EXPLORING THE RELATIONSHIP BETWEEN

STUDIO-BASED LEARNING AND ACTIVE LEARNING IN THE

LANDSCAPE ARCHITECTURE DESIGN STUDIO

by

LESLIE JANE PALACIOS

(Under the Direction of Daniel Nadenicek)

ABSTRACT

The landscape architecture design studio has seen little change in its 120 years in academe in the United States, and limited research on its pedagogic processes has been conducted. This study was intended to explore the relationship between studio-based learning, as manifested in the landscape architecture design studio, and active learning. How does active learning influence studio-based learning, and can active learning gain any insight from studio-based pedagogy?

Building on the existing historical descriptions of the landscape architecture design studio in the literature, advancements were studied through the decades, along with descriptions of contemporary design studios from allied disciplines. The literature also provided precise descriptions of both studio-based learning and active learning. Instructor surveys and interviews, plus live studio observations, provide data on the meanings that instructors ascribed to active learning and studio-based learning pedagogies. The data illuminated the lived experiences of instructors in the undergraduate landscape architecture design studio. The findings show that landscape architecture

instructors offered varied definitions of active learning. Additionally, studio-based learning was largely regarded as implicit. Both pedagogies rely heavily on learning through doing in the classroom. However, the vital concept of reflection, as promoted by the literature of both pedagogies, was not always evident in the interviews and observations of the studio practice. On this basis, it is reasoned that there are similarities between active learning and studio-based learning and that active learning could find value in design studio pedagogy. Moreover, the design studio should look to active learning's inclusion of reflection. Further research is needed with a larger and more diverse population to determine what role, if any, reflection plays in the contemporary landscape architecture design studio in the furtherance of professional education.

INDEX WORDS: Studio-based learning, active learning, landscape architecture, design studio, studio pedagogy.

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by

LESLIE JANE PALACIOS

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MLA, Virginia Tech, 2012

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LESLIE JANE PALACIOS

Major Professor:	Daniel Nadenicek
Committee:	Sherry Clouser
	Marianne Cramer
	Umit Yilmaz

Electronic Version Approved:

Ron Walcott
Dean of the Graduate School
The University of Georgia
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DEDICATION

This dissertation is dedicated to my spouse Ed, whom I dearly love, for supporting me emotionally, cheering me on, and making sacrifices that went above and beyond what I expected. He has graciously endured the time I spent researching and writing this dissertation as well as the time away gathering data. Ed has been extraordinarily supportive of my work, willingly there to lend a hand whenever I ask. He is my sounding board and confidant, listening to me endlessly work through doubts and questions during the process.

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CHAPTER 1

INTRODUCTION AND BACKGROUND

The design studio is said to be among the most innovative teaching environments in academia. Shulman (2005) has described design studio as "signature pedagogy" (p. 52), characterized by the lively and robust questioning and dialogue between students and instructors. The design studio, through studio-based learning (SBL), represents a means to construct learning environments for design students to aid them in engaging with the ill-structured nature of design problems (Kvan, 2001; Lackney, 1999). Design studio instructors claim that this small-group teaching environment fosters complex and unique learning experiences, which in turn inspire students' creativity (Quinlan, Corkery Marshall, 2007). However, those claims are anecdotal at best because, especially in landscape architecture, little research and empirical scholarship exists in support of such suppositions (Britton, 2015).

Although it has been proclaimed as a paradigm for university learning in general (Boyer and Mitgang 1996) and particularly for educating design professionals (Schön 1985), the design studio can be an unpredictable educational setting involving complex interactions between students and teachers (Quinlan, Corkery Marshall 2007). Nonetheless, at the university, there is another pedagogy that is becoming a pervasive model in disciplines outside of design – active learning.

Active learning allows students to participate in the process of learning and requires them to actively pursue knowledge rather than merely passively receiving

instruction (Bonwell & Eison, 1991). The students are actively involved in the learning process, as it places the responsibility to learn the material squarely on the shoulders of the learner (Bonwell & Eison, 1991). Active learning classrooms require students not simply to listen but also to be engaged in all aspects of knowledge building, including problem solving (Bean, 2011).

At the core of these two learning methods lies the concept of pedagogy. The word pedagogy comes from the Greek for *paidagōgia* or custodian of the child. Contemporary pedagogy is defined by the Oxford English Dictionary (n.d.) as the art or science of teaching children. Although the term literally means "child-tender," the term is often used to describe teacher/subject-based instruction and student-centered/directed instruction, respectively.

Another important set of concepts explored in this research revolve around the notions of inherent knowledge and explicit learning. Inherent or implicit knowledge is naturally occurring and often takes place without the intent to learn or awareness of what has been learned. Inherent knowledge is a passive process through which people acquire knowledge of new information through exposure. As an active process, explicit learning occurs when people seek out the structure of any information that is presented to them. Explicit learning refers to the learner's deliberate attempt to master some material or solve a problem.

This research examined the studio-based and active learning pedagogies and construed intricacies beyond the core of learning through doing. It is designed to discover what happens in the studio classroom and how those experiences can inform or be

informed by an active learning pedagogy. However, first, the problem for this research must be explored.

Statement of Problem

The design studio pedagogy in landscape architecture has changed little since its inception at the turn of the 19th century. Understanding precisely what happens today in the studio to ensure the advancement of knowledge building and professional development in the discipline is a necessity for this pedagogical approach to remain relevant at the university. This research sought out areas of congruencies and inconsistencies between studio-based pedagogy in the design studio and the active learning pedagogic model through questioning of the instructional processes in the studio.

Research Question

The purpose of this project is to investigate the current design studio teaching approaches through SBL to determine if, and in what form, active learning exists in the landscape architecture studio pedagogy. Research questions associated with this line of inquiry investigated, from the instructors' perspective, how studio pedagogy reflects active learning. The researcher also examined the distinct facets of the design studio through witnessing instructor roles, i.e., the daily interactions students have with various instructors and the differences therein. The following three questions developed from this line of inquiry:

RQ1: What is the extent to which studio-based learning is implemented by the undergraduate faculty in the landscape architecture design studio?

RQ2: In cases in which those strategies are used, can studio-based learning be considered as a model of the active learning method in the design studio?

RQ3: How does the nature of design studio instruction support the active learning model as revealed in the landscape architecture design studio?

The answers to these questions revealed the implications of the study through analysis of the data.

Study Significance

The significance for this research is underpinned by two key factors: (a) the extent of studio-based learning and active learning in the design studio and (b) the lack of empirical evidence in landscape architecture design studio pedagogy. Studio-based learning is at the core of the design studio pedagogy, and active learning is a proven pedagogical method to advance knowledge building and motivate professional practice learning, yet there is little evidence to suggest how these distinct yet similar methods affect teaching and learning in the landscape architecture design studio.

This study significantly advances the knowledge in landscape architecture pedagogy through an examination of the roles and suppositions of instructors in the design studio. Further, the scrutiny of landscape architecture educators' suppositions regarding the core principles of active learning reveals the extent of understanding of a robust and effective pedagogy and the value it may hold for the design studio setting.

While the results from this study are bound within the landscape architecture pedagogical setting, the empirical nature of the research has the potential to inform the broader field of design research. Being evidence based, this study contributes to theoretical advances on studio-based learning and active learning in the design studio and the relationship that exists between them.

Study Organization

Chapter 2 explores the literature and further expounds on questions and issues pertinent to understanding the concepts surrounding landscape architecture education through the ages, studio design education, and active learning. Although traditional grounded theory excludes a literature review at the beginning of the research, Clarke (2005) recognized that the constructivist grounded theory researcher does not come to a study naive and viewed "prior knowledge of the substantive field as valuable rather than hindering" such study (p. 13).

Chapter 3 identifies the reasoning behind the choice of qualitative research as well as the philosophical underpinnings of how the methodological process was developed and defines grounded theory (GT). The constructivist paradigm is then discussed as the chosen methodology along with the rationale behind its inclusion in this research. Methodology is presented first in the paper as it establishes the foundation for the early literature review supported by a constructivist GT study.

Chapter 4 focuses on the methods for data collection and processing. In this chapter, the context of the study, the sampling methods, the participant selection process and justification, and the data analysis method are assessed.

In Chapter 5, the data is coded for comparison and contrast. Memos, created according to the memoing process of constructivist grounded theory, reveal thoughts and projections that form the core categories. Then, through an ongoing comparison analysis, substantive meaning in the form of categories and concepts from the design studio pedagogy begins to emerge. This process led to the development of themes from the data.

The discussion of the emergent theoretical concepts begins in Chapter 6. This analysis initiates the development of theories to answer the research query and addresses how they are supported by the results from Chapter 5. These concepts will be compared and contrasted with the SBL and active learning discourse from the literature review.

Chapter 7 serves as a culminating chapter with implications for studio instruction and further research.

Summary

This study investigated how instruction is accomplished in the design studio setting. There is a significant gap in the literature on design studio instruction structure and substance in landscape architecture discipline. Current literature on teaching with a student-centered approach focuses on active learning and explores faculty experience and interactions with students. The design studio presents a challenge and an asset for faculty in terms of classroom design and culture, as well as interventions and strategies to address student professional development. This research used constructivist grounded theory as the methodology to explore these separate processes to gain insight and understanding of what occurs when instructors interact with students in the design studio. Expanding the knowledge base regarding the instructor relationship to the learning process in the design studio provides a basis for future research and advances in design education.

CHAPTER 2

REVIEW OF THE LITERATURE

The literature is sparse regarding the teaching and learning processes in the landscape architecture studio from its inception through contemporary times. Nonetheless, in this chapter, the extant literature is explored through four distinct lenses: significant historic moments in landscape architecture design studio education, starting in the late 19th century; the contemporary design studio; the concept of SBL, which forms the foundation of the design studio pedagogy; and active learning as a historic and modern pedagogical process for educational instruction.

In the first section, the extant literature on landscape architecture will be explored for reference to the origins of the discipline at the academy, instructor-student relationships, the physical environment, studio culture, and technology as it relates to studio teaching and learning. The published data was supplemented by personal interviews with emeritus faculty, who provided accounts of teaching and learning from more than fifty years in the university design studio.

The Historic Landscape Architecture Design Studio

Although much has been written about the history of landscape architecture through the ages and into contemporary times, little is known about the history of the discipline in the academy. Originally, according to Kvan (2001) and Lackney (1999), medieval artist guilds offered a place for apprentices to work under the tutelage of skilled craftsmen in fine art, architecture, and garden conservation, with learning in the atelier, or

studio, style of the master. This setting evolved into the academy with the founding of the École des Beaux Arts architecture program of the early 19th century (Alofsin, 2002). Lackney (1999) also traced landscape architecture college curriculum roots back to the these same ideas and to apprenticeships with Frederick Law Olmsted at the end of the 19th century. In the early 1880s, Frederick Law Olmsted began taking on apprentices at his firm. In 1883, Charles Eliot became the first of these apprentices and provided the most vivid illustration of his life through journal entries from his time at the firm, which were published by his father after his death (Eliot, 1902). Eliot wrote of travels to sites with Olmsted and of their field sketching and note taking (Eliot, 1902). In the studio, he was tasked with learning to compile the final drawings of plans created by Olmsted and associates through

> making sketches, enlarging or reducing plans, calculating earth-work, making preliminary studies for laying out grounds…and finally, often after repeating reconsiderations and revisions by the master, in preparing working-drawings, with all their elaborate details of figuring, lettering and coloring. (Eliot, 1902)

There is no real mention of landscape architecture apprenticeships or scholarship for the next ten years, but in 1889 Michigan State University established the first degree program in landscape architecture (Macwan, 2018). Then in 1893, the first course in landscape architecture was offered at the Bussey Institute at Harvard, with Eliot, Jr. in attendance (Eliot, 1902). This was followed in 1900 by Frederick Law Olmsted, Jr. who developed the program for the new school of landscape architecture at Harvard. The following year, the Lowthorpe School of Landscape Architecture, Gardening, and Horticulture for Women began offering classes and a diploma in landscape architecture

(Tripp, 1912). Although little has been written about these early programs or the studio processes, there is evidence that programs continued to be established throughout the country during this era.

According to the American Society for Landscape Architects (ASLA) website, at the end of the century, in 1899, eleven individuals, mainly associated with the Olmsted firm, founded the ASLA (American Society of Landscape Architects, n.d.). These founding members of the ASLA were entrusted to teach the first courses at Harvard and at other schools through a continuation of the atelier style of education, with these professionals teaching at the university (Boyer & Mitgang, 1996).

Studio Teaching and Learning

In the early days, Charles Eliot, Jr. detailed what he experienced at the Olmsted firm. Preparing plans for planting became part of his office duties, leading him to spend hours at the Arnold Arboretum learning plant materials and receiving substantial instruction from Olmstead and his colleagues (Eliot, 1902). Once the academy at the university was established, teaching was focused on studio and lecture courses in landscape architecture, drafting, architectural drawing, history of architecture and landscape architecture, surveying and engineering, and trees and shrubs, among others (Simo, 2000; Tripp, 1912).

There is little other mention of academic studio teaching in the literature through the 1920s after the early studio launches, but there were indicators of the directions to be taken by instructors in the coming decades. By the mid-1930s, Garrett Eckbo, Dan Kiley, and James Rose, landscape architecture graduate students at Harvard University, were expressing concerns over the curriculum at the academy, which was considered to be

mired in the Beaux Arts tradition (Alofsin, 2002). Heavily influenced by German architect and Bauhaus founder Walter Gropius, these students sought a more modern, interdisciplinary approach to landscape design at the academy (Simo, 2000). Eckbo, Kiley, and Rose (1993) argued that, with the rise of Modernism, there also arose the need that arts, sciences, and social change be integrated into the teachings of landscape architecture. If this concept changed teaching in the landscape architecture studio, however, such change is not demonstrated by the literature.

The next mention of the teaching style in studio is far more specific and comes from recollections starting in the 1950s. *The Teaching of Landscape Architecture* (White, 1953) notes that the various schools of landscape architecture had to develop their programs through trial and error; thus, the programs show considerable individuality and regionalism. White (1953) also asserted that teaching is a matter of "improvisation where the teacher learns as he talks" (p. 9). The teaching of design must reside in the hands of "competent and inspiring" instructors (White, 1953, p. 30).

The actual landscape architecture studio teaching techniques, up into the 1950s, rely heavily on the lecture mode, although it was not generally regarded as the best approach. Other options were also explicated. The lecture, according to White (1953), should be less of a speech and more of an extemporaneous event that is constantly evolving. White's (1953) book also referenced the reciprocal approach, in which the student takes a turn at the lectern to impart some knowledge gained through careful study. Another vehicle for studio teaching from the period harkened back to the master "showing" the apprentice the necessary skills or design techniques in the studio (White, 1953). Finally, critique sessions could be used to inform the student on "audience

psychology, the use of the voice, organization of the defense, the importance of persuasion…and the necessity for exposing the logic of the design" (White, 1953, p. 56).

According to Stovall (2020), the daily studio format was experienced as a "studio-critique style of teaching supported by project assignments" and peppered with one-on-one desk crits. As explained in Nichols (2020), the method involved the instructor sitting with the individual student and, through using overlay trace—or "trash"—paper over the student's work, offering suggestions or pointing out areas to reason through; this approach aided students in initiating thoughts and ideas. The studio time was occasionally interrupted by short lectures or talks to further expound on process, project parameters or relevant design topics or theory (Morrison, 2020; Nicholls, 2020). The idea was to "balance between ensuring the creativity…and learning on their part and running…an office like I was the boss. And you are trying to give them a lot of direction" (Stovall, 2020, n.p.).

One of the most influential mid-century educators in landscape architecture, Ian McHarg, hailed from Pennsylvania State University; he relied on a reflective academic practice to move from a grounding in the modernist principles learned at Harvard to one in which culture is the key to adaptation (Steiner, 2004). McHarg believed that knowledge should guide action and that the aesthetic-driven one-size-fits-all modernism was less important to a well-rounded education (McHarg, 1969). Through a combination of his academic activities and his private practice, he conducted research with real-life activities that produced a dialogue with colleagues and students that created the basis for Design with Nature (Steiner, 2004). This style of instruction, pioneered by McHarg, has been noted as the continuing method for teaching in the design studio through the 2000s

(Morrison, 2020; Nicholls, 2020; Stovall, 2020). Morrison (2020) and Stovall (2020) both commented that although their teaching styles remained relatively the same over their decades of experience, the assignments changed often and evolved to include materials and processes relevant to the professional design studio.

