future research are shared to advance this topic by future researchers.

Discussion for Research Question One

The first research question explored the process learning center administrators used in the creation or remodeling of a learning center space at select 2-year colleges in the Midwest. Four themes emerged after interviewing eight participants from three different institutions. The themes were *needs assessment, coalition, implementation, and additional changes*. A discussion of each theme along with supporting literature and the conceptual framework is presented below.

Needs assessment. The first theme, *needs assessment*, emerged from participant responses in sharing their process for creating or remodeling their learning center. The participants at each institution determined a purpose and scope for the project, sharing their unique way of proceeding. The subthemes were very similar. These subthemes included *pre-planning, mission*, *combining services*, and *new leadership.*

Pre-planning. Participants at each institution shared their pre-planning process. Though this process was completed in different ways at each institution, the involvement of different stakeholders was prominent, which is similar to the recommendations from Marmot and SFC (2006). They encouraged the involvement of, and dialogue between, all stakeholders prior to starting a facilities project. The feedback gathered supports keeping the learning space dynamic and supportive. Lackney (2000) found maximizing the collaboration of all stakeholders helps uncover barriers early in the process. Also, this collaboration could support determining the project objectives.

One way to gather feedback is through the discussion of research and data. One institution (College #2) described the gathering of internal data prior to beginning their learning center project, as well as research conducted by the project team. Examples of research conducted, or data obtained, was student usage, site visits, creating a student-led task force for recommendations, listening sessions with stakeholders, and attendance at conferences and webinars. Regarding data, Smith (2000) found the determination of the population served, services to be provided, and open tutoring space, computer labs, and classrooms supported a successful project. Marmot and SFC (2006) recommended visiting other locations and providing professional development for the staff.

Modernization was also on the minds of participants at two institutions (College #2 and #3). Those teams considered what changes were needed in pedagogy or andragogy prior to discussing the space. JISC (2006) and Ellison (1973) both mentioned determining pedagogic objectives or choosing a learning theory first to transform the learning experience for students. JISC (2006) went further by stating the final design

should be inspired by clear pedagogic goals chosen by stakeholders rather than any other consideration.

Participants from two institutions described the amount of time they had to prepare for the learning center project. Where College #2 had approximately three years of planning prior to the project beginning, College #3 had double the amount of time. Participants mentioned part of the reason for the timeline was due to institutional processes. The literature reviewed for this study had no mention of how much time should be spent in project pre-planning. One reason may be the one given by participants—institutional procedures may supersede any best practice found by researchers.

Mission. The determination of the mission or vision for the project as part of the needs assessment was also shared by the participants, though a specific mission statement for the project was not shared during the interviews. At each institution, questions regarding what the purpose of the space would be and how it would be accomplished dominated the pre-planning discussions. Conversations such as these match recommendations made by several researchers (e.g., Burruss, 2014; Ellison, 1973; Houston, 2015; JISC, 2006). JISC (2006) shared there is no specific set of conditions to use in the creation of the learning center as it is affected by the mission, vision, and purpose of the institution. White (2004) concluded the size and capacity of a space was not as important as ensuring the space supported the mission of the learning center. Ellison (1973) also recommended tying the project mission or vision to the institutional mission, vision, and philosophy. Burruss (2014) found the choices made in designing the new space communicated the value placed on learning by those in charge, which was

usually found in a mission or core purpose statement. All these studies ran counter to what Temple (2008) believed was the current practice in higher education space design. He believed space planning in higher education during the time of his study was more focused with providing only the minimum amount of space and maximizing it once provided. Radcliffe, Wilson, Powell, and Tibbetts (2008) agreed with Temple's (2008) findings and created the PST Framework to counter the belief that space design in higher education was a practical exercise in fitting as many people as possible within a space.

One core purpose shared by participants was the creation of a focal point for the entire institution. However, two institutions (College #1 and College #3) had differing wants and needs from students. Students at College #1 did not want people to know they were going to the learning commons for academic support. Students at College #3 wanted the space to be prominent. The literature supports the results shared by the participants at College #3. Ellison (1973) noted the importance of the learning center and believed it should be a fundamental piece of the educational culture on campus. White (2004) shared the learning center should be a centralized, easily accessible location. Doshi, Kumar, and Whitmer (2014) found the learning center should be located at the center of the campus and situated near other facilities or services heavily used by students.

Participants also believed the new learning center needed to have an open concept or design and foster a space where students feel welcome. One participant at College #3 described it as the creation of a kitchen table, which is usually where learning happens at home. Smith (2000) communicated the provision of open space supported students feeling more confident and secure in seeking out academic support. She also noted the

value of building physical space which is inviting and friendly. White (2004) found 88%

of institutions surveyed had learning centers with large, open, flexible spaces with

attractive interiors (85%), which are comfortable (96%) and inviting for students

(91.8%).

The creation of a new learning center would not prove successful without

ensuring students stayed on campus to use the services within the space. Specifically, at

College #3, one participant described wanting to have students feel like they owned the

learning center space. Enright (1975, 1995, 2000) believed creating a sense of place for

students was the defining feature of a learning center. She also noted building a sense of

place at 2-year institutions was more important than at a 4-year institution because of the

number of non-traditional students (e.g., first-generation, adult, English Language

Learners [ESL]) who are enrolled. Without this sense of place, she said, students at 2-

year institutions could decide to stop out of their higher education sequence. She also

found students who sought out academic support did not feel comfortable in the

educational setting; thus, the learning center was a place where students felt safe and

welcome, as well as finding refuge, emotional support, and a cup of coffee.

At each institution, participants thought the learning center needed to afford

students and staff the opportunity to collaborate, which is easier to do if people feel

comfortable in their surroundings. These types of communal gathering spaces were

termed *third spaces* by Oldenburg (1999). Lackney (2000) described creating a sense of

home within a new learning center, which encourages feelings of warmth, care, and

community. Part of building a sense of home is also building collaboration with faculty

and staff within the learning center. JISC (2006) encouraged faculty and staff to spend

time in the learning center to build connections with students that were distinct from the classroom context. McMullen (2008), a librarian by training, described a learning commons as a space for students to collaborate, discuss among peers, and consult with faculty and others. Harrington (2014) highlighted the need for space where students can make connections with others. The author also pointed out ways to inhibit interaction: areas limited either by space or seating; the creation of a large space with minimal seating; or locations that were congested. Neither of these were found at the institutions included in this study.

Combining services. Discussion regarding the combining of support services was also part of the pre-planning work of the project teams. Participants described having services that were disjointed and spread across the campus. Part of the project was ensuring important services were found either within or nearby the learning center. Sometimes, participants described feeling as though they were needing to combine many different parts. Some of those services to be combined were course support (e.g., mathematics, writing, ESL, reading, science), General Education Diploma (GED) support, library services, and tutoring. Only College #3 did not combine library services within their new learning center. Houston (2015) argued the only way to stop trying to do too many things and losing focus was by returning to the core purpose of the project, which is different than a mission statement. She did state the way to ensure a balance of priorities is to create a core purpose statement focused on the mission of the library, as her research was specific to libraries. However, Smith (2000) believed a mission statement for the creation of a learning center should be determined first as all other considerations would flow from it. Christ (1971) listed five components of learning

assistance: tutoring space; ability to refer students to academic support services; a library of content learning strategies; space to educate peer tutors and staff; and professional development space for faculty and staff. Ellison (1973) believed the learning center was a hybrid of audiovisual and library services. Other researchers (e.g., Brown, 2014; Christ, 1971; Ellison, 1973; Enright, 1975, 1995, 2000) defined learning centers as a centralized location. Only Brown's (2005) definition did not require centralization of services within one place.

Two of the three institutions (College #2 and #3) built café areas in or near their learning centers. McMullen (2008) identified elements of learning centers from a librarian's perspective: computer access; integrated, single service desk; collaboration spaces; digital studios; instructional support areas; classrooms; tutoring or academic support areas; community space for programs and events; and food and lounge space. Bennett (2003) described the definition of the original learning commons as a place to discuss over food and drink. Dennis (2011) also noted quick access to food as important to a comfortable learning space. JISC (2006) recognized the provision of food and drink with seating as a catalyst for learning support, but student input in the specific amenities was necessary for increasing student usage. Somerville and Collins (2008) encouraged the building of a café or a similar location where students could purchase food.