At the beginning of the 21st century the relevance of landscape architecture comes into focus with the publication of "An Apocalyptic Manifesto" in 2004. Heidi Hohmann (2004) captured the attention of the academy and the profession with the assertion that with no "historiography, no formal theory, no definition, direction, or focus," landscape architecture may not have a future. There is, Hohmann (2004) cautioned, a great rift between education and professional practice. Landscape architecture at the university has not developed a strong methodology of its own but rather appropriated from other disciplines (Hohmann, 2004)

In the contemporary landscape architecture design studio, students continue to work in the atelier, or studio, style on design problem solutions in an iterative manner, with a series of rolling critiques by instructors and peers, leading to a final design solution as described by Lackney (1999). White (1953) wrote of the value and necessity of unsupervised work as an extension of supervised instruction. The instructor must convince the student of the value of assuming responsibilities in their own learning process (White, 1953).

Relationship Between Instructor and Student

Although the relationship between student and teacher has its roots in the master/apprentice format, the first real mention of such a relationship in landscape architecture design, between Olmsted, Sr. and Eliot, Jr., came in the late 1800s. Not only

was Eliot, Jr. a part of the firm, he was also welcomed into the Olmsted house, akin to the apprentices of medieval times (Stevenson, 1977). In his journals, Eliot, Jr. remarked on the influential nature of his various trips with Olmsted, and other members connected with the firm, in his early days as an apprentice (Eliot, 1902).

Little is known about how the relationship between instructor and student may have changed over the ensuing decades, but according to interviewees' recollections from the early to mid-1950s, the relationship remained a formal expert/student style of teaching in the design studio (Morrison, 2020; Nicholls, 2020; Stoval, 2020). By the late 1970s, the relationship had begun to relax, and the role of the instructor changed to that of a coach in the design studio (Stovall, 2020). Lecture classes continued to support the design studio activities, but the design studio evolved to encompass more than lectures through the sharing of the advancing developments in the design profession (Morrison, 2020).

Studio Environment

What is known about the physical studio from the literature is very limited. There are accounts of the physical environment of the studio shortly after 1903 when Russell Hall opened at Harvard (Alofsin, 2002). According to Alofsin (2002), this building was designed to house the architecture and landscape architecture programs. Lecture rooms were available, and studio space was set aside for the landscape architecture students on the first floor of the building (Figure 1) (Alofsin, 2002). The design studio was set up with oversized studio desks to accommodate folios and to allow for students to work on scale drawings (Alofsin, 2002; White, 1953). Although details of the landscape architecture studio for the first half of the 20th century are scant, this type of studio setup,

according to Morrison (2020) and Nicholls (2020), was pervasive from the 1950s through contemporary times. White saw the studio as a place that accommodated space and culture.

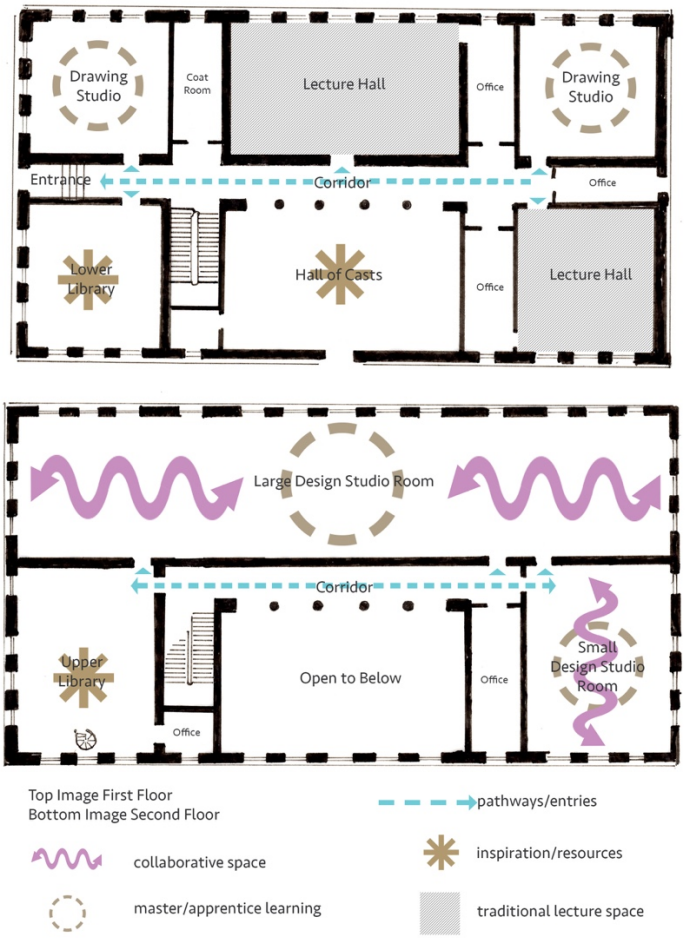

Figure 1. Russell Hall at Harvard, 1903.

In 1953, White reported that the studio should provide an assemblage of indoor and outdoor spaces with design areas that are well organized for "function and character" (p. 86). Such areas should be arranged for efficiency, with the classes separated into "cells" (p. 86) within the space (White, 1953). The arrangement of the entire program (offices,

library, studio space, classrooms, etc.) should be such that “successful and happy” (p. (87) students are accommodated (White, 1953).

Morrison (2020), Nicholls (2020), and Stovall (2020) also hinted at the culture of the studio. Students were expected to be present and working during assigned studio time, during which they would interact with faculty and with their peers (Nicholls, 2020; Stovall, 2020). On most days, studio extended after hours, during which time peer relationships were strengthened through common design, construction, and engineering assignments (Nicholls, 2020). The closer to the due date it became, the longer the hours spent in the studio for most students (Morrison, 2020).

Technology

Technology received limited reference in the literature in relation to landscape architecture studio teaching and learning. White (1953) discussed the “devices” (p. 89) that were necessary for the field of landscape architecture to evolve and thrive. The technology of the era should include air photography, color photography, slates with colored chalk, and tape recorders to aid in teaching in the studio and the classroom (White, 1953). In the 1950s, there was also mention of slide projectors and opaque projectors for projecting book pages, printed material, and photographs (Morrison, 2020; Stovall, 2020; White, 1953).

Jumping ahead to the 1980s, Simo mentioned that the computer opened up opportunities for landscape architecture students for “planning, analysis, and research but also for design” (2000, p.284). Computer Aided Design (CAD) programs and computer presentation programs, such as Adobe Photoshop and Adobe InDesign, were not required by the early 2000s, but their use was growing in popularity and made for visually

appealing presentation documents (Morrison, 2020; Nicholls, 2020; Stovall, 2020). Nonetheless, even with these advances, Gross and Do (1997), Morrison (2020) and Stovall (2020) mentioned that pencil and paper remained the most commonly accessible creative tools in the design studio.

Due to the scant nature of the literature on the landscape architecture design studio, this literature review also includes the design studio processes associated with the disciplines of architecture and interior design in examining the contemporary design studio. This exploration of the literature focused on literature published after the year 2000.

Contemporary Design Studio

Crowther (2013) contended that contemporary design studios are remarkably similar in most design curricula in the United States. The studio is a place where design students learn and practice visualization and representation of a problem graphically and how to integrate design thinking (Green & Bonollo, 2003). Green and Bonollo (2003) asserted that, in the design studio, "emphasis is placed on creativity, drawing, problem solving, and communication" (p. 269). Crowther (2013) believed that contemporary design studio has a duel meaning within the design discipline that identifies a place where instruction happens and as a "mode of engagement" or a "pedagogical strategy" (p. 18).

According to Crowther (2013), the principal framework for the design curriculum is the studio. Cennamo and Brandt (2012) wrote that the studio is an extended class that typically meets for several hours per session several times per week. With the feature of real-world assignments, the academic design studio attempts to replicate the design processes and environment of those in a professional practice setting (Abedelmonem,

2014). Kvan (2001) noted that learning in the design studio, as a flexible and complex mechanism, occurs in three distinct ways: first, the construction of knowledge; second, the development and application of skills; and finally, through a transformative pedagogy in which learning is recognized as altering the learner. Studio in the academy was seen by Crowther (2014) as not only a physical space for education but also a temporal, cultural, and pedagogical site.

Physical Design Studio

Fundamentally, the studio classroom is considered a place that facilitates learning and social activities and influences students' interests and curiosity (Crowther, 2013). Within the design fields, Donnelly and Fitzmaurice (2005) saw design studio acting simultaneously as a classroom and a space for design with instructor as the facilitator for the structure of the class in the designated space.

The literature has described the character of the physical studio space as large rooms with flexible spaces and furnishings that may occasionally house several studio sections (Brocato, 2009; Demirbas & Demirkan, 2007; Taylor, 2009). Obeidat and Al-Share (2012) included that studio furnishing includes individual drawing/drafting tables to enable design assignment iteration and personal desk crits. The contemporary studio features more collaborative tables and areas and extended power sources to support technology (Brocato, 2009). Additional features of the studio space may include pin-up walls, lecture seating, secure storage, enhanced classroom technology, and formal critique areas (Taylor, 2009). To Crowther (2013), this unique space serviced a threefold paradigm though a space for scheduled studio time, a place for students to work on their own time, and an amalgam of the two in which both can occur simultaneously. This

spatial construct is designed “to support a flexible pedagogy through a flexible physical infrastructure” (Crowther, 2013, p. 21).

Temporal Aspects

One of the hallmarks of studio is the long hours that students spend side by side working on design projects (Kuhn, 2001). Studios possess a genus of temporal pattern in sequence and situation with assignments which are either brief or longer lasting to allow for iterative design cycles (Kvan 2000). Cennamo et al. (2011) noted that studio classes also meet for extended hours to allow for practice and production of artifacts and to allow ample time for collaboration amongst students and with professors. Design is, in fact, a process that consists of a series of distinct events that occupy discrete and measurable periods of time and can be seen as a series of discrete activities requiring a level of expertise that affects the way work is done and are discernible in the temporal pattern of their work (Vyas, van der Veer, & Nijholt, 2013). However, Kvan (2000) observed that there is a sense that sometimes the studio instructors “provide support at inappropriate times,” either too early or too late in the process, thereby affecting the project quality and the students’ ability to learn from the encounter.

There also exists a time-content continuum that demonstrates how students begin to master discipline specific content while engaging in the proposal process (Burroughs et al., 2009). Cennamo (2009) observed that, over time, students engage and reengage in content using their learning to offer enhanced and deeper iterations of their design proposals for continued critique by peers and coaches.

The Culture of the Studio

Green and Bonollo (2003) determined that the culture of the academic design studio presents differently from other, more traditional disciplines on campus. The design studio is a creative, collaborative, and highly material place where students develop personal methods and processes of design (Blevins et al., 2007; Gross and Do, 1997). Additionally, Crowther (2013) perceived the design studio in the academy not only as a physical space for education but also a cultural and pedagogical site. Thus, in the contemporary studio, "elements of this culture include a sharing ethos, being social, treating the space like a second home, maintaining a good work ethic, utilizing peer learning, and accommodating serendipity into interactions and learning" (Bull & Whittle, 2014, p. 45). Kvan (2001) and Wang (2010) discussed creativity as the essential activity of the design studio; imagination and relevance to the problem at hand is what is considered most valuable. This approach marks a striking contrast to the cautious empiricism and strict rationality of the general educational mode at the university (Wang, 2010).

In both academic and professional design disciplines, including landscape architecture, Wang (2010) determined that there is a general culture to the design studio: collaboration, rapid communication and broad social relevance. A typical design studio has a material character with artifacts of physical models, sketches, notes, and images scattered on work surfaces and walls (Vyas et al., 2013). Schön (1987) depicted this environment not as embodying problem-solving activity but as "a reflective conversation with the materials of the situation" (p. 4). Gross and Do (1997) and Wang (2010) defined the studio as an intensely social space, both formally through critique and as mandated,

and informally as a communal and personal places, and one that is constantly occurring in some form. Thus, the role of collaboration becomes a critical component of design students' creativity and reflective nature (Wang, 2010). As Vyas et al. (2013) noted, the source of creativity is not characteristic of the student designer but a product of conversations, both internal and through the socio-cultural context.

Design Studio as Pedagogy

Crowther (2009) observed that learning, as a flexible and complex mechanism, occurs in distinct ways in the design studio: the construction of knowledge, the development and application of skills, and as a transformative pedagogy in which learning is recognized as altering the learner. In studio classes, students are presented with a design problem, work individually or in groups to develop a solution, and subject their work to reviews (Cennamo et al., 2011). Cennamo et al. (2011) noted that the design studio instructor typically does not conduct traditional "lectures" but instead orchestrates experiences that lead students to new insights in their work.

Cennamo et al. (2011) mentioned that design students may be asked to design an original place or space and may be assigned to study trends throughout history to develop an understanding of the form and function of the context. Brocato (2009) realized that problems presented in studio are generally loosely structured with room for creative solutions, while Abedelmonem (2014) saw deep learning and critical thinking involved which allows students to suggest solutions to real world problems and challenges. Again, the focus in the design studio is on problems that mimic real world situations that may be encountered in professional practice (Brandt et al., 2013). Brandt et al. (2013) wrote, "The course instructor directs and facilitates the structure of the class, in the studio space,

using the studio method of instruction" (p. 840) such as studio-based learning. Thus, instructors provide assistance without giving answers or specific instruction for the students' creative direction (Brandt et al., 2013). Abedelmonen (2014) and Çelik (2014) added that in addition to promoting the learning objectives of building critical thinking skills and building upon knowledge base, there is still an emphasis on final product.

In the design studio itself, the literature recognized that knowledge and skills are refined through the project critique, or crit (Brocato, 2009; Burroughs, Brocato, & Franz, 2009; Gazvoda, 2002; Gross & Do, 1997). The literature further explains that the crit may be present as formal or informal reviews and range from desk crits and pin-ups to project evaluations (Brocato, 2009; Ellmers, 2006; Gazvoda, 2002; Green & Bonollo, 2003). Cennamo (2011) describes the review process as one in which "students present their design solutions, articulate their reasoning and receive feedback from faculty, peers, and occasional guests" (p. 14). Critiques occur formatively throughout a project's progression, informally when faculty pass through student collaborations offering input on the design process, during spontaneous pin-up sessions, as well as at the completion of a project (Cennamo et al., 2011).

The contemporary design studio does not vary significantly from the historic landscape architecture studio. The studio's physical structures remain essentially unaltered and reminiscent of the professional studio. The pedagogy is still led by the instructor/master acting as coach in a student-centered instructional pedagogy. The design studio is process driven around a central design problem that can be as short as a class session or stretch into several weeks with expectations that students will work for

hours beyond the scheduled studio class time. The studio has also maintained a collaborative community that shares not only the design space but a dominant culture.

In the following sections, SBL and active learning are separately defined and discussed as pedagogical methods.

Studio-Based Learning (SBL)

SBL is described as a method of instruction that is student centered and revolves around the studio classroom through an experiential pedagogy. This section will detail the literature defining experiential learning as the roots of SBL and outline the processes surrounding the SBL pedagogy and the key roles in the process.

A Brief History—Roots of SBL

As an instructional technique, SBL dates back to the time of Plato and emphasizes the "free and unfettered exchange of knowledge" (Green and Bonollo, 2013, p. 269). Such a knowledge exchange, according to Lackney (1999), is reminiscent of that put forward by art guilds of the Middle Ages, which practiced the master/apprentice model in which students learned and worked in the professional world on real problems and products for the community in the master's studio. This experience began to form the impetus for experiential learning. In the words of Lewis and Williams (1994):

> In its simplest form, experiential learning means learning from experience or learning by doing. Experiential education first immerses learners in an experience and then encourages reflection about the experience to develop new skills, new attitudes, or new ways of thinking. (p. 5)

Kolb (2014) suggested that the often-ambiguous problems associated with SBL first formed as an experiential pedagogy.

John Dewey, with the establishment of the Laboratory School in the late 1800s, established the model of experiential education, which affords opportunities for problem solving and critical thinking rather than memorization and rote learning (Lackney, 1999). Experiential learning rose in popularity in the mid-twentieth century as an attempt to move away from traditional formal education—in which teachers simply presented students with abstract concepts—and toward an immersive method of instruction (Crowther, 2013; Dewey, 1938; Kolb, 2014; Piaget, 1971). David Kolb (2014) noted in 1984 that in experiential learning, there is a need for a link from present content to previous experiences. Kolb (2014), building on Dewey's early work, theorized that learning is a lifelong process that is grounded in a pedagogy of experiential learning: in this approach, teaching is seen as a motivational tool for students to use in learning, and the learning experience, through doing, moves beyond the classroom and strives to incorporate more involved forms of knowing. In Kolb's (2014) theory of experiential learning, the impetus for the development of new concepts is provided by new experiences. Figure 1 illustrates Kolb's experiential learning style theory, which is typically represented by a four-stage, integrated, mutually supported learning cycle: concrete experiences, reflective observation, abstract conceptualization, and active experimentation (Healey & Jenkins, 2000; Kolb, 2014). Kolb's (2014) concrete experience takes the learner through actively experiencing an activity, followed by conscious reflection on that experience. The learner is then asked to conceptualize a theory or model of what is observed (Kolb, 2014). The fourth stage of active experimentation sees the learning attempting to test the model/theory/plan for imminent experience (Healey & Jenkins, 2000). It is posited that, although the learning cycle may

be entered at any stage, all four stages must be completed for effective learning to occur (Kolb, 2014; Moon, 2013). This experiential learning model formed the foundation for the SBL model used in the design studio pedagogy (Lackney, 1999).

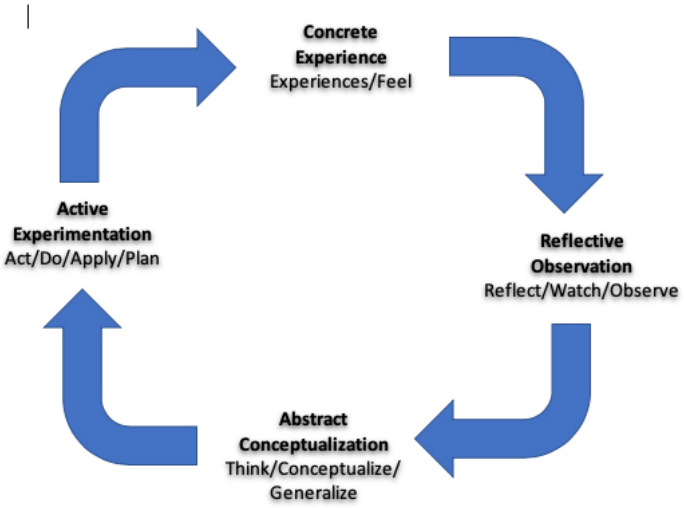

Figure 2. Kolb's (2014) Four Stages of Learning.

An understanding of the experiential model helps illuminate the development of SBL. As previously mentioned, the evolution of the formal academy began with the master's studio, which developed into the design studio; as the learning environment changed, so too did the learning processes (Lackney, 1999). SBL formally originated in the Bauhaus School of Design during the early 1900s in Germany (Brocato) and later was adopted as a key component of design programs at the university level in the 1970s (Schön, 1985, 1987).

Studio-Based Learning (SBL) Model

The SBL model is an approach to designing learning environments that can promote both deep disciplinary learning and creativity (Brocato, 2009). The process, as

noted in Figure 3, involves a progressive process from the initial and recurrent design enquiry through levels of informal and formal critique, with increasing time producing increasing content (Monson, 2007). Figure 3 illustrates Monson's (2007)

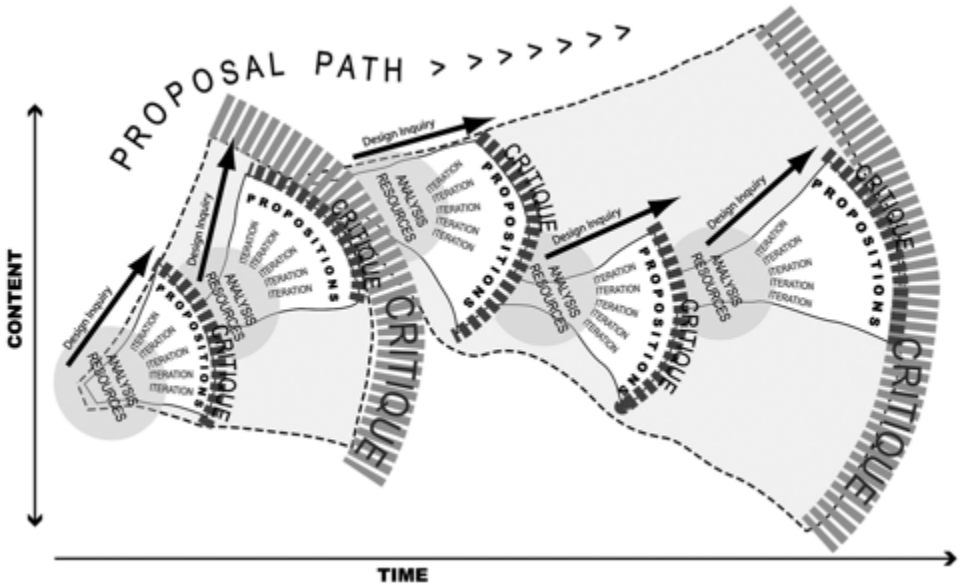

Figure 3. Proposal path during a studio-based learning case (Monson, 2007).

evolving proposal path from initial analysis through a repetitive process of iteration, proposal and critique as they unfold. Characterized by open-ended iterative problem solving, expert coaching, and a culture of sharing and critique, SBL is well suited for supporting complex forms of inquiry in a studio setting (Cennamo et al, 2011). The studio forms the foundation of the SBL model, which creates a unique environment unlike that of other pedagogic models.

SBL seeks to create a ubiquitous learning environment (the studio) in which students work on design problems while instructors offer "formative feedback" through spontaneous crits (Crowther, 2013, p. 18). According to Schön (1987), much of the learning in such spaces takes place through dialogue that elicits those activities that shape, elaborate, and deepen understanding. In the literature, studio-based learning has

been viewed as case driven, using hazy design problems that leads learners to formulate their own inquiries through a propose-critique-iterate cyclical process (Brocato, 2009; Burroughs et al., 2009; Cennamo & Brandt, 2012).

SBL develops many abilities for the design studio learner, as his/her learned skills focus on the process and product and culminate in a presentation that demonstrates "specific knowledge and concepts, creating context and reason to learn and understand the information and concepts" (Brandt et al., 2013, pp. 332-333). Studio is considered the fundamental teaching strategy, fostering students' encounters with and discovery of the essential concepts of the applied design discipline through the SBL process (Burroughs et al., 2009).

Characteristics of SBL

SBL, as an inquiry model, follows problem-based learning but allows a more persistent person-centered approach in the context of a shared learning environment in which ambiguous problems are focused on iteratively (Brocato, 2009). Brocato (2009) addressed the activities that are essential to the SBL model and categorized them as proposition, critique, and iteration.

The first mode constitutes the *propose* phase of the propose–critique–iterate model and comprises inquiries that inform a pupil's proposals (Brocato, 2009). In the proposition phase, activities revolve around and include field experience, individual and collaborative study in the studio space, and lectures and discussion with the instructor (Brocato, 2009). Through carefully choreographed field excursions, the student is led to "individual inquiry that influences individual design projects" (Brocato, 2009, p. 140). With proper prompts and instruction, students develop specific notions about what they

intend to design and what to look for during field experiences (Brocato, 2009). Studio instructors attend and narrate during the field experiences, which are extensive and are often repeated to offer observations of the phenomena being observed (Burroughs et al., 2009).

According to Brocato (2009) and Burrough et al. (2009), the studio space and place is a core element of the SBL learning model in the proposition phase. In SBL, the physical studio provides a dedicated workspace that accommodates the individual learner but also provides for a discursive collaborative environment in which students work with one another, with instructors, and with experts (Schön, 1985). Brocato (2009) viewed this working environment as designed and appointed to provide continuity between realistic problems and the professional practice spaces it sought to emulate. This space is designed to be flexible and changes in accordance with students' needs during learning engagement (Burroughs et al., 2009).

Moreover, the SBL environment extends beyond the walls, desks, and collaborative spaces of the designated spaces and, according to Brocato (2009) and Ellmers (2006), into the discipline-specific field, in which intense study takes place. Burroughs et al. (2009) saw this approach as offering a real-world environment in which learning takes place, which is seen as unique to the SBL model.

Within the design studio and through field experiences, the instructors act as experts who guide learner behavior to emulate professional practice (Brocato, 2009). The SBL model recalls the master/apprentice relationship as described by Lackney (1999). Burroughs et al. (2009) also noted the high level of interaction that experts in SBL used to enhance learning, which provided the experience and enticed students to lead their own

inquiry individually and collaboratively. According to Brocato (2009) and Burroughs et al. (2009), the studio teacher, with his or her practical experience, serves as a mentor in the design studio and acts as an example of a design thinker. Through the instructors' design-thinking lens, students start to exemplify professional selves (Burroughs et al., 2009). In SBL, instructors also engage students in frequent Socratic dialogues, which are "typified by critical questions and reflective discussions that demonstrate clear understanding of the discipline" (Burroughs, 2009, p. 7). Features that foster the critique of those proposal ideas are the next step in the SBL model and include evaluations during formal and informal critiques, with which the student uses feedback from others to refine their work.

Ellmers (2006) and Kvan (2001) agreed that students construct their own artifacts (ex. drawings, models, sketches) suited to the design problem and presented at different phases of completion for critique in the SBL model. The concept of the crit in the design studio process was described by Crowther (2013) as intensified moments between the student and reviewer. Cennamo et al. (2011) saw critiques in SBL as providing opportunities for students to present their "design solutions, articulate their reasoning, and receive feedback from faculty, peers, and occasionally guests" (p. 14). This activity is seen as central to SBL and sets it apart from other pedagogical approaches while informing new and improved iterations (Brocato, 2009). Burroughs et al. (2009) saw, in SBL, learning time spent in studio as a constant journey toward increasingly "technically accurate, artistically superior design proposals through critique" (p. 12). SBL leans conceptually toward a process of learning by doing in which staff and peers act as constructive critics and coaches (Burroughs et al., 2009; Lackney, 1999).

Formal critique happens in SBL throughout the course of the studio (Brocato, 2009; Bull & Whittle, 2014; Lackney, 1999). Burroughs et al. (2009) and Cennamo (2011) saw students as engaging formatively throughout project development when faculty circulate throughout the studio and offer input on the design process or call for spontaneous pin-up sessions, as well as at the completion of a project. Critique most often occurs between student and instructor at the desk; this form is considered the desk crit (Lackney, 1999). This desk crit provides an opportunity for the instructor to encounter, question, and comment on the student's design inquiry and artifacts and to model appropriate design behaviors and values (Lackney, 1999). Other types of formal critique include those in which work is presented at defined intervals and evaluated by instructors and peers to further design thinking and reflection to instigate iteration. Finally, there is the juried critique, in which final design iterations are presented and defended, with a panel of visiting experts, instructors, and peers providing feedback (Brocato, 2009).

The informal critique runs concurrently with the formal studio desk critique in SBL (Bull & Whittle, 2014; Lackney, 1999). Lackney (1999) noted that students informally critique other students' work in the studio and learn the various design skill techniques from one another necessary to accomplish a particular representation of their chosen process and solution. Brocato (2009) and Burroughs et al. (2009) identified self-critique as another form of informal critique—in this case, a process of self-evaluation of one's design process and proposals. The informal critique connects the iterative process through reflective activities (Burroughs, 1999). Regardless of the type of critique experienced in studio, the critique approach is vital to the ongoing iterative process as described below.

Iteration forms the third part of the propose-critique-iterate process of SBL and is intricately connected with the critique phase. In SBL, iterative practice forms another integral component to the process. According to Brocato (2009), following an initial analysis phase in SBL, a series of design iterations, driven by critique and reflection and seeking to answer the design circumstance, begin to form. Ledewitz (1985) saw this process as comprising multiple and rapid iterations that develop idea kernels, which are further developed into prototypes that can then be tested and refined through further iteration. Design decisions form during the iteration process and anticipate and reflect the crit session (Senbel, 2012). Iterations, linked with the informal critique, advance the design process, leading to further proposals and continued iterations until a final solution is settled upon prior to a concluding critique (Monson, 2007). In this way, the design learner proceeds through the iterative cycles of design and application, using each application as an opportunity to collect data for reflection and to inform ensuing iterations (Abedelmonem, 2014). Burroughs et al. suggested that, over time, students "engage and reengage in content using their learning to offer better and deeper iterations of their design proposals for continual critique by peers and teachers" (p. 4).

Reflection

As previously mentioned by Dewey, Kolb, Schön, and others, the model of reflection requires a deeper understanding through definition and portrayal as outlined in the literature concerning the SBL model. The following section is an examination of perspectives on reflection and reflective practice in an SBL pedagogy.

Reflection is mentioned as an ancillary part of the propose-critique-iterate process of the SBL model by many sources (Brocato, 2009; Bull & Whittle, 2014; Burroughs et

al., 2009, Cennamo et al., 2011; Ellmers, 2006; Green & Bonollo, 2003; Lackney, 1999) but deserves deeper consideration. Reflection, as described by Schön (1987), is "knowing in action" or the act of consideration of serious thought (p. 72). Schön asserted that one reflects when they perceive "as unique, paying attention to phenomena and surfacing his intuitive understanding of them, his [her] experimenting is at once exploratory, move testing, and hypothesis testing" (p.72).

Reflection, in SBL, is considered by many as taking two forms: reflection-in-action and reflection-on-action. Reflection-in-action is considered by Brocato (2009) as an intellectual habit of observing how we think during an activity and of altering our thoughts to change what we are trying to achieve. Bull and Whittle (2014) saw reflection-on-action as what is performed once the action has concluded: this process is an activity of the reconstruction of a practice based on what is remembered from the action. This approach represents an effort of stepping back into the experience and then exploring that memory, thereby retrieving what was learned from it (Burroughs et al., 2009).

As viewed by Green and Bonollo (2003), the studio design project allows for deeper learning through the processes of intuition and reflection. Sometimes, reflection is planned or anticipated as part of an activity, but it often occurs simply due to the nature of the studio in the SBL model (Burroughs et al., 2009). Of course, not all instances of reflection need to occur within the studio, but the studio environment, and the culture encouraged within it, naturally allows for reflection (Green & Bonollo, 2003).

Active Learning

Active learning is any approach to instruction in which all students are asked to engage in the learning process. Like SBL, the model has its roots in experiential learning,

which is explored below along with the early history and processes of teaching and learning.

Early History

Historians of active learning may date its inception back to the 18th and 19th centuries and to Rousseau, Locke, and Pestalozzi, but, in fact, Bonwell and Eison's (1991) concept of learning by doing and reflecting, which is the foundation of active learning, dates back to antiquity and the first master/apprenticeship—indeed, the very foundations of learning itself. Confucius (1999) illustrated the tenet in the 6th century with "I hear, I know. I see, I remember. I do, I understand." (p.113). Supporting the doctrines of active learning are philosophical and theoretical underpinnings that uphold the idea of student engagement in the learning process.

Koetting and Malisa (1996) indicated that, in the 18th century, John-Jacques Rousseau and John Locke independently began to advocate for a more democratic educational system instead of passive learning, which produced resentful students who were unmotivated to learn. Hayes (2006) traced the seeds of the progressive education movement back to these pedagogues; Locke, for example, held that observation and experience produce knowledge rather than rote acceptance of instructors' teaching and that concrete experiences are necessary for learning to occur. Rousseau (1979) reasoned that children's education should develop naturally and advocated for learning by doing, arguing further that the then-established standard of education did not result in significant learning.

When Rousseau (1979) published his foundational work "Émile, or On Education," in 1762, it imparted his philosophy that education "concerns itself not with

particular techniques of conveying information and concepts, but rather with developing the pupil's character and moral sense, so that he may learn to practice self-mastery and remain virtuous even in the unnatural and imperfect society in which he will have to live" (p. 86). Johann Heinrich Pestalozzi, a disciple of Rousseau's, talked in his novel *Leonard and Gertrude* about how a students' mind received impressions through observation and experience, also supporting the concept of learning through being active physically and mentally as well as the idea of "Anschauung", or the process of forming knowledge structures (Pestalozzi, 1894).