College #1 explicitly described a "bubble diagramming" process used by the architect to provide structure and visualization of how disparate services would fit within the new learning center. College #2 described a "step mapping" process, walking senior leaders and the college board members through a typical student day as the student navigates obtaining different academic services across campus. Radcliffe and colleagues

(2008) wanted to create a model all stakeholders—not just those knowledgeable in facility planning—could comprehend. The Place for Learning Spectrum was that model; however, none of the participants at these two institutions felt hindered by their chosen process, nor felt the process was difficult to comprehend.

New leadership. Two institutions had leadership changes. College #3 experienced a presidential transition, and the prominence of the learning center project, as well as the scope of work of the individual overseeing all academic support services, grew. College #2 had all new academic support administrators, with limited administrative experience, trying to determine how to combine services. Further, the learning center moved from the academic affairs area to student affairs. None of the literature reviewed for this study specifically discussed leadership changes occurring prior to, or during, a learning center remodel.

Coalition. The second emergent subtheme was *coalition*. The two subthemes which arose from the interviews were *stakeholder input* and *challenges*. Participants at each institution discussed how they built coalitions of those who would be impacted by the learning center project. All participants were concerned with ensuring all voices were heard from the beginning.

Stakeholder input. Participants stated administrators were the predominant stakeholders serving on the main project team, with faculty, staff, and students serving on sub-teams. College board members were also involved in the process; however, no board members served on either the main project team or sub-teams. Community members at one institution (College #2) also participated. The literature was replete with examples of the value of collaboration between stakeholders and the architects and designers. White

(2004) recommended extensive input into the design of the space, especially those who use the space a great deal. Long and Ehrmann (2005) also believed users, not facility specialists, should design the new space. McMullen (2008) claimed the creation of the learning center required an enormous effort beginning with the cooperation of external stakeholders. Somerville and Collins (2008) viewed the building of the new space was also the building of collaborative partnerships between those groups who will inhabit the new space upon completion of the project.

Participants described a cycle of gathering input, sharing it with the project team, making changes based on the input provided, and returning to the stakeholders to discuss the changes. When creating a learning center space, Dennis (2011) believed constant input was one of the greatest needs. Earthman (2011) advocated for school staff to determine how things were to occur within the space and the facility experts (e.g., architects and designers) would create the physical space based on the school staff input. Then, the drawings are returned to the school staff to ensure educational adequacy. JISC (2006) also recommended having input from across the institution. They proposed a high-ranking administrator may be required to lead the team to ensure the strategic vision of student success was carried out. Burruss (2014), on the other hand, declared designers are more aware of adult learner needs than faculty and administration. He asserted designers could better select design elements, with administrators and faculty not agreeing with the designer's choices. He also believed having administrators and faculty choosing the design elements steered decisions away from supporting student learning and toward a different rationale (e.g., financial impact).

College #2 was the only institution to include students in the design and planning process and the main project team, though all institutions sought out student feedback throughout the process. The studies conducted by Dennis (2011), Doshi et al. (2014), and Hedestig and Söderström (2012) found students are looking for the paradoxically possible—a place to be in solitude while wanting to be easily found by others. Phillips (2014) averred the physical environment was crucial to student confidence and learning; therefore, having student input in the arrangement of the physical environment increased student empowerment and community.

Challenges. There were challenges noted when seeking and obtaining stakeholder input. Space allocation was the greatest source of tension. The learning center directors at all institutions were dismayed by the territorial nature of the main project team members. Nevertheless, the learning center directors at College #2 and #3 considered the friction supported a better result. This was due to having hard conversations and working through those perspectives together. The most challenging situation was described by the learning center director at College #3—when upper administration would make dramatic changes to something that had already been agreed upon by the project team, which usually affected the space allocation of service areas. Only Smith (2000) described fitting services within a space by prioritizing the amount of space allocated to services based upon the service's importance or need.

Another challenge was project team members creating their own drawings of the new learning center to continue the provision of services without making any fundamental changes to how those services would be provided in the future. Hedestig and Söderstrom (2012) noted the configuration of new learning spaces could support

exploring new teaching practices. However, the authors also cautioned users of the space bring their previous experiences with them, causing the users to try to fit old habits within the new space. Marmot and SFC (2006) provided suggestions to create improved learning spaces. They considered having administrators and faculty determine the pedagogies already used in the current space. Then, the administration and faculty could incorporate pedagogies not able to be used before, compelling faculty to experiment with those new pedagogies to better understand whether they benefit student success.

Even with all the challenges faced by the project teams, all learning center directors noted how valuable the support they received from administration was to the success of the project. Whereas one director (College #2) believed administration was as supportive of building a space with a predominant focus on student input, the director at College #1 was grateful her supervisor supported her pushing as hard as she needed to accomplish the goals of the project. When the director at College #3, a librarian, started questioning her knowledge of learning assistance, her supervisor was there to provide advice and remind her of the similarities between library and learning assistance services though each may approach student support differently. None of the literature included in this study noted the importance of administrative support as described by the participants; however, Beckers, van der Voordt, and Dewulf (2016) hoped their findings would be used by administrators at all levels in making informed decisions. It is possible there is a gap in the literature because it is assumed a facility project would have the support of middle and upper administration. However, none of the literature reviewed specifically noted the impact of administrative support on the final design.

Implementation. The third theme was *implementation*. There were three subthemes included: *post-assessment*, *security*, and *utilization*. After the learning center remodel was completed and people were able to use the new space, the team looked to determine whether the new space met the goals and purpose of the project.

Post-assessment. The post-assessment process at each institution was described as either not having a formal process or as intentionally anecdotal. The facilities participant at College #1 was forthright in his assertion that post-assessment was something his institution does not do well. Earthman (2011) believed post-assessment was an underutilized part of the planning process, and rarely occurs because evaluation is not considered part of the entire process. Hedestig and Söderström (2012) and Lee and Tan (2011) noted the evaluation of a learning space is a complex process. JISC (2006) found it was difficult to evaluate learning spaces without considering other variables (e.g., teaching techniques, learning styles, technological differences). Lee and Tan (2011) found most of the research centered on learning space design rather than on formal methods to evaluate those same spaces and were not evidence-based nor comprehensive. They specifically noted the challenge of finding learning space design contacts at higher education institutions, the informal nature of evaluation used, if at all, and project teams maintaining minimal documentation regarding the evaluation of the learning space. Radcliffe et al. (2008) determined there was no explicit approach to create learning centers; however, some researchers (e.g., JISC, 2006; Johnson & Lomas, 2005; Long & Ehrmann, 2005; Oblinger, 2006) provided a list of principles. Nevertheless, Radcliffe et al. (2008) noted the dearth of objective data or analysis based

on research which can test these principles, though the authors did create questions to consider once the learning space is operational.

The instruments used by the participants in this study to gather post-assessment feedback were surveys, attendance, and usage. At College #2, presentations to the Student Senate were part of the post-assessment feedback loop. Student attendance at College #3 was tied to grades to determine a way to measure whether student academic success had increased after the completion of the learning center remodel. Marmot and SFC (2006) recommended providing post-occupancy surveys to review what went well and what could be learned for future projects. Lee and Tan (2011) found that, although qualitative and quantitative methods were being used at institutions that conducted post-assessments, the evaluation instrument may have been used only in that instance. Somerville and Collins (2008) found quantitative methods could be used for evaluation, but qualitative methodologies were predominantly used. Cash (1993) created the Commonwealth Assessment of Physical Environment (CAPE) instrument to determine building condition and measure student achievement. This assessment was used across the P-12 districts in the state of Virginia, the only study to create and conduct a formal assessment used more than once or in one location. Radcliffe et al. (2009) extended the PST Framework to create the PST Design and Evaluation Framework. The new questions focused on data collection and analysis, as well as ensuring multiple stakeholders were part of discussions at each stage of the project and the post-occupancy evaluation. Still, there were no studies, including by Radcliffe and colleagues, which tested the efficacy of the new Design and Evaluation Framework.

Security. The learning center directors at College #1 and #2 shared concerns regarding keeping the space secure. The director at College #1, being a librarian, was focused on the security of the physical items within the space. She ensured there was only one entrance to the learning center and had Radio Frequency Identification security gates installed. She also pushed to have extra security cameras installed in the hallways where computers were being temporarily positioned, even though the facilities participant noted the security department on campus did not feel cameras were necessary. The director from College #2 was not trained as a librarian and multiple entrances were part of the final design. A library security gate was installed in the rear entrance to deter theft. However, the only time an alarm was set off was when faculty were leaving the space. Sliding metal gates were installed to restrict access when an area was no longer being staffed. More important to him, though, was ensuring the staff felt safe in all spaces. The all-female writing staff raised concerns regarding being in the back corner of the space without the ability for other staff to see what is occurring within the writing space. These types of security concerns were not found in any of the literature reviewed for this study.