Cremin (1959) noted that John Dewey introduced a formal progressive education movement that continued in the vein of Pestalozzi's ideals of learning. As described in the previous section, Dewey (1938) argued that education should be a set of experiences that building on one another to help students create and understand new experiences. Dewey (1938) also asserted that unless students' school activities and life experiences were connected, real learning would be impossible. Severing students' psychological ties to society and family makes their learning journeys less meaningful and thereby makes learning less memorable (Dewey, 1938).

Contemporary Active Learning Background

Contemporary active learning is grounded in the constructivist philosophy and experiential learning theory, which emphasizes that existing knowledge and experiences form original or heightened understanding (Brame, 2016; Cooperstein & Kocevar-Weidinger, 2004; Page, 1990; Prince, 2004). Bonwell and Eison (1991) are credited for the initial wide use of the term active learning in the 1980s to describe an approach that

rejects instructor-centered, passive learning activities and instead insists that the acquisition of knowledge is an active endeavor.

In the literature, active learning has been described synonymously as an approach (Bell & Kozlowski, 2008; Bonwell & Eison, 1991), a method (Weltman, 2007), a process (G. Anthony, 1996; Collins & O'Brien, 2011; Michael, 2006; Prince, 2004), a pedagogy (Armbruster, Patel, Johnson, & Weiss, 2009), and a strategy (Lumpkin, Achen, & Dodd, 2015). It has also been considered as a set of activities and a model of learning (Brame, 2016; Chickering & Gamson, 1999; Felder & Brent, 1996; Fink, 1999). Regardless of the precise definition, active learning is always a phenomenon of knowledge building.

Definition. Active learning is sometimes described by contrasting it with its antithesis: active learning is the opposite of passive learning (Lumpkin et al., 2015). Although active learning has not achieved a universally accepted definition, the definition offered by Bonwell and Eison (1991) has been cited by many authors seeking to describe the phenomenon (Bell & Kozlowski, 2008; Bowen, 2012; Michael, 2006; Morrison, 2012; Prince, 2004; Schank et al., 1999; Weltman, 2007). In their influential work, *Active Learning: Creating Excitement in the Classroom*, Bonwell and Eison (1991) defined active learning as "instructional activities involving students doing things and thinking about what they are doing" (p. iii). Prince (2004) also described as "any instructional method that engages students in the learning process (p. 223). This definition was expanded by Brame (2016), who suggested that active learning involves students' efforts to actively construct knowledge. One other definition of note incorporates the sense of reflection noted by the Greenwood Dictionary of Education into the amalgam:

> The process of having students engage in some activity that forces them to reflect upon ideas and how they are using those ideas. Requiring students assess their own degree of understanding and skill at handling concepts and problems in a particular discipline. The attainment or knowledge by obtaining or contributing. The process of keeping students mentally, and often physically, active in their learning through activities that involve them in gathering information, thinking, and problem solving. (Collins & O'Brien, 2011, p. 6)

Weltman (2007) adds that active learning is commonly associated with learning strategies such as experiential learning, learning by doing, service learning, peer tutoring, laboratory work, role-playing, and the use of case studies.

Active learning, according to Eison (2010), relies heavily on process over product while developing students' autonomy and their ability to learn through greater involvement and with greater control over their learning. He also argued that the process becomes evident in thinking critically or creatively, the activity in cooperative learning, expressions in writings, and exploration of personal values and attitudes, feedback, and reflection (Eison, 2010).

Student engagement. Bowen (2012) and Schank et al. (1999) surmised that students engaged in active learning draw on acquired understanding and knowledge through higher-order thinking modes such as analysis, synthesis and evaluation to construct new knowledge. Chickering and Gamson (1999) and Donnelly and Fitzmaurice (2005) suggested that each student takes an active role in their learning through reflecting on past experiences and applying that knowledge to their present lives. Additionally, there is a rich body of literature indicating that the instructor acts as a catalyst to

maximize opportunities for student engagement (Brame, 2016; Lumpkin, Achen, & Dodd, 2015; Page, 1990; Prince, 2004).

This more holistic approach to instruction, according to Prensky (2001), engages students with diverse learning styles and appeals to the contemporary learner who thrives in an environment of diversity and variation. Prensky (2001) also noted that in this mode, the instructor provides the student with a wide range of learner-centered opportunities in class for greater mentoring and peer-to-peer collaboration, thereby increasing student engagement. In a traditional lecture format, as Chickering and Gamson (1987) argued, instructors might not be aware of student progress until after assessment. Active learning has also been linked to higher student motivation and increased confidence with class materials (Cavanaugh, 2011).

The literature is rich with instances in which active learning methods require students to utilize higher-order thinking skills (Bean, 2011; Brame, 2016; Carr, Palmer, & Hagel, 2015; Lumpkin et al., 2015; Page, 1990; Weltman, 2007). The cognitive, motivational, and emotional learning routes involved in active learning, as described by Bell and Kozlowski (2008), "influence self-regulatory processes that have been implicated as critical to the development of more complex skills and promotion of adaptive transfer" (p. 296). Active learning engages students in activities beyond reading, listening, or watching, thus deepening their learning and connection with the materials (Brame, 2016). In an active learning scenario, Bean (2011), Bell and Kozlowski (2008), and L. D. Fink (2003) all observed that higher-order thinking was enhanced through student engagement with simultaneous hands-on learning processes linked with active cognition on the activity and on the cooperative learning undertakings.

Group and cooperative learning. Johnson and Johnson (2008) asserted that a fundamental strategy in changing a student's role from passive to active is cooperative learning, or a group learning scenario, in which students work in small groups to achieve common goals related to achieving the learning outcome. Group learning is featured as a chief strategy for active learning and is supported by hundreds of studies dating back to the late 1800s that corroborate the benefits of students working cooperatively (Johnson & Johnson, 2008).

Active learning, when it utilizes authentic tasks that reflect real-life situations, increases the benefits of class periods, particularly when students are assigned to assume multiple roles and consider different perspectives (Cavanaugh, 2011). Group members are expected to contribute toward the work of the group through "sharing their ideas, helping to solve problems, arguing intellectually in order to reach an agreement, and working toward the goal" (Johnson & Johnson, 2008, p. 29). Cavanaugh (2011) asserted that in this cooperative scenario, students are required to "articulate their thinking and reflect on ideas of others" (p. 24).

Reflective Practice in Active Learning

Although reflective practice as related to the design studio pedagogy and SBL has been covered in the previous sections of this chapter, here, reflection will be described through its associations with active learning.

Concept. Reflection, as an alternative to dialogue with another person and as a thinking process, was used by Socrates more than 2,000 years ago (Van Seggelen-Damen, Van Hezewijk, Helsdingen, & Wopereis, 2017), but the approach that is used today for applying reflective practice in learning settings derives more from Dewey's

(1933) and Schön's (1983) work. Similar to SBL, Atkins and Murphy (1993) described reflective practice as an exercise in creating knowledge about one's own cognition and regulation of that cognition. Apart from the cognitive and affective dimensions, several authors have emphasized the role of experience in reflective practice (Boud, Keogh, & Walker, 2013; Brockbank & McGill, 2007; Dewey, 1933; Hatcher & Bringle, 1997; Mezirow, 1990). In Dewey's (1933) theory of reflective thinking, action and thinking are intertwined and take place at the same time.

Davis (2003) offered additional support for the research showing that reflective practice is important for successful learning processes, particularly in active learning. For example, Davis (2003) demonstrated that reflection helps to create new relationships between initial and acquired knowledge and makes the learning process more effective in an active learning pedagogy. Moon (2013) also noted that in reflective practice, the learner "engage[s] in a continuous cycle of self-observations and self-evaluation in order to understand their own actions and the reactions they prompt in themselves" (p. 81) The outcome is not intended to address specific issues defined at the outset but to observe and refine general practice. (Moon, 2013).

Ash and Clayton (2004) acknowledged that many learning environments have been designed to support students' inquiry and reflection skills. Moon (2013) argues that in an active learning pedagogy, the experiential learning theory is supported by hands-on learning with practical, authentic experiences, reinforced and evolved through reflective practice. Bulpitt and Martin (2005) wrote that reflection, "in a classroom setting, presents educators with a method for narrowing the theory–practice gap." (p. 207). Ryan (2013) also noted that active learning processes bring the practice environment into the

classroom to be used as the experience that enables students to understand and value reflective practice as an essential part of the learning process.

From the literature. Reflective practice can be linked to a wide variety of learning methods, including active learning (Mezirow, 1990; Van Manen, 1995). Reflection was prescribed by Bonwell and Eison (1991) as a part of an active learning pedagogy. However, limited literature was found on the reflective process in active learning, with the exception of mentions as a cognitive partner to the act of doing (Bell & Kozlowski, 2008; Brame, 2016; Carr et al., 2015; Freeman et al., 2014; Lumpkin et al., 2015; Michael, 2006; Prince, 2004). Like active learning, experiential learning—a close associate to active learning through constructivist ties—finds the literature widespread with process and critiques of the theory and methods of reflective practice (Eison, 2010). This section will review the processes of reflective practice through an experiential learning lens to support the discussion.

Experiential learning, from an epistemological standpoint follows a constructivist perspective where subjects build meaning from their own experiences (Boud et al., 2013; Moon, 2013). Dewey (1938) saw all learning as experiential, but not all experiences are educational. Experiential learning is similar to active learning, according to Boud et al. (2013), in that learning occurs through doing and reflection on the action that has been undertaken. However, Cooperstein and Kocevar-Weidinger (2004) asserted that where experiential learning takes a more empirical approach in which reflection is on experience rather than action, active learning creates knowledge from reflecting on a wide range of activities (mental and physical).

Atkins and Murphy (1993) posited that reflective practice is accounted for on many different levels, although there are similarities in the terminology that connect to three key stages of reflection. The first stage can be equated to Schön's revelation, regarding uncomfortable feelings and thoughts, that the innate knowledge being applied is "not sufficient to explain what is happen(ing) in that unique situation" (as cited in Atkins and Murphy, 1993, p. 1189). Ryan (2013) also described the initial brush with reflection as "reporting and responding" (p. 146) on what has happened to cause the situation.

The second, or middle, stage, according to Atkins and Murphy (1993), "involves a critical analysis of the situation, which is constructive and involves an examination of feelings and knowledge" (p. 1189). This analysis may involve an examination or generation of new knowledge but, as explicated by Boud et al. (2013), should emphasize the importance of utilizing positive positions and eliminating obstructive feelings. Mezirow (1981) and Ryan (2013) have described this critical thought process as a matter of connecting prior knowledge to the situation and analyzing with support for further action.

The third and final stage, according to Atkins and Murphy (1993), comprises the development of a new perception about the situation; thus, the outcome of reflective practice results in knowledge building. Mezirow (1981) describes this stage as "perspective transformation" (p. 6). Boud et al. (1985) discuss in more detail the outcomes of reflective practice, suggesting that there are emotional, cognitive changes which may or may not lead to behavioral changes.

Facilitating reflection. According to Boud et al. (2013), it is important that students do not learn solely from actions and/or experiences but rather from the reflection on those actions and/or experiences. Despite its importance, Russell (2005) noted that there seems to be more rhetoric about the value of reflective practice than there is detail about how professional educators can develop the skills of reflective practice in students. Moon (2013) acknowledged that concrete activities must facilitate reflection on experiences to help students make connections to previous learning so that they can subsequently apply their ideas to new situations. Schmidt and Brown (2016) determined that to ensure consistency, there must be a conscious plan for multiple opportunities for reflection before, during, and after experiences. These opportunities help students explore the questions, challenges, and insights that arise over time (Moon 2013). Ryan (2013) indicated that reflective activities must be linked to learning objectives. Through repetitive reflection, using a consistent framework applied through various contexts, the students are trained to apply implicit reflection in their coursework and, ideally, in their daily lives (Boud et al., 2013).

While reflective practice is best suited for affecting objectives, activities associated with experience can also address knowledge and skills. According to Ash and Clayton (2004), faculty must prompt reflection with thought-provoking questions that require students to think critically. Students must be encouraged to challenge their assumptions through open inquiry while maintaining a mutually beneficial atmosphere that respects the perspectives of others (Brockbank & McGill, 2007). Moon (2013) concludes that reflection must have context and should not be limited to the student

perspectives; instead, it must also consider the larger situation by examining other academic factors.

Russell (2005) promoted instruction in reflective practice—explicitly, directly, thoughtfully, and patiently—using personal reflection-in-action to interpret and improve one's teaching of reflective practice to others. Brockbank and McGill (2007) wrote of three modes promoting reflective practice in the classroom:

> First, consciously engaging in reflective practice enables the teacher to learn from and therefore potentially enhance their practice and learning about their practice.…Secondly, by engaging in reflective practice…[the] teacher can uncover, unravel and articulate…with a view to learning from that reflection.…Thirdly, making reflective practice accessible to student learners, enables…[them to] become more conscious of their own approaches to their learning and thereby promote critically reflective learning…via reflection on their practice and learning about their learning. (p. 72-73)

In the classroom, Ryan (2013) saw the opportunity for the instructor to model reflective practice or expound upon the reflective methods used in their research, although the process should be conducive toward learning objectives. A vital component to facilitating reflection and reflective practice is for instructors to engage in the practice themselves and be able to articulate and model such practices for the students to help them to engage in reflective practice, too (Brockbank & McGill, 2007).

Limitations to reflection. Despite its importance, there are limitations to the reflective practice in education. Leijen et al. (2009) proposed four difficulties related to reflection: general difficulties, difficulties describing an experience, difficulties

evaluating an experience, and difficulties relating to multiple perspectives. Russell (2005) and Ryan (2013) cautioned that there is an absence of any clear agreement about what reflective practice is and how to recognize it. Ryan (2013) elaborated that learners are not often taught how to reflect, which different types of reflection are possible, or how best to communicate their disciplinary knowledge through reflection. Moon (2013) and Ryan (2013) also warned against superficial reflection, which is not an effective means of learning.

Critical reflection is not an intuitive skill, Ryan (2013) argued, and competence in the different levels of reflection cannot be taken for granted. According to Russell (2005), students do not automatically know what is intended by the act of reflection, and thus, they may infer that it is a description or critique of instruction. Moon (2013) also acknowledged that there is a disconnect for instructors, who are encouraged to engage in reflection but have not been instructed in the skills or given models of reflective practice.

Cooperative Learning

Lumpkin et al. (2015) and Prince (2004) saw cooperative learning as a part of the active learning process and as a stimulus to producing better solutions to problems than those developed by individual learners. In the classroom, Soller and Lesgold (1999) contended that effective collaboration with peers has proven valuable as a uniquely powerful method. According to Lumpkin et al. (2015), cooperative activities not only allow for students to be more actively engaged with the content but lead to deeper learning and more critical thinking. Keyser (2000) also saw that through planned learning activities, students seek outcomes that are beneficial to all other group members as well as to the individual. To ensure that the learning outcomes are achieved, Johnson and

Johnson (2018) and Keyser (2000) determined that consideration must be given to group dynamics, including appropriate group size, student roles within the group, and group evaluation tactics to provide feedback for class sessions. This group work, per Johnson and Johnson (2018), provides different roles for students to assume in the group organization; these roles reinforce learning objectives and strengthen knowledge scaffolding activities through group participation. Britton (1990) believed that a student's learning is derived from the community of learners made up of other students. Eison (2010) asserted that students learn effectively in groups, encouraging one another to ask questions. Britton (1990) also noted that the source of learning is dialogues and interactions with other students (and sometimes the instructor) resulting from the positive interdependence among students' learning goals. According to Johnson and Johnson (2018), the heart of collaborative learning, therefore, is the cooperative foundation of students working together to maximize their own and one another's learning. However, Soller and Lesgold (1999) debate the sustainability and efficacy of placing students in groups where there are no guarantees that students will engage in effective collaborative learning behavior.