Utilization. The goal of all participants was to increase the usage of the learning center by students, faculty, staff, and administration. Each participant described how an increase in flow, combining services heavily used by students, and being able to see students actively working within the space were driving forces in students using the space. This, in turn, drove faculty to start gathering where students could be found, abandoning the traditional office hours concept for time spent with students in the learning center. JISC (2006) recommended faculty spend time in the learning center to

allow for connections between faculty and students to grow separate from the connections formed within the classroom. Multiple researchers (e.g., Dennis, 2011; Doshi et al., 2014; Harrington, 2015; JISC, 2006) noted usage as an important aspect of learning center space, and the findings of this study conform with that conclusion.

Additional changes. As discussed earlier, even though there was no formal post-evaluation process at each institution, the participants still looked to find more input to determine if additional changes were needed. Existing literature emphasized the need for continuous change within the learning center. Dennis (2011), particularly, found the learning center is reinvented on a continual basis. Though the participants in this study were pleased to hear non-learning center employee stakeholders had no major changes requested, the learning center staff, including participants, still saw issues to address.

One of the items brought forward by participants of College #1 was having to install computers in the hallway outside the learning center temporarily due to construction issues. Feeling as though there was little choice but to acquiesce, the learning center director wanted them moved as soon as possible. However, to the ultimate surprise of the director and others, the students were elated at the opportunity to have a quasi-computer area in the hallway. Even when half the computers were moved into the learning commons, the students still preferred to work in the hallway. When working on redesign projects, it is common to have temporary solutions become part of the final layout. As Woolner et al. (2007) stated, "the most successful [design solutions] are likely to be those which are seen as interim solutions and which have within them elements of flexibility and adaptability" (p. 64). JISC (2006) noticed more consideration should be given to the use of hallways or walkways through buildings, using the term

learning streets for these spaces. Somerville and Collins (2008), along with Oldenburg (1999), mentioned the hallway as *third space*, or an area not typically thought of as a space for learning and changing it into a learning center. JISC (2006) also affirmed the use of underutilized spaces within institutions to create social hubs and support maximizing the use of space and building a community feel within a building. Radcliffe et al. (2008) created the Place for Learning Spectrum, which was a continuum showing how any space could support student learning and tried to move people away from siloed thinking regarding spaces.

The learning center director (College #1) could have required the removal of all computers from the hallway but, over time, she saw student use in the hallway increasing and described it as a more social technology hub. This is in line with Phillips (2014) who noted how important the physical environment is to student confidence and learning. By allowing students to create their learning environment, Phillips found, students become empowered and develop community. However, the experience at College #2 was different than what Phillips (2014) observed. The students there wanted a completely quiet space based on input during the needs assessment. Once created, there was extremely low usage in that area. In the end, those areas changed for other uses (e.g., an ESL classroom, the inclusion of the bookstore, and an Apple store).

A further concern raised by the facilities representative (College #1) was the comingling of a quiet space (i.e., library services) with a more social space (i.e., tutoring space). She shared it took the staff almost one-half of a year to learn how to mesh and find the balance between the spaces. This finding is consistent with Dryden and Roseman (2010), as they found students wanting collaboration between tutoring, library,

and writing staff. Hedestig and Söderström (2012) and Dennis (2011) also found

students were looking for a place where social and quiet spaces coexisted.

JISC (2006) encouraged pilot testing design ideas more than once prior to final

implementation so any potential challenges can be determined and appropriate solutions

applied. The unique opportunities found at College #1 and #3 are consistent with the

JISC (2006) recommendations—needing to complete multiple learning center remodel

projects. Representatives from both institutions described their experience with multiple

projects either after or before the main learning center project, respectively. Each

remodel project at both institutions afforded learning opportunities to the directors, who

would take the previous designs and tweak them for the subsequent project. Then, the

directors circled back to the main learning center to see if more adaptation was necessary.

Very little changed at College #1. With having the opportunity to pilot at a smaller,

regional campus, the director at College #3 did make a major change—the separation of

the library from the learning center. The combination was a disaster, and subsequent

projects kept an adjacency model, where the library and learning center are near one

another but not in the same location (though, at the main campus both areas are on

separate floors, with the library directly above the learning center).

Discussion for Research Question Two

The second research question was used to determine whether the impact of

pedagogy, space, and technology was considered at all during the learning center project.

Three themes emerged from the participant interviews. The themes were *instructional*,

space, and *technology considerations*. Discussion of these themes follows, along with

the supporting literature and conceptual framework.

Instructional considerations. The first theme participants raised was *instructional considerations*. Two subthemes emerged from the interviews: *stakeholder input* and *faculty implications*. The participants believed instructional considerations were important to designing their learning center. This was due to their belief these considerations are impacted by the physical space, and the input from all stakeholders would be critical.

Stakeholder input. Stakeholder input was a topic raised throughout the interviews with participants. The evidence of a project team discussing instructional considerations is not typical. Bennett (2003) noted the creation of knowledge was the work of the learning; therefore, the learner should own the space. This meant including students in any feedback or input being sought. Nevertheless, Burruss (2014) believed architects and designers were better judges of adult learning needs than faculty and administrators. Temple (2008) found little evidence to suggest changes in facilities were made based on the interconnection of space, teaching, and learning. Additionally, he found little documentation on how administrators expected the physical space and the teaching and learning occurring within to be affected. Two uncommon items arose from the participants: students being integrated into the main project team at one institution (College #2) whereas College #3 spent 18 months deliberating what instructional considerations to include. Though these were observed by the participants, none of the literature reviewed for this study required students to be part of the main project team to obtain input from them. Neither did the literature mention a recommended amount of time for these deliberations.

Faculty implications. The College #1 IT representative believed it was important to determine what type of pedagogy was to be used first before deciding how to physically make that happen. Participants chose to have more open, collaborative spaces which eschewed the traditional services used previously. This meant a move to more active learning opportunities within the learning center space. Marmot and SFC (2006) believed the choice of a particular pedagogic or andragogic style was enhanced by the learning space used. Christ (1971) believed learning assistance differed from content instruction. He determined instruction focused on facts and presentation of information; learning assistance focused on students acquiring skills to understand the learning process by growing their own skills and attitudes. Though at different times, some researchers (e.g., Andrews & Wright, 2015; Brown, 2005; JISC, 2006; Marmot & SFC, 2006) noted movement in the learning profession from instructor-centered to student-centered paradigms.

Radcliffe et al. (2008) concluded pedagogy, space, and technology were intertwined. Because of this, part of the motivation for any learning center project should consider the types of teaching to be fostered. Radcliffe and colleagues started with pedagogy to create their framework; however, it was clear pedagogy was not necessarily the only starting point. One could start with space or technology just as easily. They started with pedagogy because of the importance of learning within the learning center. Brooks (2012) created a syllogism showing on-task student behavior was affected by the space due to the space affecting instructor behavior and the choice of activities. Perkinson (2009), as well as Phillips (2014), concluded the physical environment must complement the teaching and learning objectives based on the instructional approaches

chosen. Wilson and Randall (2012) studied the effect of a pod room on student engagement. Their study found an increase in engagement within the pod room due the greater ability to provide collaborative tasks, enriching the interactions between student-and-student, as well as student-to-teacher. Nevertheless, even with the input being sought out from faculty and staff, challenges such as those described earlier were still found.

Space considerations. The second theme, *space considerations*, coalesced from the participant interviews. Four subthemes were found within this theme, which were *stakeholder input*, *ambient aspects*, *physical aspects*, and *future-proof*. Physical space changes are affected by many variables, and different variables were found by participants for each institution.

Stakeholder input. The uniqueness of having students as members of the project team at College #2 was only surpassed by using the learning center project as a capstone project for the interior design program students. The students were heavily involved in the design of all aspects of the new learning center. Though some of their ideas were not included, many were part of the final design. Participants also noted there was unrequested, and required, changes received from upper administrators who were not present for any discussions. These situations usually occurred when discussing the space configuration or layout more than situations involving instruction or technology. Nevertheless, stakeholder input was highlighted by Smith (2000), and ensuring the mission, vision, and goals of the learning center were communicated to the architect and interior designer. The architect and interior designer are usually generalists, she

continued, so the collaboration between the instructional specialists and the space and design specialists is critical.