Evidence of Efficacy

Michael (2006) wrote that there is compelling evidence that "active learning, student centered approaches…work, and they work better than move passive approaches" (p. 165). Brame (2016) saw evidence that an active learning approach, traced back nearly 30 years to Bonwell and Eison's (1991) *Active Learning: Creating Excitement in the Classroom*, helps students learn more effectively than the traditional lecture course. Overwhelmingly, the literature shows that students who are active in their own learning

perform better (Armbruster et al., 2009; Bonwell & Eison, 1991; Brame, 2016; Lumpkin et al., 2015; Michael, 2006; Prince, 2004). Substantial research has proven that active learning is a successful stratagem to increase achievement levels and enhance content mastery through students' transformation from passive listeners to active participants (Gaffney, Housley Gaffney, & Beichner, 2009; Prince, 2004). Active learning is a broad umbrella that can be narrowly focused into forms that define activities which produce a specific outcome (Carr et al., 2015). Such forms may include both low-stakes activities (mind mapping, pair-square-share, crowd crumple, etc.) and high-stake engagement (case studies, peer learning, enquiry-based learning, etc.) ("Active Learning Stategies," 2011). There are multiple models of active learning, including problem and inquiry-based learning, peer-led teams, team-based learning, and process-oriented guided inquiry learning (Abdelmonem, 2014; K. Anthony, 1991; Bonwell & Eison, 1991). Lumpkin et al. (2015) also suggested that "scaffolding" quick, low-stakes assignments before introducing lengthier, more analytical assignments proves more beneficial to learning outcomes.

Prince (2004) noted that there exists a separate problem in determining what is effective when deciding if an improvement is significant: "Proponents of active learning sometimes cite improvements without mentioning that the magnitude of the improvement is small. This is particularly misleading when extra effort or resources are required to produce an improvement" (Prince 2004, p. 224). According to Carr et al. (2015), active learning is a very broad concept that covers, or is associated with, a wide variety of learning strategies. Prince (2004) argued that, overall, active learning alone, as a method, does not always compel success in the classroom. Prince (2004) and Michael (2006) also

noted that some active learning practices, particularly cooperative learning, do not always provide increases in individuals' problem-solving skills outside the group dynamic.

However, multiple studies have observed the effectiveness of active learning. Richard Hake (1998) studied more than 6000 physics students to examine active learning, in the guise of interactive engagement, as compared to traditional lecture instruction. The results of the three-year study strongly suggested that active learning courses can increase course effectiveness well beyond that of passive course delivery (Hake, 1998). A study of 155 undergraduate science students conducted by Kim, Sharma, Land, and Furlong (2013) determined that the instructional approaches incorporated in the design of active learning can facilitate students' engagement in critical thinking in the context of authentic problem solving. Brame (2016) reported on a 2014 university study that validated the efficacy of an active learning model. Moreover, a meta-analysis of 225 studies comparing "constructivist versus exposition-centered course design" (Freeman et al., 2014, p. 8410) concluded that that the evidence for the benefit of active learning was very strong compared to more passive forms of instruction.

Although Bonwell and Eison's (1991) examination of the literature surrounding active learning approaches reveals that they often result in marked improvement in student attitudes, as well as an improvement in student thinking and writing skills, Prince (2004) supported the efficacy of active learning components rather than a holistic approach. Prince's (2004) examination of the literature assumes that, taken as individual activities such as breaking the lecture up with pauses for short- and long-term retention drills, active learning methods are effective. However, he continued, there is ample evidence that simply introducing activities into the classroom is insufficient to influence

retention (Prince 2004). There must be a promotion of student engagement between the student and the instructor, among student peers, and between the student and the material to affect significant change in learning and retention (Carr et al., 2015; Michael, 2006; Prince, 2004). Prince (2004) also demonstrated evidence that student engagement, coupled with a moderate amount of cooperative learning (as opposed to competitive structures), creates effective scholarship and promotes life-long learning.

Summary

In the literature, the design studio, SBL, and active learning share many commonalities, although they also diverge at several points, both historically and as pedagogies.

Chronologically, as seen in Appendix A, two significant confluences exist among the three pedagogies. First, in its historical origins, the master/apprentice method of teaching is evident in all three pedagogies. This teaching method was not only historically significant but remains essential as the model for coaching students in the classroom setting, whether it be studio or traditional. The next phase of convergence occurred in the John Dewey era, during which his ideas of experiential scholarship moved from a teacher-centric pedagogy toward ideas that support a student-centered pedagogy in which students create their own knowledge. Over time, active learning has taken an independent path, according to the literature, which observed influences in addition to those associated with the studio. The design studio and SBL continue to follow a parallel path in the timeline with ideas of studio classrooms, teacher/student relationship, and the propose-iterate-critique method.

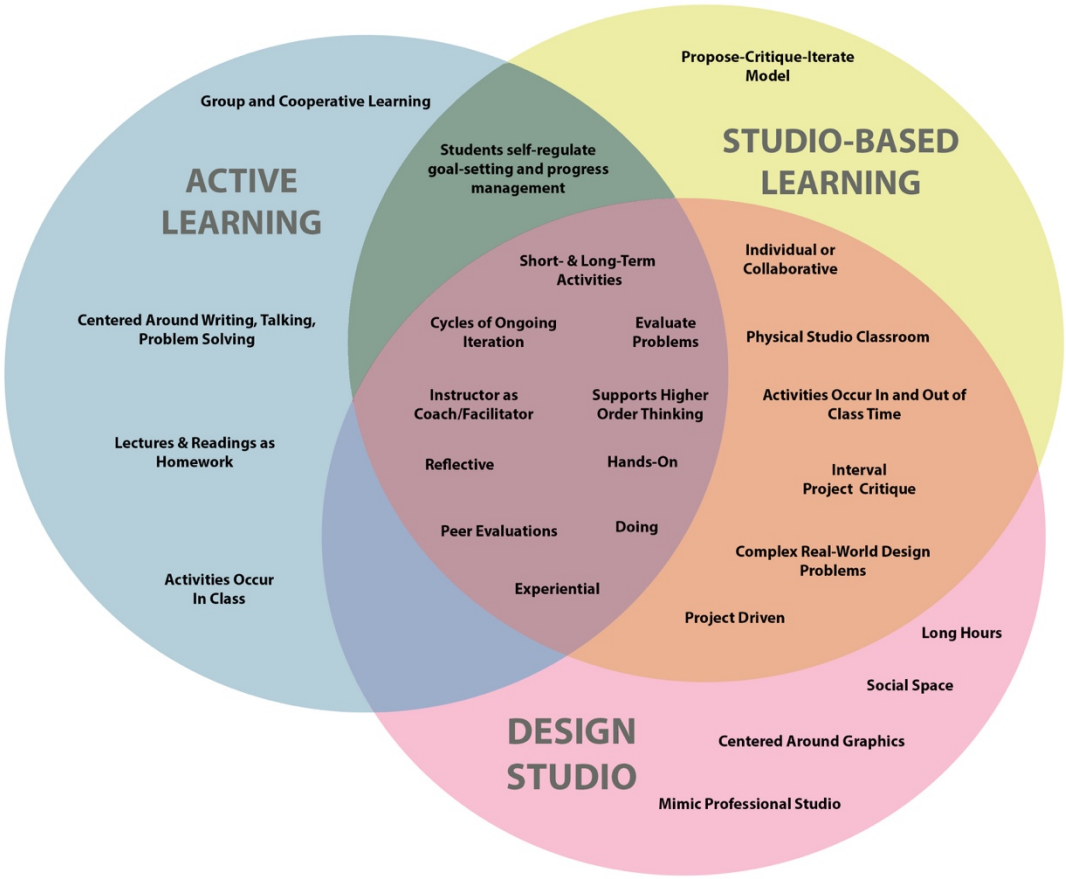

Figure 4. Relationship model for active learning, design studio, and SBL.

Whereas studio-based pedagogy has been described as uniquely centered on the activities within and surrounding the design studio, the literature has suggested several similarities between it and active learning pedagogy. Beyond the obvious hands-on, learning-by-doing activities, the role of the instructor, the student and peers in the learning process, the length of the activities, and the processes revolving around the problem share common ground between these pedagogies. The design studio sees fewer commonalities with active learning, as seen in Figure 4, which shows potential scenarios for how the actual design studio, SBL, and active learning unfold. The literature does not

support a purely siloed studio model, nor does it adhere strictly to the active learning archetype. However, there is evidence that SBL and the design studio share a strong common core of activities and principles.

There are strong areas of confluence within the three examined pedagogies through activities and process, although differences do arise that indicate that the studio is a distinctive environment that promotes a different cultural and structured environment.

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to introduce the research methodology for this study investigating the current design studio teaching approaches. Bogdan and Biklen (2007) distinguished methodology, "the theoretical perspective for a research project", from method, "specific research techniques" (p. 35). This chapter will lay out the essentials of qualitative research and the applicability of grounded theory (GT) and a constructivist approach.

The objective of a constructivist GT approach is to spawn theories that explain how some facet of the social world works and is therefore connected to the reality being explained: "The comparative and interactive nature of GT at every stage of analysis distinguishes GT from other approaches and makes it an explicitly emergent method" (Charmaz, 2008, p. 163). This chapter will describe the general methodological approach used for this study. It will explain the reasons why it was necessary to use the qualitative research methodology and the epistemological and theoretical perspectives that helped frame the study. Finally, the chapter outlines the rationale for selecting a constructivist GT method to interpret the data and evolve a theory.

Restatement of Purpose of Study

The purpose of this study, as noted in earlier chapters, was to explore the pedagogical processes in the design studio setting through two lenses to obtain an understanding of the processes employed in teaching and learning through studio-based

learning (SBL) in the design studio in a landscape architecture curriculum and to provide a deeper understanding of the role that active learning plays in a professional practice pedagogy. This study pursued an understanding of the relationship between active learning and the SBL practices in an undergraduate landscape architecture design studio. This project sought to determine current SBL instructional approaches and if and in what form active learning exists in the landscape architecture undergraduate studio pedagogy.

Rationale for Qualitative Research

This qualitative study used the Charmaz constructivist GT design to generate a substantive theory of instructor perception of the pedagogy in undergraduate design studios. Qualitative research is particularly suited for the exploration of an area of study in which research is lacking, and it provided the best means to address the present research questions. Qualitative research has been described as "any kind of research that produces findings not arrived at by statistical procedures or other means of quantification" (Strauss & Corbin, 1990, p. 17) and is derived from a variety of disciplines and traditions (J. W. Creswell, Hanson, Clark, & Morales, 2007). With its origins in social and behavioral science, the concern of qualitative research, according to Merriam and Tisdell (2016), is the understanding of "how people interpret their experiences, how they construct their world, and what meaning they attribute to their experiences" (p. 5). Qualitative research begins by accepting that there is a range of different ways of making sense of the world and is concerned with discovering the meaning seen by those who are being researched (Groat & Wang, 2002; Merriam & Tisdell, 2016). Denzin and Lincoln (2015) saw qualitative research as exposing underlying reasons, opinions and motives while revealing a range of behaviors; it is not

concerned with the “what” and “how” of statistically and numerically driven quantitative research but, rather, why certain behaviors occur.

In the literature, qualitative research has generally taken an interpretive, naturalistic approach to its subject matter; qualitative researchers study things in their natural settings in an attempt to make sense of, or interpret, phenomena in terms of the meanings that people bring to them (Denzin & Lincoln, 2015; Merriam & Tisdell, 2016). Denzin and Lincoln (2015) and Morrow (2007) used qualitative methods to learn directly from people what was important to them and to identify important variables for further research. Although qualitative inquiry has been advocated as a way of seeking and exposing information other methods cannot, J.W. Creswell (2003) noted that it is distrusted by some because it rarely provides a generalizable foundation for decisions and policies. However, Lincoln and Guba (1985) suggested that qualitative research offers a method to “establish confidence in the ‘truth’ of the findings” (p. 218). They called this confidence “trustworthiness” and suggested that it comprises four criteria: credibility (confidence in the veracity of the outcomes); transferability (providing proof that, in context, findings have applicability); dependability (displaying consistency and the ability to be duplicated); and confirmability (the findings are not shaped by the researchers’ bias but by the participants’ narrative and experience) (Lincoln & Guba, 1985). Qualitative research was selected for this study to capture expressive information that cannot be conveyed in quantitative data about beliefs, values, feelings, and motivations that underlie behaviors. This qualitative research sought to understand how instructors in the landscape architecture undergraduate studio interpreted their lived experiences and explained how they made sense of these life events. Thus, constructivism

was the appropriate choice to assist in understanding instructors' lived experience involved with the design studio.

Assumptions of Qualitative Design

Certain sets of beliefs as well as philosophical assumptions underlie qualitative approaches. Qualitative researchers appreciate the importance of the beliefs and theories that inform their work and have actively written about them in their research. Methodological assumptions consist of the assumptions made by the researcher regarding the method used in the process of qualitative research (Creswell 2003). The qualitative methodology is an inductive as well as topic-specific process. Reality is seen as a social construct that emerges in the subjective language used in and perceived of the world. Creswell (1994) asserted that "[q]ualitative research is interpretive research" (p. 147). Thus, the individual perception of reality is part process, a partial construct of a whole, and totally subjective. Qualitative research is seen as an investigation of processes in which reality is construed by the respondent as well as the researcher.

Qualitative research assumes that what the respondent said, how it was spoken, and the words and phrases employed, within the context of the situation, have value. Value is also seen in the personal voice and the informal speech of the data as well as in informal language and narrative. Thus, interviews form a critical part of qualitative research methodology. In qualitative research, using interviews involves interaction between the researcher and what is being investigated, with the extent of the study, and with the respondent. The character of an interview itself evolves as directed by the respondent.

Qualitative research respects the perspective or position that the researcher shapes the research. The researcher calls on reflexivity to preserve reliability—a conscious attitude of openness to the data and obligation to acknowledge one's predispositions or biases. Through its exploration of the values, biases, and subjective experience of respondents, qualitative research is perceived as effective, reliable research in its authentic adherence to data and in the reflections of respondents. Other key assumptions of the present work include:

1. As a participant observer, the researcher may maintain the integrity of the study by recognizing her own biases and not driving the data into preconceived categories.
2. Tangible instructor narratives can reveal noteworthy intangible ideas and aid both the researcher and instructor in the course of discovering meaning.
3. Constant comparative analysis can support the application of subjective participant perceptions to generate more collective perceptions and meanings.
4. A limited field study can lend to a course for broadened substantiating research from the concepts, categories, meanings and theory generated.
5. An assumption of theoretical sampling lies in the persistence that theories formulated for a particular group "will probably hold for other groups under the same conditions" (Glaser & Strauss, 1967, p. 49).

Grounded Theory Research

GT, acknowledged by J.W. Creswell (2003) as one of the strategies of inquiry of qualitative research, is a general, inductive research method concerned with the generation of theory, according to Strauss and Glaser (1967). GT was developed by

Strauss and Glaser (1967) and is a general methodology for developing theory that is "grounded" in data that has been systematically gathered and analyzed. Inductive research involves the search for patterns through observations and the development of theories for those patterns through a series of hypotheses (McGhee, Marland, & Atkinson, 2007). In GT, no theories or hypotheses are applied in the inductive studies at the beginning of the research, which leaves the researcher unencumbered in terms of altering the direction for the study (McGhee et al., 2007; Strauss & Corbin, 1990; Strauss & Corbin, 1994). According to Charmaz (1996):

> the GT method forces the researcher to attend closely to what happens in the empirical world he or she studies. From a constructionist, interpretative perspective, the GT researcher must then study the meanings, intentions and actions of the research participants - whether he or she observes them directly, constructs life histories with them, engages them in intensive interviewing or uses other materials such as clinical case histories or autobiographies. (p. 32)

Crooks (2001) used GT to uncover such things as social relationships and behaviors of groups known as social processes. Because the GT method captures social process in social context, this research approach is most useful when the goal is a framework or theory that explains human behavior in context (Charmaz, 2000).

Engaging in any form of GT study, however, according to McCann and Clark (2003) and Glaser and Strauss (1967), requires the researcher to address a set of common characteristics: theoretical sensitivity, theoretical sampling, treatment of the literature, constant comparative method, coding and memoing, and identification of the core category.

Theoretical sensitivity refers to the insight of the researcher concerning her ability to give meaning to the data, understand what the data says, and separate out what is relevant and what is not (Charmaz, 2000; Strauss & Corbin, 1994). According to Glaser (1978), by being theoretically sensitive and using insight, the researcher is able to develop a theory that is grounded, theoretically dense, and cohesive. Sensitivity comes from several sources, including (1) literature—in-depth reading offering a rich understanding of the phenomena being studied; (2) professional and personal experience—offering an understanding of the events and topics being explored; (3) the analytic process—allowing for insight and understanding of the phenomena (Strauss & Corbin, 1990).

Glaser and Strauss (1967) first mentioned theoretical sampling and described a process of generating theory from data, which includes collecting the data and then coding and analyzing the data. They saw the researcher as making a conscious decision about what further detail needs exploration as the new theory develops (Glaser & Strauss, 1967). Charmaz (2000) noted that this process usually takes place after some initial key concepts or categories have been identified. Theoretical sampling, therefore, is used to produce more data to endorse or refute the categories that have been identified in the previous analysis (Charmaz, 1990).

Per McGhee et al. (2007), literature should be handled with care so as not to contaminate the data. Although traditional GT precluded a literature review prior to data collection, a more contemporary view, which is supported by the constructivist GT, suggests that a preliminary literature review supports the work's theoretical underpinnings. Thus, mingling a literature review with data gathering and analysis helps

provide depth to the study as it continues to evolve toward an emerging theory (McGhee et al., 2007).

Coding from the data are the fundamental analytic tool used to uncover an emergent GT from the field of inquiry. Three forms of codes can be used: open, theoretical, and constant comparative (Barney G Glaser, 2013). Open coding, according to Montgomery and Bailey (2007), is the initial step of theoretical analysis, developing codes from the data. This form of coding concludes when it locates a core category. Theoretical codes expose relationships between categories and their properties (Glaser, 2013). Montgomery and Bailey (2007) used the phrase "constant comparative coding" to describe the method of continual assessment that permeates both open and theoretical coding. Glaser (2013) cited an oft-overlooked part of GT, memoing, in which the emergent concepts and theoretical ideas are generated and stored while the researcher is performing GT analysis. The idea of memoing is to "stop and jot" as a researcher comes upon ideas and notions regarding the data, with no set style or prerequired format (Mills, Bonner, & Francis, 2006).

The central point of GT, the core category, is to integrate all of that theory's various aspects. Strauss and Corbin (1994) developed the process by which the core category is identified to acknowledge the role of a researcher as the author of a theoretical reconstruction that occurs during the process of selective coding. In particular, Strauss and Corbin (1990) achieved this through their exploration of the centrality of the story and their narrative rendering of the analysis and the eventual development of the core or central category.

Constructivist Grounded Theory

The theoretical perspective in epistemology underlying this qualitative study lies within the paradigm of constructivism, in which there is no single reality or truth; reality is created by individuals in groups (Creswell et al., 2007; Finlay, 1999; Riegler, 2012). Crotty (1995) and Rasmussen (1998) identified reality as needing to be interpreted and used to discover subjectively the underlying meaning of phenomena. The constructivist paradigm of the experience of real life, according to Creswell et al. (2007), is explored through a GT method.

Constructivist GT has its roots in American Pragmatism. In a constructivist GT approach, the views of pragmatism are reflected through (a) the active role of the researcher, (b) the importance of theory grounded in reality, (c) field-based research, (d) an effortless and uncertain view of reality, (e) the active role of participants in shaping their worlds, and (f) a pragmatic attitude toward problem-solving (Charmaz, 2009; Corbin & Strauss, 2008). Charmaz (2009) additionally stated that pragmatism "also acknowledges multiple perspectives emerging from people's actions to solve problems in their worlds" (p. 128). In design studio education, the physical learning environment, as well as social interactions between the participants, influences the perceptions of the design studio experience. Crotty (1995) noted that it is important not only to discover external, observable human behavior but also to understand the intentions, values, attitudes, and beliefs behind that behavior. Several authors have identified this approach as GT when it is underpinned by the constructivist paradigm (Charmaz, 2000; Clarke; McCann & Clark, 2003; Sandelowski, 2000; Schou & Hewison, 1998).

Constructivist GT is part of the interpretive tradition. In this view, Charmaz and Belgrave (2007) viewed all analysis as contextually situated in time, place, culture and situation—in this work, that of the landscape architecture undergraduate design studio. The prescribed format of a constructivist GT allows for an open-ended exploration of ideas from lived experience and phenomena through the lens of truth emerges from the data (Mills et al., 2006). In this study, a collection of viewpoints and truths from instructors was revealed through this process, thus enabling an analysis of data and a reconstruction of theory that was richer and more reflective of the context in which participants are situated (Charmaz, 1990, 1996).

Charmaz and Belgrave (2007), who stated that categories and theory are co-constructed by researcher and respondent, examined how experience is constructed, and structures are related, in constructivist GT. The role of the researcher in constructing theory is predicated on the ability to remain open to patterns in the data and aware of the potential impact of their own preconceptions and presumptions, which only become part of the research when they are reflected in the data. Charmaz (2014) argued that the researcher is a part of the reality they study, and thus, they construct their theories through "past and present involvements and interactions with people, perspectives, and research practices" (p. 17). There remains the possibility that if the researcher fails to recognize and reflect on the researcher's preconceptions, or subjectivities, those preconceptions will have unaccounted consequences to the inquiry (Charmaz 2014).

Rationale for Constructivist Grounded Theory

Over the years, Glaser and Charmaz developed the two grounded theory approaches in divergent ways. Glaser's approach (1978, 1992) has come to be known as

classic GT research, whereas Charmaz's approach (Corbin & Strauss, 2008; Strauss, 1978) has taken the name constructivist GT. The primary reason for choosing constructivist GT was Charmaz's argument that classic GT is based on "outdated assumptions of an objective external reality, a passive, neutral observer, or a detached narrow empiricism" (Charmaz, 2014, p. 13). She described the constructivist perspective on research findings as constructed rather than discovered.

In constructivist GT, the assumption is that the researcher is an active moderator in the construction of theory during the research process (O'Connor, Carpenter, & Coughlan, 2018). Thus, Charmaz (2014) claimed that "relativism characterizes the research endeavor rather than objective, unproblematic prescriptions and procedures. Viewing the research as constructed rather than discovered fosters researcher's reflexivity about their actions and decisions" (p. 13).

The constructivist GT method was selected for this study due to the place and perspective of the researcher as part of the research and the positioning of the literature review in the research process. In constructivist GT, the researcher sees the product of their analysis as a reconstruction of their own making (Corbin & Strauss, 2008). From the topic selection, to the literature review, data collection, analysis, and the final interpretation of the emerging theory, the researcher is a fundamental element of the process. Constructivist GT assumes that there are multiple social realities, one of which is the researcher's perception of the problem and the data. Constructivist GT was also selected as it offers a systematic and rigorous approach to data collection that is grounded in the participants' and researcher's experiences and interpretations.

The positioning of the literature review also affected the selection of constructivist GT for this work. As suggested by Charmaz (2003), examining the existing literature helped to highlight the conceptual background within the substantive phenomenon being studied by the researcher. Through the literature review, relative and pertinent discussions and related research, already explored elsewhere by other researchers, are investigated. Charmaz (2006) further recommended "that the researcher embark upon research with some tangible problem at hand, along with any pre-conceived ideas and knowledge about the problem" (Bhonsle, 2012, p. 9). She argued that the issue of theoretical sensitivity to the research problem at hand is inescapable, which, according to her, is something to be encouraged: "Give earlier works their due" (Charmaz, 2006, p. 166).

Summary

The goal of this chapter was to outline the research methodology used to answer the research questions and offer a discussion of the qualitative methodology, grounded theory with a constructivist theoretical perspective, and the positioning of the literature review. A constructivist grounded theory methodology was used to develop a theory of the understanding of the pedagogies that are commonly used in the design studio. Finally, the rationale for selecting a constructivist GT was revealed. Chapter 4 continues with a discussion of the research modes and techniques.

CHAPTER 4

METHODS

This chapter describes the methods used to select and sample the population and events and to acquire and analyze the data collected from the landscape architecture undergraduate instructors and studios. This data assist in forming a better understanding of complex concepts and cultural phenomena in the design studio. The chapter continues with an outline of the specific sample selection and data analysis for the research, including study participants, procedures, analysis method, and ethical concerns.

Sampling Method

Non-Probability Sampling

Rather than aspiring to statistical generalizability or representativeness (Barbour, 2001), qualitative research aims to reflect the diversity within a given population (Kuzel, 1992). Non-probability samples are those in which the probability that a subject is selected is unknown, which results in selection bias (Acharya, Prakash, Saxena, & Nigam, 2013; Barbour, 2001; Etikan, Musa, & Alkassim, 2016; Tongco, 2007). Regarding sampling, Tongco (2007) recognized that the non-probability method can be considered equally suitable to the probability method, in some situations, to recognize the existence of different types of information that can be extracted from a community without running the risk of losing efficiency or efficacy. Random sampling is not always feasible nor always efficient, and a high dispersion of samples could induce higher costs

for a researcher (Tongco, 2007). Acharya et al. (2013) also noted that one of the most commonly used types of non-probability sampling is purposive sampling.

Purposive sampling. Purposive sampling techniques are the most frequently used in qualitative research outside random sampling strategies (Drever, 1995; Teddlie & Yu, 2007). Typically used in qualitative research, purposive sampling identifies and selects information-rich cases for the most pertinent utilization of available (Tongco, 2007). This approach involves the identification of participants who are competent and knowledgeable within a phenomenon being studied (Battaglia, 2008; Devers & Frankel, 2000; Etikan et al., 2016). In addition to knowledge and experience, Etikan et al. (2016) and Suen et al. (2014) emphasized the importance of participants' availability, willingness to participate, and the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner. Teddlie and Yu (2007) argued that purposive sampling is usually used when a study is based on a specific purpose and the selected participants share particular knowledge and characteristics and have the potential to provide rich, relevant, and diverse data pertinent to the research question.

According to Tongco (2007), the purposive sampling technique is a deliberate choice by a researcher due to the qualities the participant possesses. This nonrandom technique does not need underlying theories or a set number of participants (Devers & Frankel, 2000; Tong, Sainsbury & Craig, 2007). The researcher determines what needs to be known (Bernard, 2002) and sets out to find a population who can, and are willing, to provide the information by virtue of knowledge or experience. In purposive sampling, sample size is determined by data saturation, not by statistical power analysis (Suen, Huang, & Lee, 2014). Furthermore, in purposive sampling, it is suggested that the sample

be chosen based on the convenience of the investigator (Etikan et al., 2016; Suen et al., 2014). According to Etikan et al. (2016), for purposive sampling to be effective, a researcher needs an idea and participants who suit the purpose of the study.

According to Etikan et al. (2016) there are seven forms of purposive sampling, including typical case sampling (TCS). TCS is considered a form of sampling in which a researcher deals with large programs, as it helps set the bar of what is considered standard or "typical". With TCS, candidates are generally chosen based on their likelihood of behaving like everyone else (Etikan et al., 2016).

Theoretical Sample Size

In constructivist GT, one of the central features is that the sample size (the number of respondents) cannot be predetermined (Glaser, 1992). Alternatively, a procedure called theoretical sampling is employed that guides data collection as the study progresses, based on concepts and categories that have already materialized from an analysis of the data that has been collected earlier in the process. After the problem has been identified, the preliminary data collection can begin. Tong et al. (2007) stated that once the initial data has been collected, coding begins, and through constant comparison analysis, concepts and categories will begin to emerge. These concepts and categories dictate the next part of data collection, and such theoretical sampling continues iteratively until theoretical saturation, the stage at which data stop providing new understandings about categories, appeared (Tong et al. 2007).

Sampling Strengths and Limitations

Tong et al. (2007) noted that qualitative studies use nonquantitative methods to contribute new knowledge and to provide new perspectives. Non-probability sampling is

considered by Acharya et al. (2013) as common in qualitative studies due, in part, to its economy and the ability to choose the sample and limit the number of participants who are representative of a larger population.

The strongest limitation to purposive sampling is also one of its assets: bias. However valuable choice is in the sample, it cannot be measured or controlled and is, in itself, a variable. Thus, the resulting data collected may not be generalizable beyond the sample (Acharya et al., 2013; Barbour, 2001). However, if a sample is representative, it becomes valid over the realm it represents, thereby providing external validity (Etikan et al., 2016; Teddlie & Yu, 2007; Tongco, 2007).

There is evidence in the literature that, even though purposive sampling is inherently biased, it can provide reliable and robust data (Acharya et al., 2013; Kuzel, 1992; Teddlie & Yu, 2007). Tongco (2007) identified the strengths of the method as lying in the bias itself, due to the researcher's familiarity with the sample. This research used purposive sampling, which involved landscape architecture undergraduate instructors. Informants were chosen out of convenience or from recommendations of knowledgeable people, which can be considered valid for certain studies (Battaglia, 2008; Poggie, 1972; Sanders, 1960; Tongco, 2007).

Another issue with the non-probability sampling technique is the inability to estimate, statistically, the characteristics of a population from the sample. For many non-probability samples, the number of participants—in this research, eight interviews and four observed courses—is less than the oft-cited 30 participants for statistical analysis (Saunders, 2012). However, as Saunders (2009) argued, while a small sample prevents

generalization about a population statistically, it is still possible to generalize theoretically, providing the participants chosen are appropriate for the research aim.

Devers and Frankel (2000) discussed other challenges in purposive sampling, which lie in a researcher's ability to format appropriate questions to draw out the information being sought. Informants present yet another concern in sample collection in that they must also have a high degree of reliability in order to answer questions (Poggie, 1972; Sanders, 1960). The degree to which an informant is honest speaks to the reliability of the sample (Seidler, 1974). This research exercised the ability to determine whether the informant is being truthful or if the data are unreliable because informants are eager to please, have hidden purposes and intentions, or have their own emotional issues, principles, and viewpoints (Barbour, 2001).

Having established the data collection procedures pertinent to constructivist GT, the discussion continues with the context of the study, the participant selection method, the participant descriptors and the data collection method for the qualitative survey, the observations and the interviews.

Context of Study

Criteria for this study's participants and courses were selected through a non-probability sample. When a non-probability sample is used, appropriate cases are selected while actively excluding others (Morse, 2010). Thus, as a consequence, some of the population had a chance of being chosen while others did not. This sampling technique is concerned with ensuring that the sample chosen is justified in enabling the researcher to gain understanding and insight (Saunders, 2012). For constructivist GT application, which focuses on the generation of a theory from specific and applicable participant

insight, the investigator was best suited to select a participant sample based on their individual contribution to the development of the theory (Creswell 2007).

The context of this study included the larger community of landscape architecture educators in the United States as well as a smaller duo of Southeastern universities with accredited programs. A total of 327 landscape architecture undergraduate educators from 35 landscape architecture institutions, accredited by the Landscape Architectural Accreditation Board (LAAB), were invited to participate through a Qualtrics online survey.

This study examined, in particular, the experiences of four classes, referred to as studio or design studio, in two landscape architecture programs: two studios at the University of Georgia and two studios at Virginia Tech. The design studio forms the cornerstone of the programs at each university, with the professional curricula structured around the studio sequence. The studio interpretations involved observing the activities of the instructor and student cohort in four different classes.

Approval to Conduct Research

Approval to conduct the three research protocols (interview, survey, and observations) was given by the University of Georgia Institutional Review Board (IRB). After final approval by the IRB was received (Appendix B) and per the IRB process, an Authorization to Conduct Research was submitted to the chair of the Landscape Architecture Program in the College of Architecture at Virginia Tech (Appendix C).

Data Sources

The sample examined for this research was based on the TCE type of non-probability purposive sampling, as described previously in the chapter. The institutes and

studios were chosen due to the investigator's familiarity with and proximity to the programs being studied. Due to the nature of the relationship between the researcher and the institutes being studied, a subjectivity statement was developed, and it exposed that bias was involved in the evaluation of the collected data. The subjectivity statement can be viewed in Appendix D.

Data Collection

As previously mentioned, in constructivist GT, research begins with a literature review as a means to establish a baseline of what is known and has been studied in the substantive area (Bhonsle, 2012). The dearth of published research on the landscape architecture design studio led this researcher to seek out information from a broad array of instructors through a survey to establish a baseline of understanding.