Doshi et al. (2014) concluded students do not use space in the same way as other stakeholders; therefore, the input of students regarding what they need, and the ability to control it, should be incorporated. Dryden and Roseman (2010) determined student input could affect new policies and procedures within the new space (e.g., elimination of noise, better furniture and lighting, collaborative learning spaces). Dennis (2011) found students wanting social and quiet space within the same location. Though input received from stakeholders in other studies (e.g., JISC, 2006; Lee & Tan, 2011; Oblinger, 2006; Oblinger & Oblinger, 2005; Radcliffe et al., 2009; Temple, 2008; Temple & Fillippakou, 2007) revealed an overwhelming request for flexible space, Burruss (2014) ascertained administrators and faculty overwhelmingly requested flexible room designs, but also requested traditional arrangements of tables in rows. Just under half (49.7%) of designers chose flexible space.

Ambient aspects. Participants considered how to create noise zones within the new learning center. Areas for library services needed to be quieter compared to those where tutoring services would happen. College #1 and #2 participants shared one challenge was getting the faculty to understand the different noise zones; students had no issue adjusting at either institution. College #3 did not have to worry about the difference in noise zones because of the decision to keep the library and learning support services separated on two different floors. Nevertheless, the learning center director did create differences in noise levels within the library, with the entrance near the desk as the louder area and it got quieter as you moved toward the back of the space. Long and Ehrmann

(2005) noticed the consideration of how space is to be used allowed the design team to ensure the proper acoustics within a space (e.g., sound dampening or projection). Folkins et al. (2015) realized the acoustics of a room was important, especially in the United States of America. The Americans with Disabilities Act (ADA) specifies requirements to be met in any facilities project, including appropriate acoustic levels. Burgstahler (2012) defined Universal Design (UD) principles, not unlike the ADA law. Dennis (2011) shared students wanted social space, but also required quiet space for individual work. Cash (1993) noted acoustics as another aspect of the physical environment which impacted student success. Lackney (2000) found appropriate acoustics supporting students with their focus and clarity in learning.

Lighting was a predominant factor during the planning process at College #2 and #3. The students at College #3 wanted the prominent source of light to be sunlight within the new learning center. The same was true at College #2; however, one area deemed the quiet area had abundant natural light but was completely underutilized and, finally, reconfigured for other purposes. Smith (2000) observed the provision of natural light and open space supported students feeling more confident and secure in seeking out academic support. Temple (2008) also discerned students preferred the availability of windows, natural light, and outdoor observation. Folkins et al. (2015) concluded lighting was an important consideration as too much light could cause a glare when using technology whereas too little light would cause students to be tired. Cash (1993) identified lighting as one aspect of the physical environment which impacted student success. Barrett, Davies, Zhang, and Barrett (2015) concluded light, whether daylight or electric, was a

statistically significant design parameter in supporting student learning. Lackney (2000)

observed natural light was as important as temperature, furniture, and lighting.

Only one institution (College #2) had participants who discussed color

considerations. The color palette described by the participants was what is usually found

within a typical coffee shop—mostly neutral. The final choice of the color scheme was

made by the eight interior design students. Cash (1993) and Barrett et al. (2015) noted

color as another statistically significant design parameter in supporting student learning.

Counter to the findings at College #2, Burruss (2014) concluded one-third of participants

verified administrators and faculty were not inclined towards a specific color choice;

however, the designers in the study preferred neutral and cool colors.

Physical aspects. The learning center director at College #1 asked the main

project team a question regarding how to create a learning center which uses space

efficiently and is comfortable. One of the responses shared by all participants was the

use of flexible and movable furniture. An open learning environment was requested by

the students at College #3, feeling students would not feel welcome if the space felt

closed-off or constrained. The inclusion of soft seating, participants believed, would help

build a sense of home and keep students from leaving campus. The term *flexible* is used

by different researchers (e.g., Bennett, 2007a; Brooks, 2012; Burruss, 2014; Davies et al.,

2013; Fraser, 2014; McMullen, 2007; Temple, 2008; Woolner et al., 2007), with each

author considering it to be an important aspect of physical space design. Christ (1971)

asserted focusing on flexibility to provide students with options of learning environments.

Long and Ehrmann (2005) and Smith (2000) shared a recommendation to determine how

to use space in multiple ways. For example, if a classroom is not used for a large part of the day, consideration should be given to use that space for other services.

Temple (2008) noted flexible spaces allowed people working within a space to rearrange it to their own needs which, including comfort of the space, were also preferences of students and faculty. Folkins et al. (2015) shared flexible seating, and the ability to rearrange the furniture, was a necessary component of active learning, which the JISC (2006) and Marmot and SFC (2006) noted was the better pedagogic method for student learning. Only Applegate (2009) found students preferred space that is not as flexible or social. She posited students preferred areas which created a social dynamic within, but students did not want to hear others speaking within the space. Barrett et al. (2015) also found flexibility of space to be another statistically significant design parameter. Burgstahler (2012) considered flexibility one of the seven UD principles. Long and Ehrmann (2005) found soft seating would support student learning as the students would focus more on content than their discomfort sitting for long periods of time. The facilities participant (College #1) noted the square footage per student calculation would need to be increased to fit the furniture, which was also being discussed at College #2. Folkins et al. (2015) determined active learning classrooms needed 20 to 35 net assignable square feet per student versus the 15 to 20 net assignable square feet per student in a traditional classroom.

Huddle, or study, rooms were also a key component of each learning center project. A participant from each institution shared the wish of having been able to include more than they did at the time as students use them constantly. The director at College #2 had to restrict the use of huddle rooms to students only as faculty tried to use

the huddle rooms as an office hour location, which limited student access. Huddle rooms

were one of the seven distinct learning spaces found within higher education according to

Temple (2008). Wolff (2001) considered space to congregate, obtain information,

provide instruction, and provide contemplation as features important to project-based

learning.

      Future-proof. The facilities representative from College #2 stated a project like

this does not come often, suggesting the project team think 15 years into the future when

determining what to include in their new space. Also, the team used the insights of the

interior design students to build in components they felt were beneficial. The one

variable the project team could not account for was future growth. Temple (2008)

defined the term *future-proof* as ensuring adaptability in room configuration to

accommodate future, and unknown, needs. White (2004) mentioned approximately two-

thirds (63%) of survey respondents had adequate space for present, but not future, needs.

Smith (2000) described a similar concept in her study, advocating for including program

growth in any redesign plans. McMullen (2008) also shared future-proofing a new space

required the ability to reconfigure the space to include new elements. Lackney (2000)

urged the merger of physical and virtual learning spaces as a prominent feature of future-

proofing. Also, Radcliffe et al. (2008) created the PST Framework to include

components of future-proofing within the planning and evaluation of a new learning

space.

Technology considerations. The final theme was *technology considerations*.

Several subthemes emerged within this theme. Those subthemes were: *access*, *budgetary*

implications, *delivery mode*, and *future-proof.* All representatives described their

technology needs. Though some were similar, others were not. Nevertheless, there were

similarities in how solutions were determined given their unique situations.

Access. Electrical access was paramount for students at each institution. The

placement of electrical outlets affected the layout of the room and the furniture chosen for

the new learning center. The inclusion of access for mobile technology had a similar

effect on space. Mobile technology included the opportunity for students to charge their

personal devices within the space. Along with access to electricity, access to reliable

internet connections, whether using institution-owned or personal devices, is critical in

the information age. Access to technology was raised by Folkins et al. (2015) who

described the growth of wireless technology and the challenge of connecting personal

technology to institutional configurations. In the study by Dryden and Roseman (2010),

about one in five respondents wanted more computer and electrical connections. The

students in the study by Dennis (2011) desired ample technology and large surfaces for

working. Both JISC (2006) and Marmot and SFC (2006) discussed the impact of

technology on pedagogical considerations, with their analysis based on the rise of

technology and the ability of people to access learning through mobile solutions. The

desire for providing access was limited only by the budgetary constraints of the project.