Constructivist GT is also seen as compatible with a wide range of data collection techniques. Semi-structured interviewing, participant observation, even diaries might generate data for GT (Cohen & Manion, 1994). Using a combination of observations and interviews, the research team of Glaser and Strauss (1967) followed participants to watch them work and ask them questions. Sometimes, they sat observing, while at other times they talked openly with the participants. In constructivist GT, gathering and analyzing data simultaneously frames the data collection procedures (Charmaz, 2000). This procedure forms the basis for the development of analytical categories through scrutiny of the empirical world being studied (Charmaz & Belgrave, 2007). Rich, detailed data promote explicit materials with which to work, which affords "views of human experience that etiquette, social conventions and inaccessibility hide or minimize in

ordinary discourse. Hence, rich data reveal thoughts, feelings and actions as well as context and structure." (Charmaz, 1996, p. 33)

Because this study enquired about the perceptions of landscape architecture educators who were actively involved with matters pertinent to the teaching of design, the decision was to use purposive sampling for participant selection. A non-probability sampling was selected along with TCS as the participants share common traits as landscape architecture educators who are involved, or have a history of involvement, with undergraduate studio design courses.

The data collection occurred in three stages: the qualitative survey, the observation sessions, and the instructor interviews. Each stage is individually outlined below with a description of the participant selection process, the participant population disposition, and the data collection procedure.

Methods of Data Collection

Data collection in constructivist GT involves specific procedures which, when applied appropriately and with care, will result in rigorous and well-grounded data (Barney G Glaser, 1978). Constructivist GT is also compatible with a wide range of data collection techniques; thus, this research used survey data as well as observations and semi-structured interviews.

Informant selection is considered part of the data collection method. One way of deciding how to choose informants, described by Allen (cited in Tongco, 2007), is to establish qualifiers for deciding on "a good informant" and "a bad informant" (p. 151). Based on these qualifiers, a list of qualifications was composed by the researcher. It is especially important to be clear on informant qualifications when using purposive

sampling (Tongco, 2007). Table 1 describes the qualifications developed for choosing the institution, design studios, design studio levels, and instructors involved in the research.

Table 1

Informant Qualifications

Sample	**Good Informant**	**Bad Informant**
Institution	United States Undergraduate Landscape Architecture program Currently accredited	Other Countries No Landscape Architecture program Not accredited or in initial accreditation process
Design Studio Classes	Undergraduate program First, second and/or third year undergraduate Students verbally agree to participate with knowledge of no known risk or compensation	Graduate and/or PhD programs only Terminal year design studio Students object to or wish not to participate in observation
Instructor	Minimum 5 years design studio teaching experience Minimum 5 years teaching undergraduate design studio at the same institution No design studio teaching and learning publications Observed instructors agree to follow-up semi-structured interview post observation Terminal degree (Master) in landscape architecture	Less than five years design studio teaching experience Less than five years at institute teaching undergraduate studio Published teaching and learning activities in academic journal Observed instructor does not agree to be interviewed for the purpose of this research No terminal degree in landscape architecture

Researchers use the constructivist GT approach to learn about a culture or group by speaking with informants, or members of the culture or group, through semi-structured interviews (Drever, 1995; Wimpenny & Gass, 2000). Semi-structured interviews allow the interviewer to actively engage with, and interpret, the interviewee's responses. As Charmaz (2006, p. 26) described it, "an interview goes beneath the surface of ordinary conversation and examines earlier events, views, and feelings afresh" (p. 26). The

constructivist GT methodology, as adapted for this research, encouraged an interview process that was open-ended, conversational, and mutually constructed.

Semi-structured interviews were conducted with the faculty instructors involved in the landscape architecture undergraduate studio to uncover the narrative of the lived experience in the studio. According to Drever (1995), the types of interviews conducted by researchers using this approach vary in degree of formality (informal to semi-structured to structured interviews), with semi-structured interviews occurring when the interviewer requires more focused information and asks specific questions to gain it. For this research, the discussions were opened by listening and using prompts to guide the respondent (the instructor) (Drever, 1995). A central feature of GT methodology is that analysis is concurrent with data collection, thus allowing emerging theory to inform subsequent data collection. In this research, analysis occurred during the interview through additional "pop-up" questions for the purpose of clarification or to supply new information in areas where gaps arose. As Wimpenny and Gass (2000) indicated, in GT "ongoing analysis will influence the questions that are asked, with the direction of the interview becoming driven by the emerging theory" (p. 1489). Using semi-structured interviews still allows some flexibility: for example, Longhurst (2003) noted that they permit the interviewer to pursue issues of particular significance that relate to the research question. This method also allows for the exploration and clarification of comments made by the respondents, as well as enabling the interviewer to use prior knowledge during the interview process (Longhurst, 2003). The use of semi-structured interviews was therefore congruent with this constructivist GT research, as it allowed the researcher to ask key questions of the instructors in the same way during each interview

but also allowed flexibility in the sequencing of questions and in the depth of exploration (Drever, 1995).

Qualitative survey. Although qualitative surveys, or open (inductive) surveys, are not typically mentioned as a datum source in constructivist GT, Glaser's (2001) dictum that "all is data" would indicate that any qualitative data can be used. Glaser (2001) determined that data are discovered for the conceptualization of a theory and, accordingly, it is up to the GT researcher to figure out what data they are obtaining, with the understanding that qualitative data may be vague, baseline, or interpreted. The qualitative survey is considered inductive and measures diversity, as opposed to distribution, through open-ended survey questions (Fink 2003, Webster 2005). Qualitative open-ended survey questions in this research provided baseline data that was used to help bolster other qualitative data gathered through more traditional constructivist GT approaches. The qualitative survey can be found in Appendix E.

The qualitative survey represented the initial stage of datum collection. The survey was intended for professional landscape architecture educators who were identified from faculty lists on the individual landscape architecture program websites. As previously stated, 327 landscape architecture undergraduate educators from 35 landscape architecture institutions, accredited by the Landscape Architectural Accreditation Board (LAAB), were invited to participate. The programs surveyed met two criteria: (a) they were in the United States, and (b) there was an indication that a landscape undergraduate program was extant. Three hundred thirty-one invitations to complete the qualitative survey were sent out, with 51 returned responses. Of these, 39 indicated that they are teaching or have taught landscape architecture undergraduate

design studio and completed the response section about teaching and learning. The other 22 surveys did not indicate that they taught or were teaching undergraduate studio or did not complete the survey in a manner that provided useful qualitative data.

The participants for the survey included self-identified undergraduate educators in landscape architecture. Of the completed surveys, 14 indicated PhD degrees, while the remining 25 held a master's degree, which is considered a terminal degree in landscape architecture. At the time of the survey, 31 respondents indicated that they were currently teaching landscape architecture design studio, and eight had taught in the past. Fourteen had taught 15 or more years of studio; seven had taught 11 to 15 years; 12 had taught six to 10 years; and six had taught for five or fewer years.

Observation sessions. Observation sessions provide researchers with a method to scrutinize nonverbal expression of feelings, comprehend how participants communicate and interact with one another, and check how time is expended on various activities (Kawulich, 2005). DeWalt and DeWalt (1998) believed that "the goal for design of research using participant observation as a method is to develop a holistic understanding of the phenomena under study that is as objective and accurate as possible given the limitations of the method" (p. 92). Participant observation involves fieldwork in which the researcher is immersed fully in the daily activities and routines of those being studied (Kawulich, 2005). Observation in constructivist GT research differs from visual observations of daily routines; all five senses are employed to better understand the phenomenon and its hidden meanings (Montgomery & Bailey, 2007; Najafi, Roudsari, Ebrahimipour, & Bahri, 2016). Field notes have been regularly defined in research as written records of observational data produced by fieldwork (Montgomery & Bailey,

2007). These field notes, according to Montgomery and Bailey (2007), record the charisma, identity, association, ambiguity, and doubt of the participants being observed.

In addition to surveying the instructors, his study examined the experiences of four classes, referred to as studio or design studio, in two landscape architecture programs: two studios at the University of Georgia and two studios at Virginia Tech. The observed design studios ranged from 12 to 42 undergraduate students and are further outlined in Table 2.

Table 2

Observed Studios

Observed Studio	Design Studio Descriptor	Sequence in Program	Studio Program	Number of Students
Studio One (S1)	Fundamental design process and elements	Fall semester/ second year	First-year design studio	12
Studio Two (S2)	Form, function and horticultural characteristics in small-scale landscape compositions	Fall semester/third year	Second-year design studio	16
Studio Three (S3)	Fundamental site process and elements	Fall semester/ first year	First-year design studio	42*
Studio Four (S4)	Site/project scale planning and design with an emphasis on conservation-oriented design	Fall semester/ third year	Third-year design studio	12

*Double studio class with two instructors

The observation sessions took place during scheduled design studio time during the fall semester of 2018 and spring semester of 2019. Table 3 outlines the parameters of the four observed courses.

Table 3: Observed Studio Instances

Studio Identifier	Number of Studio Sessions Observed	Total Time of Observations
S1	8	24 hours
S2	8	24 hours
S3	9	32 hours
S4	9	32 hours

Permission was acquired from the individual instructor ahead of the design studio observational sessions via verbal confirmation. The studio student participants were informed of the purpose and reason for the researcher's continued presence at the beginning of the first class observed. As observer, the researcher sat or stood near enough to visually and auditorily experience the environment of the studio and the individual but had no interaction with the studio substance, instead relying on listening and watching to develop data. All field notes were handwritten in journals and reviewed after each session.

Interviews. As stipulated in Glaser and Strauss (1967), the aim of the interview is to facilitate a collaborative conversation. The intent was to conduct what Holstein and Gubrium (1995) referred to as "active interviews," which refers to a partnership between interviewer and interviewee in building meaning around a discussion. This meaning was not accidental but guided by open-ended questions that spurred the conversation and

opened up new relevant directions for the discussion (Holstein & Gubrium, 1995). This study used open-ended interview questions, found in Appendix F, for which both the interviewer and the interview questions were the instrumentation used. The original interviews started with a sample size of two undergraduate educators and then, per the theoretical sampling, were extended by adding additional interviews, a few at a time, toward datum saturation.

All of the interviews were conducted face to face. The length of the interviews ranged from 25 to 40 minutes, with one outlier lasting over two hours. An iPhone 5 was used to record the interviews, and the recordings were downloaded to a QuickTime program on an Apple Mac. There were no technical difficulties with the interviews. Five of the interviews were recorded in the respondents' private university offices, and two were held in private meeting rooms, also on university property. The two-hour interview was held over lunch at the request of the respondent. The interview over lunch encountered some difficulties with background noise but not enough to warrant a change of location; only three words from the two-hour interview are inaudible on the recording and are straightforwardly interpolated. In the transcription of the audio recordings of the interviews, pseudonyms were assigned to each instructor, as suggested by Khan (2014), to protect their identities. Table 4 outlines specific characteristics about the interviewees.

Table 4

Interview Participants

Assigned Name	Relevant Education in Landscape Architecture	Years Teaching Landscape Architecture Undergraduate Studio	Studio Teaching Status
Alex	Bachelor of Science in Landscape Architecture Master of Landscape Architecture	18	Currently teaching
Beth	Master of Landscape Architecture	19	Currently teaching
Carl	Master of Landscape Architecture	33	Currently Teaching
David	Bachelor of Landscape Architecture Master of Landscape Architecture	24	Currently teaching
Erin	Bachelor of Landscape Architecture Master of Landscape Architecture	26	Currently teaching
Franklin	Master of Landscape Architecture	38	Currently teaching
Gary	Bachelor of Landscape Architecture Master of Landscape Architecture	47	Formerly taught
Hector	Bachelor of Science in Landscape Architecture Master of Landscape Architecture PhD in Environmental Planning	21	Currently teaching

The faculty seemed keen to participate and expressed interest in the research, in part because the researcher had a student/instructor relationship or a professional relationship with many of the respondents. At times, a few of the respondents seemed to speak more as representatives of their specific university programs, so more specific

questions were queried to illicit specific examples of incidents relaying their own experiences.

Memoing

Memo writing, a vital part of constructivist GT (Charmaz 2003), begins as a process from the first moments of datum collection. In the early stages, memoing is intended to interrupt the coding process through reflection and probing (Charmaz, 2003). Memoing acts both to reveal more appropriate concepts and to promote more abstract and theoretical thinking (Charmaz, 2003; Mills et al., 2006). The memoing process in this research began as data were reviewed and was an ongoing process throughout the constructivist GT processes of initial coding, intermediate coding and theoretical coding.

Data Analysis

From the onset of datum collection, constant comparison, "whereby each interpretation and finding is compared with existing findings as it emerges from the data analysis" (Lewis-Beck, Bryman, & Liao, 2004, p.17), was applied. The researcher applied the constructivist approach for the critical analysis of the interviews and the field notes from the studio observations to open code for common threads (Creswell et al., 2007; Denzin & Lincoln, 2015).

The majority of the data collected for this study was obtained from October 2018 to June 2019. Because the sampling procedure in this constructivist GT study was theoretically driven, datum collection in this study of the phenomenon of identification of teaching method in the design studio followed an open-ended, flexible, continuous, and ongoing process that continued until the research questions to be answered by the substantive theory were addressed.

Coding

The gathered data were initially coded, pulling out specific words and phrases that spoke to process, definitions, and activities in the design studio. With each survey, observation, and interview transcription, the practice of collecting codes continued. Open coding, according to Corbin and Strauss (2008), requires careful examination through breaking datum down into components, creating comparisons, and querying the datum.

Atlas TI 7 software was used to begin to identify the number and frequency of codes through a line-by-line examination of the data. This approach provided a set of initial codes with which to start the analysis. Therefore, codes existed as both identified parts of the of raw data collected and data that resulted from the processes of breaking down the raw data. For instance, many respondents spoke about the abstract concept of reflection in the learning process. Many talked about prompted reflection, reflective conversations, or reflective writing, which are important codes and are much more tangible than the seemingly broad concept of reflection. Open coding and establishing codes and concepts was systematic and was supplemented through comparing and contrasting as part of the constant comparison process. This approach facilitated the prospect of re-assessing and re-grouping codes and concepts into categories and, finally, themes.

Open coding is said to be the initial phase of the coding process in the GT method of qualitative research (Strauss and Corbin, 1994). Identified themes and open codes were evolved and categorized conceptually through axial coding, resulting in the identification of properties through an interpretive lens. The third analytical level for the codes involved selective coding to seek out various code clusters formed selectively by the

researcher to construct a set of relational statements that were used, in a general sense, to determine what was going on in the studio.

Constant Comparison. Constant comparison is pervasive in constructivist GT research and represents the driving force behind datum collection, datum analysis, and development of theory. It represents a method for analyzing data to develop constructivist GT concepts from the data by coding and analyzing at the same time (Taylor & Bogdan, 1998). According to Glaser and Strauss (1967), constant comparative analysis allows for the generation of a theory from any size social division. Charmaz (2000) indicated that constant comparison in constructivist GT research may include (a) comparing data between individuals, (b) comparing data within individual accounts, (c) comparing instances with other instances, and (d) comparing categories with other categories. The constant comparative method involves code and category development by breaking down data and organizing it into distinct incidents (Glaser & Strauss, 1967). The initial stage of analysis compared incident to incident in each code. Initial codes were then compared to other codes. Codes were then collapsed into categories.

The constant comparative process was used with the initial gathered data, comparing it for similarities and oppositions and for topics in teaching with underlying connections among the design studio, SBL and active learning. The constant comparison process continued with the observational portion of the study. Upon completing a day of observation, with two separate courses observed, the researcher reviewed the field notes with open coding, and constant comparison was again performed, comparing elements of the two observations as well as with the extant survey codes. Finally, the interview transcriptions were examined, coded, and compared, first to one another and then to the

survey and observation data. The interviews themselves developed, over time, as concepts and meanings emerged from the data. While the researcher waited for additional interviews and observations to occur, time was spent reading, re-reading, listening to, and absorbing the collected data.

Summary

This chapter set out to outline the research methods used to answer the research questions. A discussion was offered of the procedure, study participants, and datum collection, outlining the specifics of how the study was conducted and who participated in it. The goal of Chapter 5 is to provide the study results and demonstrate that the methods described in Chapter 4 were followed.

CHAPTER 5

RESULTS

This chapter comprises an analysis of what was read, experienced, and heard during the datum collection phase. The study began by identifying the problem and an initial location for the study, after which the data were gathered. As the initial data were collected, the process of comparison and analysis was initiated, and some preliminary concepts began to emerge. These concepts guided the next phase of datum collection and the further formulation of theoretical categories.