Budgetary implications. All participants described the difficulty in fulfilling

project requests while staying within the budget constraints. Decisions, such as the

purchase of laptops versus desktop computers or the number of electrical outlets, forced

the hands of the project team from including everything. The participants noted choices were judicious to provide the greatest amount of flexibility without spending too much money. However, the project team at one institution (College #1) used their budget to purchase what the facilities participant deemed as "the latest and greatest [technology] within the spaces." However, some of the technology purchased was not used by faculty either because of inadequate training or not fitting the pedagogical methodology of the staff. At College #2, staff forgot to include costs related to signage, requiring the learning center director to create signage within the institution until budgetary funds were available. The facilities participant from College #3 also noted the dreadful choice of whiteboard paint instead of purchasing wall-mounted whiteboards. Later, funds were used to replace the whiteboard paint walls with actual glass, dry-erase boards. White (2004) was concerned with the number of learning center personnel not involved the purchase of computers, which he deemed to be the most important learning technology available in a learning center. Hedestig and Söderström (2012) realized the design of learning spaces was challenging when balancing technology improvements, financial considerations, learning theory incorporation, and student learning preferences. They further described low-level technology (e.g., huddle boards, whiteboard tabletops) as methods of supporting the presentation of student work with minimal cost.

Delivery mode. Participants at all institutions described the use of mobile solutions as a predominant feature of their technology choices. At each institution, the type of solution used, whether laptops, tablets, or electronic huddle boards, the idea was to move away from a traditional space and give options to students so they can learn in a flexible and comfortable way. At College #1, mobility created opportunity as the whole

institution transitioned during the global pandemic. The IT team was able to move into the learning center and use the newly acquired technology to check out to students who did not have their own personal devices. Temple (2008) described the change in technology, which has required less physical space when remodeling. Thus, embedding technology within a space has become easier. Wilson and Randall (2012) described the pod room at Bond University (Australia) as a flexible space, allowing the instructor and students opportunities to learn in different active-learning spaces within the classroom. Folkins et al. (2015) considered flexibility as providing opportunities for students to use their own personal devices within institutional configurations. Each of these authors were adamant on a flexible delivery mode to future-proof a learning space.

  Future-proof. Only one institution (College #3) noted future-proofing in regard to technology. The purchase of the Virtual Desktop Infrastructure (VDI) software supported the growth of technology access without requiring the purchase of desktop towers or laptops. All that is required is a monitor, keyboard, and mouse. Though Temple (2008) originally used the term *future-proof* to mean spaces that are adaptable to accommodate future needs, he also described the flexibility of incorporating technology as it has shrunk in size over time. JISC (2006) warned educators to consider how technology would impact their chosen pedagogical methodology. Ellis and Goodyear (2016) noted the division between physical and virtual spaces are not as well-defined anymore, and students are seeking greater flexibility. They did caution, however, this flexibility could lead to fragmentation, which requires faculty and staff to find compelling methods to connect students together, as well as connecting students with the content taught.

Implications for Practice

The following implications for practice are provided to help learning center administrators, and anyone else who is considering a learning center project, use research-based recommendations in creating a new space by tying pedagogy, space, and technology together in support of the academic success of students. This study focused on the perspectives of learning center directors and other project team members as they determined what their new learning center space would become. Diverse voices were represented by the participants (i.e., learning center director, facilities, administration, information technology), as well as on the project team itself. Overall, this study is distinctive within learning center physical space literature. Of the studies reviewed for this study, only two focused on 2-year institutions within the last 20 years. One of those, Wolff (2001), examined the effect of the physical learning environment on project-based learning. The other author (Perkinson, 2009) considered the relationship between learning space and the learning-centered paradigm based on the perspective of developmental education faculty. Continuing to grow the literature base focused on the experience of learning center creation at 2-year institutions can support balancing the recommendations and conclusions drawn, which are currently skewed toward 4-year institutions.

Institutional leadership should better document the processes used in the creation or remodeling of a learning center, as well as conduct a post-evaluation. Evaluating the final product is as important as better understanding how these projects begin in the first place. Several researchers (e.g., JISC, 2006; Johnson & Lomas, 2005; Lee & Tan, 2011; Oblinger, 2006; Radcliffe et al., 2008) noted the lack of a formal process for post-

assessment. Even the participants noted there was some informal post-assessment, with one describing their evaluation as intentionally informal. Though Radcliffe et al. (2008, 2009) created a framework to support all processes of learning space creation, including post-evaluation, it has not been translated into an evaluation process that has been peer-reviewed. It is also important to consider what is being measured by a post-evaluation, considering there are multiple variables affecting student success beyond the physical learning environment.

Researching what pedagogical and andragogical practices provide the best opportunities for student learning within a learning center should be a major priority of leaders and staff who oversee learning assistance. Additionally, the creation of a mission, vision, or goal statement centered on these best practices must happen with the input of key stakeholders, including students. One of the reasons to balance the recommendations between 2- and 4-year institutions is due to the student populations served by each type of higher education institution. Participants were noticeably focused on student success and needs, and the focus of the project (whether termed a mission, vision, goal, or purpose statement) was exhibited in the final product. This is not unlike other studies focused on physical learning spaces within higher education (Applegate, 2009; Arendale, 2002, 2004, 2005, 2010; Barrett et al., 2015; Bennett, 2007b; Brooks, 2012; Brown, 2005; Christ, 1971; Folkins et al., 2015; JISC, 2006; Johnson & Lomas, 2005; Marmot & SFC, 2006; White 2004). Each of these authors promoted specific recommendations and suggestions for best practices within their own educational community—libraries, professional associations, P-12 schools, and 4-year institutions. Though the student needs at 2-year institutions may be similar, the student demographics, mission, and

perspectives of students may require different solutions when reviewing the PST Framework. This is especially true as 2-year institutions usually have a higher ratio of non-traditional students.

Learning center project teams must include diverse representation from all the student services being combined, and with everyone's contributions carrying equal weight. The participants from each institution recognized how space affected the functioning of their respective services. This was acknowledged so much by faculty and staff working in the learning center that they became territorial about space allocation. Occasionally, this friction occurred between the project team members drawing their own versions of a final product, sometimes at the expense of other service areas. Other times the friction came via decree from the president, institutional board of directors, or senior leadership of the institution. This contrasted with fitting services by importance or need, as Smith (2000) described. Nevertheless, each project team believed the friction guided the project to a better result. This happened by ensuring stakeholders were involved from the beginning through multiple avenues (e.g., surveys, focus groups, student-led organizations) and taking the input seriously.

Learning center administrators must ensure their new space creates a sense of place for all students, not just a select few. Enright (1975, 1995, 2000) was explicit in noting how important a sense of place is to student success at 2-year institutions, usually being the difference between continuing their educational journey or stopping out temporarily or all together. First, learning center leaders should compare the student demographics of those who visit the learning center with the whole institution to determine if there are any gaps. This would signal the learning center is not providing a

sense of place for those students. Consideration should be given to determine if there are methods, such as at College #3, where the practices of the learning center are tied to student success measures (e.g., C or better course completion). Having the learning center connected to the student recruitment and retention practices can influence the culture of the institution and change the perspective of students, especially underrepresented students who need more support to complete their educational journey.

The point person to ensure the mission, vision, or goals of the learning center project must have the support and encouragement of their respective administrators and senior leaders. One participant felt like she had been given permission to fight harder for the mission and vision of the new space because her supervisor told her he would support any stance she took so long as it was centered around the mission and vision of student success. This type of support did not show up in the literature review, so documenting anecdotes surrounding how decisions were made and how they were supported by all levels of administration could inform how to remove or reduce barriers, such as policy or procedures, to better support student success. This information would promote putting into practice guiding principles regarding physical space design and development.

The provision of professional development for the learning center staff must be a required financial consideration necessary for a successful learning center project. Participants from all institutions discussed the importance of determining what pedagogical practices would be used within the new learning center, careful to limit the number of previous practices carried over which were not successful. From learning about new practices, to understanding the new technology being used within the learning center, participants looked to internal and external opportunities for knowledge. The

learning center director at College #3 explicitly mentioned the attendance at conferences and webinars to better understand the creation of a learning center. JISC (2006) noted the need to set aside funds for professional development of educators as the change from teacher-centered to student-centered learning opportunities continues to gain traction. Marmot and SFC (2006) recommended professional development, whether formal or informal, as one item supporting the creation of effective learning centers.

The provision of professional development for learning center administrators should include facility planning. Professional development of learning center administration in the creation of physical spaces is as important as knowing teaching and learning best practices. Burruss (2014) specifically pointed out the perspectives of interior designers and believing the designers are better at knowing how to support adult learners compared to the educational employees. Institutional leadership should require learning center administrators to join professional associations focused on learning center theory and physical design as part of their scholarship or job description. Terms such as "bubble diagramming" or "step mapping" are used during facility project planning, but these may not be understood by others outside that environment. This is part of the reason Radcliffe et al. (2008) created their framework as something that could be understood by all—including those who are not knowledgeable in facility planning. Potentially having the learning center leader involved in other facility projects which impact student academic progress may also support the growth of the learning center leader and change the conversation toward best practices for all students.

Recommendations for Future Research

Because of the limited amount of literature in this area, there are many

opportunities to conduct future research, more than can be encompassed or considered in

this study. The recommendations shared next are based on either the comments from this

study's participants or the delimitations and limitations of this study intertwined with the

reviewed literature. Recommendations include considering different populations and

samples, different approaches to reduce the delimitations and limitations, different

research approaches, or practical suggestions.

This study focused on three institutions within one 2-year college system in the

Midwest. It is possible other institutions within the same state or region could have

provided different results. Similarly, institutions in different regions of the United States

of America, as well as in different countries, could give a better sense of best practices to

be included across the spectrum. Also, including students as participants in the study

would allow them a voice in sharing what they need to create a sense of place and space.

This study included interviews only. Conducting a documentary analysis of

project team notes, charettes, iterations of space design, architectural renderings, surveys,

among other documents, can only provide greater insight into the results of the study.

Moreover, being able to conduct a walkthrough of the spaces being studied with

explanations from each of the participants individually could allow a cross-case analysis

within project team members to determine what each believes is important to a successful

learning center project.

Different research approaches would also enhance this topic. A longitudinal,

quantitative analysis of one institution from beginning to three years post-completion is

one potential opportunity. Another study could focus on student grade impacts or student retention fluctuation of new instructional practices. A further study could conduct a demographic analysis of student success based on changes in the learning center. Finally, conducting a comparative study of student participation in learning centers where students were a major part of the project team versus where students were not. This could provide rich data to determine how valuable it is to include students in more ways than passive opportunities (e.g., surveys).

Summary

The purpose of this qualitative case study was to try to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. The participants shared their experience and described the impact of pedagogy, space, and technology in their design decisions. They described the challenges and successes of working as a team focused on student success, knowing this project may not be remodeled again during their careers.

This study fills a gap in the literature of learning center space design which has focused more on libraries, P-12 education, and 4-year institutions of higher education. Potentially, this study can provide the impetus for others to conduct their own study and highlight the important contributions found within the 2-year colleges heretofore unexplored. Additionally, this study could advance the work at 2-year institutions in being viewed as co-equal to that of the 4-year institutions—a distinct contrast to the history of how 2-year institutions have been viewed previously. The 2-year institutions, with their mission of open-enrollment, strive to live up to the expectations set by their communities—internal and external. Learning centers were born out of a desire to

support students in their journey through higher education. Both 2-year institutions and learning centers are shining examples of providing opportunities out of cycles of poverty and other social maladies. It takes all of us to ensure these contributions continue to be celebrated and be highlighted in the research literature.

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APPENDIX A

Interview Protocol

The interview questions were as follows:

1. How was the decision made to begin this learning center project? Who was involved in the decision?

2. What was the purpose of your learning center project? How was that determined?

3. Describe the composition and selection of the project team.

4. Were any pedagogical considerations made at the outset of the project?

   a. If not, were any added as the project continued? Why?

   b. If so, did they change over time? Why?

5. How were decisions made to choose the physical design of the space? Who was involved in the decisions?

   a. Were the decisions on space tied to the pedagogical considerations? Why?

   b. Were the decisions on space tied to the technological consideration? Why?

6. How were decisions made to choose the technology for the space? Who was involved in the decisions?

   a. Were the decisions on technology tied to the pedagogical considerations? Why?

   b. Were the decisions on technology tied to the physical design and furniture considerations? Why?

7. In your opinion and considering some preliminary data, did you feel you accomplished your goals for the project? Why or why not?

8. Did students have an opportunity to participate in this project? How?

9. What are some aspects you would change if you had to do it all over again?

10. Was there anything which surprised you once the learning centered opened (e.g., student usage, faculty and staff changes)?

11. How did you assess the outcomes of the learning center project?

12. Is there anything else you would want to share that I did not ask?

APPENDIX B

IRB Approval

Date: Dec 18, 2019 12:45 PM CST

TO: Juan Jimenez Nara Martirosyan
FROM: SHSU IRB
PROJECT TITLE: Current Practices in Designing and Developing Learning Center
Spaces in Postsecondary Education
PROTOCOL #: IRB-2019-182
SUBMISSION TYPE: Initial
ACTION: Exempt - Limited IRB
DECISION DATE: December 17, 2019

EXEMPT REVIEW CATEGORIES: Category 2.(iii). Research that only includes
interactions involving educational tests (cognitive, diagnostic, aptitude,
achievement), survey procedures, interview procedures, or observation of public
behavior (including visual or auditory recording) if at least one of the following
criteria is met:
The information obtained is recorded by the investigator in such a manner that the
identity of the human subjects can readily be ascertained, directly or through
identifiers linked to the subjects, and an IRB conducts a limited IRB review to make
the determination required by §46.111(a)(7).

Greetings,

On December 17, 2019, the Sam Houston State University Institutional Review Board
(IRB) determined the proposal titled Current Practices in Designing and Developing
Learning Center Spaces in Postsecondary Education to be Exempt with Limited IRB
Review pursuant to 45 CFR 46. This determination is limited to the activities
described in the Initial application, and extends to the performance of these activities
at each respective site identified in the Initial application. Exempt determinations will
stand for the life of the project unless a modification results in a new determination.

Modifying your approved protocol:
No changes may be made to your study without first receiving IRB modification

approval. Log into [URL], select your study, and add a new submission type (Modification).

Study Closure:
Once research enrollment and all data collection are complete, the investigator is responsible for study closure. Log into [URL], select your study, and add a new submission type (Closure) to complete this action.

Reporting Incidents:
Adverse reactions include, but are not limited to, bodily harm, psychological trauma, and the release of potentially damaging personal information. If any unanticipated adverse reaction should occur while conducting your research, please login to Cayuse, select this study, and add a new submission type. This submission type will be an adverse event and will look similar to your initial submission process.

Reminders to PIs: Based on the risks, this project does not require renewal. However, the following are reminders of the PI's responsibilities that must be met for IRB-2019-182 Current Practices in Designing and Developing Learning Center Spaces in Postsecondary Education.

1. When this project is finished or terminated, a **Closure submission** is required.

2. Changes to the approved protocol require prior board approval (**NOTE:** see the directive above related to **Modifications**).

3. Human subjects training is required to be kept current at citiprogram.org by renewing training every 5 years.

Please note that all research records should be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact the Sharla Miles at 936-294-4875 or irb@shsu.edu. Please include your protocol number in all correspondence with this committee.

Sincerely,

Donna M. Desforges, Ph.D.
Chair, Committee for the Protection of Human Subjects
PHSC-IRB

APPENDIX C

Cover Letter to Participants

[date]

Dear colleague:

My name is Juan F. Jiménez, and I am a doctoral student of the Developmental Education Administration program at Sam Houston State University. I would like to take this opportunity to invite you to participate in a research study to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. I am conducting this research under the direction of Nara Martirosyan, EdD. I hope that data from this research will provide great insight regarding how to incorporate specific physical aspects into the final design and development of the learning center. You have been asked to participate in the research because you were identified as a learning center director within the same college system who was directly involved in the design and development of a new or remodeled learning center within the last seven years at your current institution.

The research is relatively straightforward, and we do not expect the research to pose any risk to any of the volunteer participants. If you consent to participate in this research, you will be asked to participate in an interview, review the interview transcription for any errors or clarification, provide any documents which could help provide greater insight into the process used, and participate in a follow-up interview (if needed). Any data obtained from you will only be used for the purpose of describing the process used at your institution and how that process is similar or different to other institutions. Under no circumstances will you or any other participants who participated in this research be identified. In addition, your data will remain confidential. This research will require about 60 minutes of your time for the interview, with additional time potentially needed to provide documents or a follow-up interview. Participants will not be paid or otherwise compensated for their participation in this project. The interview will be audio recorded, and the recording will be stored on a password-protected computer kept at the researcher's home. Once the transcription of the interview is completed, the audio recording will be kept for three (3) years. You are entitled to review the recording at any time and will be notified when the audio recording is destroyed.

If you are willing to participate in my research, please let me know by responding to this email: I will send a copy of the informed consent for you to review, and we can arrange a time and location in which to conduct the interview. Thank you so much for your time and consideration.

Sincerely yours,

Juan F. Jiménez

Digital Consent Form

Sam Houston State University
Consent for Participation in Research

KEY INFORMATION FOR CURRENT PRACTICES IN DESIGNING AND DEVELOPING EFFECTIVE LEARNING CENTER SPACES IN POSTSECONDARY EDUCATION

You are being asked to be a participant in a research study about understanding the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. You have been asked to participate in the research because you were identified as a learning center director within the same college system who was directly involved in the design and development of a new or remodeled learning center within the last seven years at your current institution and may be eligible to participate.

WHAT IS THE PURPOSE, PROCEDURES, AND DURATION OF THE STUDY?
The purpose of this qualitative case study is to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. By doing this study, we hope to learn how to incorporate specific physical aspects into the final design and development of the learning center. Your participation in this research will last about 60 minutes for an interview either face-to-face or via videoconferencing, with additional time potentially needed to provide documents or a follow-up interview. The interview will be audio recorded, and you would also be asked to review the transcript of the interview and provide any corrections to ensure accuracy.

WHAT ARE REASONS YOU MIGHT CHOOSE TO VOLUNTEER FOR THIS STUDY?
Your participation will help bring the needs of 2-year institutions to the foreground of learning center discussions. Further, your participation will also support the professional development of learning center administrators regarding the design and creation of physical learning center spaces. Also, as the needs of students change over time along with educational policy and building codes, your participation can ensure learning center administrators maintain currency with new trends in education.

For a complete description of benefits, refer to the Detailed Consent.

WHAT ARE REASONS YOU MIGHT CHOOSE NOT TO VOLUNTEER FOR THIS STUDY?
The research is relatively straightforward, and we do not expect the research to pose any risk to any of the volunteer participants. Under no circumstances will you or any other participants who participated in this research be identified. In addition, your data will remain confidential. Participants will not be paid or otherwise compensated for their participation in this project.

For a complete description of risks, refer to the Detailed Consent.

DO YOU HAVE TO TAKE PART IN THE STUDY?
If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any services, benefits, or rights you would normally have if you choose not to volunteer. If you are a student and decide not to take part in this study, your choice will have no effect on your academic status or class grade(s).

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS OR CONCERNS?
The person in charge of this study is Juan F. Jiménez of the Sam Houston State University Department of Developmental Education Administration who is working under the supervision of Nara Martirosyan, EdD. If you have questions, suggestions, or concerns regarding this study or you want to withdraw from the study, please use the contact information below to contact me, Juan F. Jiménez, or Nara Martirosyan, EdD. If you have any questions, suggestions, or concerns about your rights as a volunteer in this research, please contact Sharla Miles, Office of Research and Sponsored Programs, using her contact information below.

Juan F. Jiménez Developmental Education Administration Sam Houston State University Huntsville, TX 77341 Phone: (608) 785-9544 E-mail: jfj005@shsu.edu	Nara Martirosyan, EdD Developmental Education Administration Sam Houston State University Huntsville, TX 77341 Phone: (936) 294-2493 E-mail: nxm021@shsu.edu	Sharla Miles Office of Research and Sponsored Programs Sam Houston State University Huntsville, TX 77341 Phone: (936) 294-4875 Email: sharla_miles@shsu.edu

Sam Houston State University

Consent for Participation in Research

DETAILED CONSENT FOR CURRENT PRACTICES IN DESIGNING AND DEVELOPING EFFECTIVE LEARNING CENTER SPACES IN POSTSECONDARY EDUCATION

Informed Consent

My name is Juan F. Jiménez, and I am a doctoral student of the Developmental Education Administration program at Sam Houston State University. I would like to take this opportunity to invite you to participate in a research study to understand the process learning center administrators used in the creation or remodeling of a learning center space at a 2-year college system in the Midwest. I am conducting this research under the direction of Nara Martirosyan, EdD. I hope that data from this research will provide great insight regarding how to incorporate specific physical aspects into the final design and development of the learning center. You have been asked to participate in the research because you were identified as a learning center director within the same college system who was directly involved in the design and development of a new or remodeled learning center within the last seven years at your current institution.

The research is relatively straightforward, and we do not expect the research to pose any risk to any of the volunteer participants. If you consent to participate in this research, you will be asked to participate in an interview, review the interview transcription for any errors or clarification, provide any documents which could help provide insight into the process used, and participate in a follow-up interview (if needed). Any data obtained from you will only be used for the purpose of describing the process used at your institution and how that process is similar or different to other institutions. Under no circumstances will you or any other participants who participated in this research be identified. In addition, your data will remain confidential. This research will require about 60 minutes of your time for the interview, with additional time potentially needed to provide documents or a follow-

up interview. Participants will not be paid or otherwise compensated for their participation in this project. The interview will be audio recorded, and the recording will be stored on a password-protected computer stored at the researcher's home. Once the transcription of the interview is completed, the audio recording will be kept for three (3) years. You are entitled to review the recording at any time and will be notified when the recording is destroyed.

Your participation in this research is voluntary. Your decision whether or not to participate will involve no penalty or loss of benefits to which you would otherwise be entitled. Also, you may discontinue participation at any time without penalty or loss of benefits to which you would otherwise be entitled. If you have any questions, please feel free to ask me using the contact information below. If you are interested, the results of this study will be available at the conclusion of the project.

If you have any questions about this research, please feel free to contact me, Juan F. Jiménez, or Nara Martirosyan, EdD. If you have questions or concerns about your rights as research participants, please contact Sharla Miles, Office of Research and Sponsored Programs, using her contact information below.

Juan F. Jiménez	*Nara Martirosyan, EdD*	Sharla Miles
Developmental Education Administration	Developmental Education Administration	Office of Research and Sponsored Programs
Sam Houston State University	Sam Houston State University	Sam Houston State University
Huntsville, TX 77341	Huntsville, TX 77341	Huntsville, TX 77341
Phone: (608) 785-9544	Phone: (936) 294-2493	Phone: (936) 294-4875
E-mail: jfj005@shsu.edu	E-mail: nxm021@shsu.edu	Email: sharla_miles@shsu.edu

☐   I understand the above and consent to participate.

☐   I do not wish to participate in the current study.

AUDIO RECORDING RELEASE CONSENT

As part of this project, an audio recording will be made of you during your participation in this research project for transcription purposes only. This is completely voluntary. In

any use of the audio recording, your name will not be identified. Once the transcription

of the interview is completed, the audio recording will be kept for three (3) years. You

are entitled to review the recording at any time and will be notified when the recording is

destroyed. You may request to stop the recording at any time or to erase any portion of

your recording.

☐   I consent to participate in the audio recording activities.

☐   I do not wish to participate in the audio recording activities.

VITA

JUAN F. JIMÉNEZ

EDUCATION

Sam Houston State University, Huntsville, TX
May 2016-present
>Doctor of Education—Developmental Education Administration
>Admitted to candidacy on July 17, 2018
>Expected date of graduation: May 2021
>Doctoral Dissertation: *Current Practices in Designing and Developing Effective Learning Center Spaces in Postsecondary Education*

Viterbo University, La Crosse, WI
June 2010
>Certificate—Ethical Leadership in Organizations

Viterbo University, La Crosse, WI
July 2006
Master of Arts in Education—Educational Leadership
>Wisconsin Provisional License 51 (PK-12 Principal)
>Master's Thesis: *Leadership Style: Faculty and Academic Dean Perceptions at a Private High School*

Viterbo University, La Crosse, WI
Bachelor of Science—Mathematics Education
>Wisconsin Lifetime License 21-400 (6-12 Mathematics)

SKILLS

Effective communicator • Ethical and servant leader • Excellent interpersonal skills • Collaborative, flexible, and strategic problem solver • Fiscally responsible • Mastery of Microsoft Office and related programs • Effective project manager • Ability to multitask effectively in crisis situations and peak work periods

Strengths: Intellection, Input, Learner, Achiever, Harmony

HIGHER EDUCATION POSITIONS

Associate Dean-General Studies, Western Technical College, La Crosse, WI
July 2017–Present

Associate Dean-Learner Support and Transition, Western Technical College
November 2014–June 2017
>Western Technical College is a two-year, degree granting institution and is part of the Wisconsin Technical College System. The Mission of Western Technical College is "[to provide] relevant, high quality education, in a collaborative and sustainable environment, that changes the lives of students and grows our communities."

- Developed the Learning Commons by integrating tutoring and other academic supports with the library and other relevant services
- Researched and helped design the $1.5 million Learning Commons remodel project
- Created a collaborative, communicative workplace culture within the division to provide a positive learning environment
- Met with students to resolve grade and academic appeals
- Collaborated with other divisions and departments across the College to integrate academic support systems into programs and classes to best serve students and increase course-level success
- Collaborated with Retention Advisors to support student success
- Collected and analyzed student success data for division improvement and grant reporting
- Managed an approximately $5 million budget, as well as other external funding, in collaboration with the Dean
- Assisted the Dean in advancing the academic vision and leadership of the division, annual division planning, managing leave time, completing employee success plans, and scheduling courses
- Recommended personnel actions within the division to improve the organizational structure and ensure smooth, effective, and efficient operations
- Hired, supervised, and evaluated full-time and adjunct faculty teaching in face-to-face, online, and blended formats at all campus locations
- Worked to promote social justice within the classroom, division, and the college as a whole
- Promoted faculty development to encourage student learning and support social justice

Adjunct Instructor, Western Technical College, La Crosse, WI
June 2017–August 2017

- Taught one section of Developmental Math Fundamentals (77-854-763) in the Learner Support and Transition Division

UNION STAFF POSITIONS

Executive Director, Kenosha Education Association (KEA), Kenosha, WI
May 2014–October 2014

Assistant Executive Director, KEA
June 2012–May 2014

The Kenosha Education Association is a member-driven organization consisting of over 2,400 education professionals that are employed by the Kenosha Unified School District. It is the third largest organization of its kind in the state of Wisconsin. The Association represents the public policy, labor, and professional interests of its members and is a strong advocate for the children in the Kenosha, Somers, and Pleasant Prairie public schools.

- Assisted in planning, organizing, and implementing membership programs
- Assisted with professional development opportunities and school improvement activities per Association policy

- Continually demonstrated ability to maintain confidentiality of individual member(s) information in a professional manner
- Ensured policies and procedures were properly implemented, and assisted with internal organizational development to improve operational effectiveness
- Initiated, planned, and conducted leadership training and development
- Initiated, processed, and assisted due process representation in personnel cases, grievances, and dismissal proceedings
- Promoted and recruited educators to become involved in local, state, national, and other education organization activities

Associate Executive Director, Racine Education UniServ Council, Racine, WI
July 2007–June 2012

The Racine Education UniServ Council is a member-driven organization consisting of approximately 2,000 teachers and educational assistants employed by the Racine Unified School District and are members of either the Racine Education Association (REA) or the Racine Educational Assistants Association (REAA). It is the fourth largest organization of its kind in the state of Wisconsin. The Association represents the public policy, labor, and professional interests of its members and is a strong advocate for the children in the Racine Unified attendance area. I successfully fulfilled all duties required of the position as listed above, and in addition:

- Led negotiations for the REAA 2009-2011 Labor Agreement
- Helped negotiate the REA 2009-2011 Labor Agreement in an interest-based bargaining approach and drafted approximately three-quarters of the newly ratified contract language

TEACHING POSITIONS

Mathematics Instructor, Wayland Academy, Beaver Dam, WI
August 2005–June 2007

Mathematics and Spanish Instructor, Highland Middle/High School, Highland, WI
June 2003–June 2005

Mathematics Instructor, Highland Middle/High School, Highland, WI
January 2002–June 2003

PROFESSIONAL PRESENTATIONS

Bearbower, S., Jiménez, J. F., Meinertz, G., Russel, C. (2020, February). *How Space Impacts Learning.* Panel presentation at the Third Annual Schmidt Goodman Education Showcase Event, Rochester, MN.

Blackwell, S., & Jiménez, J. F. (2018, October). *Student-Driven Decision Making: The Intersection of Pedagogy, Space, and Technology.* Pre-conference presentation at the National College Learning Center Association Annual Conference, Niagara Falls, NY.

Jiménez, J. F. (2019, April). *Encouraging Emerging Leaders.* Presented at the Wisconsin Conversation on Servant Leadership, La Crosse, WI.

Jiménez, J. F. (2018, November). *It's OK to Talk in the Library…. Changing the Way We Think of the Library*. Keynote address presented at the Second Annual Schmidt Goodman Education Event, Rochester, MN.

Thornton, M., & Jiménez, J. F. (2018, February). *Which Interventions Work Best? Find Out with Lower-cost Tech Tools for Tracking Success*. Presented at the Wisconsin Technical College System C3 Conference, Wisconsin Dells, WI.

PROFESSIONAL MEMBERSHIPS

1. Wisconsin College Learning Center Association (2017-present)
   a. 2018 Conference Chair and Host
2. National Organization for Student Success (2016-2019)
3. National College Learning Center Association (2014-present)
   a. Treasurer (2018-present)
4. League of United Latin American Citizens (2013-2020)

SERVICE TO THE COLLEGE

1. Employee Performance Evaluation Model Co-Lead (2018-2020)
2. Standardized Grading Team (2018-2020)
3. Compensation Team (2017-2018)
4. Strategic Plan Refresh Team (2017-2018)
5. Emergency Management Team (2016-present)
6. Pillar 5 Academic Policy Team (2016-2018)
7. Western Gives Committee, Western Technical College (2016-2017)
8. Energy Leader Team (2015-2018)
9. Diversity Advisory Team, Western Technical College (2014-present)
10. Division Managers, Western Technical College (2014-2017)
11. Leadership Forum, Western Technical College (2014-present)
12. Academic Deans Council, Western Technical College (2014-present)

SERVICE TO THE COMMUNITY

1. School District of La Crosse Board of Education (2019-present)
2. La Crosse Promise Board of Directors (2018-present)
   a. Vice-President (2019-2021)
   b. President (2021-present)
3. Wisconsin Humanities Board of Directors (2017-present)
   a. Vice-Chair (2020-2021)
4. La Crosse Area Chamber of Commerce Leadership Program (2014-2015)
5. Volunteer with University of Wisconsin-La Crosse Office of Admissions to Parent College (2015-2020)
6. Immigration Task Force, La Crosse, WI (2014-2017)
7. Viterbo University Alumni Association Board of Directors (2014-2020)
   a. Immediate Past President (2018-2019)
   b. President (2016-2018)
   c. President-Elect (2015-2016)
   d. Executive Board (2014-2020)

8. National Council for Accreditation of Teacher Education (NCATE) (2004-2014)
    a. Unit Accreditation Board Audit Team Chair (2011-2014)
    b. Unit Accreditation Board (2009-2014)
    c. Board of Examiners (2004-2009)
9. Viterbo University Board of Advisors (2007-2019)

AWARDS AND ACCOMPLISHMENTS

1. Seven Rivers Region Rising Star Under 40 (2018)
    a. "Rising Stars: Juan Jimenez" in the La Crosse Tribune on October 16, 2018
       https://lacrossetribune.com/business/rising-stars-juan-jimenez/article_a300e2a6-06cb-5495-b2ac-da7005c68ac9.html
2. "Western Technical College's New Learning Commons is 'heart of our campus'" in the La Crosse Tribune on October 12, 2018
   https://lacrossetribune.com/news/local/western-technical-college-s-new-learning-commons-is-heart-of/article_317e8347-adcd-558d-8e38-4cb5cfaacae4.html
3. "Western Technical College Students Surprised by Reinvented Library Space" in the La Crosse Tribune on September 9, 2018
   https://lacrossetribune.com/7rivers/wisconsin/western-technical-college-students-surprised-by-reinvented-library-space/article_baf5af77-4852-5aac-8ce2-4a06e1f5496d.html
4. National College Learning Center Association Learning Center Leadership Certification
    a. Level 3 (2017-present)
    b. Level 2 (2014-2017)
5. Delivered Alumni Address at Viterbo University Master of Arts in Education Commencement (July 2009)
6. Delivered Alumni Address at Viterbo University Commencement (May 2008)