This chapter contains the results of the grounded theory methodology study conducted to answer the following research questions:

> How do current studio approaches, through studio-based learning (SBL), determine if and in what form active learning exists in the landscape architecture undergraduate studio pedagogy?

This question is supplemented with sub-questions asking to what extent SBL is evident in studio teaching:

> RQ1: What is the extent to which SBL is implemented by the undergraduate faculty in landscape architecture design studio?
>
> RQ2: In cases in which those strategies are used, can studio-based learning be considered as a model of the active learning method in the design studio?
>
> RQ3: How does the nature of design studio instruction support the active learning model as revealed in the landscape architecture design studio?

This chapter details the progression of this research project as it progressed from the datum collection process of surveys, interviews, and observations through coding and the generation of substantive themes. It begins with role of the researcher and exposes any potential biases, followed by a discussion of study participants and situations. This chapter concludes with a summary of the key findings.

Memo Writing/Memoing

Memoing is the process for exploring thoughts, ideas and queries that are generated from the datum explorations. They form the foundation for writing a working paper on the emerging theory (Glaser, 2013). Memos are where emergent concepts and theoretical ideas are generated and stored when performing GT analysis (Glaser, 2013). This section offers an overview of the memoing process as experienced by the researcher.

The term reflection came up several times early on in the datum-gathering process, and the following memo was written during that early stage. It examined what reflection looked like in the design studio and how it was described by the instructors, with questions regarding the relevance and variety of the implied processes:

> The process of reflection is seen as vital to the three examined pedagogies in the literature however, it is not regularly mentioned or when it is, it has an inexact explanation. Is it misunderstood? Maybe the process is considered inherent as mentioned by Erin in her interview. There are just a relatively large scale of definitions that are not necessarily congruent or related: written work/journaling, face-to-face feedback, group sharing, self-evaluation, reference previous assignments, lectures, reflective sketchbooks, debrief, peer review, mentoring and

coaching, Socratic Method, and cross-referencing materials from other courses. It is a litany of ideas.

Memos were generated regularly as a part of the constant comparison process. Another early memo, written during the coding process, followed an active learning vein:

> Active learning in the studio – it seems like there is a consensus that active learning is exactly what goes on in studio, but few seem to define it accurately. S4, S29 are the only respondents that mention reflection as a part of the active learning equation, without prompting by the interviewer. There is a general consensus that learning by doing is the foundation of active learning entails in part. Is active learning a misunderstood concept or is the reflective thinking about what has been done assumed? And if it is assumed is there also a hypothesis that students are inherently reflective? Active learning is not a new concept but is trending more on the contemporary campus. Is this seen as a movement and the reflective portion just a part of it? Or does active learning happen in the design studio but just in a different practice?

One memo revolved around learning activities that were studio specific and spoke more to an SBL pedagogy and how it looked in the actual design studio:

> The studio pedagogy is purported to display many of the fine details of the SBL pedagogy such as assessing problem statements and working and reworking (iterating) design solutions that were critiqued by peers and instructors regularly (Erin, Carl, David, Gary, S30, S29, S24, S14, S4). Self-critique was also mentioned as an evaluation tool used to push the iterations forward (Franklin, Erin, David, S3, S5, S7, S13, S25). The studio was a place of increased

connections with the problem, with processes to address technical and design aspects, and a place where students and faculty discussed the problem at hand as well as concepts and trends in the profession.

The structure and activities in the design studio were considered for a memo written while examining the field notes from the observation sessions from the University of Georgia and the Virginia Tech studios:

> The studio environment was observed as a dynamic place that sees activity happening in- and outside of the scheduled instructional hours. Both observed studios had oversized desks in one area with instructional spaces adjacent similar to those described by White (1953). In the earlier studios at UGA the design space instructional space and pin-up space shared the same basic space where the drafting tables were located. In the upper classes there were separate instructional areas from the design space. Virginia Tech design studio is a singular shared space for second through fifth year with a dedicated pin-up/presentation space, classroom, lounge area and library/work area with casual pin up boards on all available surfaces in the studio. Collaboration, such as those seen by Wang, was present in all studios observed during and after scheduled instructional time. The students freely joined together in conversations and worked on group projects. The situation presents as second nature to the students. There is a social atmosphere in the studio that is markedly different than other traditional classroom situations.

Memos also examined the definition and process of reflection, an activity shared between the design studio pedagogy and active learning. This memo scrutinized the use and understanding of reflection in the design studio:

> In the descriptions of active learning by the respondent's reflection is little mentioned and may not be considered as part of the pedagogy. From those active learning descriptions submitted by the studio educators, it is considered as asking the students questions; student led reflective seminars; reflect on related research; and self-reflection through written and oral presentations. In the interviews, Beth, Carl, David, and Alex admitted that they do not use reflection. For some it was a choice for others was it a matter of "not enough time" to engage in the activity and it could even be considered an oversight by not truly understanding reflection. Reflection is seen, more often than not as a process of discussion and reflective written work. Discussions, sometimes called debriefs, are mentioned quite often as acts of reflection. There seems to be no distinction between reflection in-action and reflection on-action as described by Schön. It may be a matter of a lack knowledge or understanding of the two concepts.

This memo, like several others, reflected ideas similar to those mentioned in other memos, thereby strengthening arguments around certain aspects of the collected data.

Late in the process, one memo pointed out that respondent indicated a less-than-accurate interpretation or a misinterpretation of active learning as previously outlined in the literature review and speculated what that meant:

> Several respondents spoke of what happens in studio as active learning but did not include instances of reflection or reflective practice as part of their

> understanding. More than one survey respondent asserted that design studio methods were active learning, however both Hector and Alex said they do not use or encourage reflection as part of the curriculum. If reflection is not included in the studio teaching process can it be considered active learning or even SBL? The literature clearly places reflection as a compulsory part of the pedagogies but if a majority of those interviewed do not use or even consider reflection in their teaching is it?

Finally, the memoing process searched for a comparison of design studio learning, SBL and active learning, looking for commonalities. One of these memos dealt with the idea of the instructor's role in the design studio and active learning environments:

> The instructors is seen to be an expert in the design studio and is often a professional from the industry represented in the discipline, such as landscape architecture. The expert acts less as a teacher and more as a guide that poses questions and moves the student in a particular direction for exploration and research. This guidance primary seems to come in the form of face-to-face desk crits and allows the instructor to react to the processes and prompt design directions and ideas of the student. This seems similar to the description of teaching or instruction in the active learning pedagogy as described by the studio instructors when talking about active learning. They saw the instructor as a facilitator or coach who steered the students in a particular direction very similar to the desk crit. These could be seen as congruent structures between the two pedagogies just like in the literature.

The memoing process helped to organize the data and coding through speculative write-ups of ideas about the substantive codes and their relationships as they emerged during the coding process.

Toward Theoretical Categories

The use of Atlas TI 7 allowed the researcher to "read, annotate, code, visualize, and interpret in one space…[and] improved our ability to systematically document all decisions that we made throughout the research process" (Paulus & Lester, 2016, n.p.). The initial interviews, survey responses, and the field notes from the observation transcripts were uploaded into the Atlas TI 7 program. Each set of data was manually coded with the software as codes were extracted from quotations within the text. The open coding resulted in 73 codes from manual coding, as shown in Appendix G.

In the next analysis phase, selective coding, the researcher searched to find categories emerging from similarities in the open codes. Using the Atlas TI 7 software, the researcher also took all the memos, quotations and open codes and began networking them. An example of one of the networks created with the Atlas TI 7 Software is seen in Appendix H. Figure 5 includes a summary of the datum and analysis process for open, selective and theoretical coding.

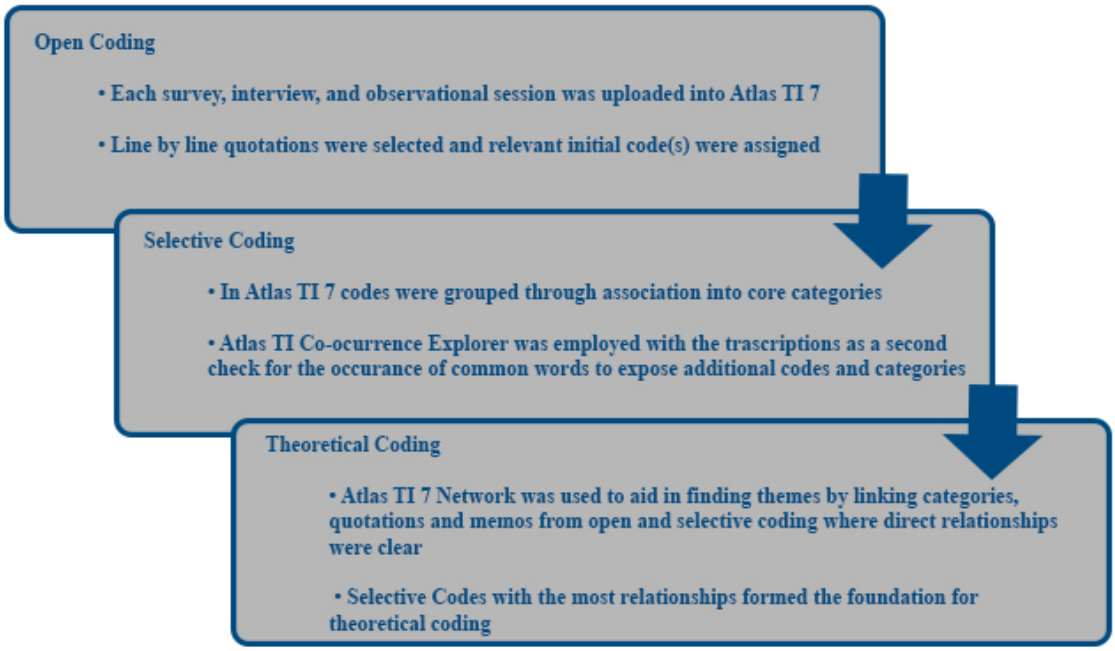

Figure 5. Emerging themes from the datum analysis process.

The initial categories were scrutinized, and the related memos were re-read for substance and new memos were created to move toward emerging categories. These categories materialized as seven themes.

Studio-Based Learning in the Design Studio

There was strong evidence in the data that many aspects of SBL were occurring as part of the fundamental landscape architecture design studio. As discussed previously, SBL represents a problem-solving process that is iterative in nature, taking the design student on a journey of learning that is organized around realistic design problems in the studio classroom environment (Cennamo & Brandt, 2011). SBL involves analysis, proposal and critique, which occur in the form of individual or group-driven design projects that are guided by instructors and include a vital reflective element to allow learners to access deeper levels of cognitive skills (Brocato, 2009).

From the observation sessions, there was proof of SBL in the design studio classroom when students are engaged with individual design projects facilitated by an instructor (S1, S2, S3, S4). The studio was operated as a model of the professional landscape architecture office, in that it emulated real-world design scenarios and, at times, dealt with real clients and professionals in the design scenarios (S2, S4, R3, R4, R19, R20, R26, R32, Erin). The studio, to many, represented a shared learning environment that responded to individual as well as group assignments and offered an opportunity to collaborate with other studio students (S30, S38, Hector, Erin). There were also several instances in the data offering evidence of instructors referring to students working on ambiguous problems that do not have predefined solutions (Erin, Carl, R4, R16, R32).

According to the literature, design projects follow an iterative process in an SBL pedagogy (Brocato, 2009). The design process is seen as asking students to "to generate and reinforce understanding through repetition and refinement" (R25). R4 echoed the sentiment with the response that he/she routinely has students "engage in the iterative design process." There was also further evidence that the desk crit was used as a means to encourage the iterative process (R27, R35). Although it was not mentioned often by the respondents of the survey, an iterative nature of the studio in observation periods S1 and S3 found support in the interviews with Erin, Franklin, and David.

Brocato (2009) saw elements that fostered the critique of design proposals as an integral part of the SBL process, in which students attain design skills and knowledge with support of the instructor (Brocato, 2009). Critique was cited in the descriptions of the landscape architecture studio process (R3, R5, R9, R10, R13, R25, R30, R32, R33,

R35, R39, Erin, Franklin, Gary). Critique was seen as a variable in the design and was recognized as an independent theme that required further exploration. This theme is explored in the next section of the chapter.

As uncovered in the literature, reflection is a chief component of SBL (Boyer & Mitgang, 1996). However, it was not mentioned often in the data. In SBL, reflection is seen as a part of the design process in which an action is contemplated and reconsidered toward deeper understanding and development (Boud, Keogh, & Walker, 2013; Hatton and Smith, 1995; Quayle & Patterson, 1989). Reflection was similarly defined as learning from review of practice to uncover the knowledge used in a specific situation (R3, R5, R9, R13, R19, R30). According to what was learned from some respondents, reflection occurred at the end of a process, including end-of-project and end-of-semester reviews or activities (R3, R5, R13, R19, R25, R33, R35). Erin and Gary seemed to support this view by offering end-of-project reflective discussion. However, from observation session S4, I saw numerous reflective prompts during desk crits. These appeared to be designed to elicit thought and further the conversation with the instructor about the work in-action rather than on-action.

It appears from the data that the engagement with a project in the design studio setting through an iterative process represents the main priority of SBL in the design studio. Second to this is the aspect of some form of critique of the work or process from instructors or peers.

Critique in the Design Studio

According to the literature, one of the unique aspects of the studio process and SBL is critique (Brandt et al., 2011; Cennamo & Brandt, 2012; Green & Bonollo, 2003).

In the data, critique is described in relation to other variables in the design studio, including iteration and reflection, proving it to be an integral part of the pedagogy. Crits were witnessed as a means to reinforce group discussion, seminars, and other explored and experienced resources in addition to revolving around the studio project (R3, R16, R30, Erin, Gary, S1, S3). Critique is seen as four different practices regarding the student project in the data: (a) formal critique at a defined interval or end of project, (b) desk crit, (c) peer critique, and (d) self-critique. As seen by Erin and Hector, the formal critique process offers an opportunity for a broad community (peers, instructors, professionals, guests) to evaluate the work presented. Formal critiques generally occur as small group events (R3, R16) or larger ensemble presentations (R6, R10).

The desk crit is often seen as providing some of the most crucial moments between the instructor and the student to move the design studio process (R3, R15, R16, R24, R27, R18, Beth). David describes this form of critique as usually occurring at a student's workspace as a one-on-one discussion of the analysis, synthesis, and design direction and other ideas. The faculty use the desk crit to question decisions to promote clarity and direction (Erin, David, Franklin).

Peer critique presents differently, as it may occur at scheduled times as mentioned above but also spontaneously (R25, R26, Erin). Peer critique happens during and outside the scheduled studio. Franklin noted that after-hours peer interactions are seen as something special and often lead to important innovations, advancements and solutions to design problems.

Self-evaluation is the most frequently mentioned form of critique in the data (R7, R14, R13, R18, R24, R33, R38). Self-critique is seen as an evaluation of the self that

follows several forms in the design studio: (a) Written work (R16, R24), (b) sketchbook entries (R28), (c) visual analysis (R19, R31), and (d) inner dialogues (R14, R16, R24, Gary). Erin saw that "students are evaluated and, more importantly, learn to self-evaluate and reflect on their own work in order to advance more refined iterations."

Active Learning in the Design Studio

This research was designed to generate an understanding of active learning methods in the design studio, but the very definition of active learning ranged widely according to the responses from the surveys and the interviews. The varying definitions presented a challenge in extracting the underlying understanding of active learning from the perspective of design studio faculty.

As mentioned previously, active learning is commonly defined as a method involving any approach to instruction in which all students are asked to engage in the learning process through learning by doing and reflecting on that learning (Bonwell & Eison, 1991). In this research, the concept of active learning presented as a messy endeavor that covers topics from the globally accepted "learning by doing" (generally without reflection) to the very vague essence of the design studio as a whole. Included are the codes that indicate a range from "no knowledge" through "accurate understanding" of active learning, with most responses falling somewhere in the middle.

Several respondents, including Hector and Beth, could not define active learning at all. They either had not heard of the concept or had knowledge of it as a method but noted that they did not understand the concept. There were some individual responses that erroneously identified active learning as "real sites with real clients" (R27), "being proactive with students" (R8), and the "master/apprentice style of instruction" (Alex).

The respondents went so far as to describe active learning as an equivalent to the design studio pedagogy (R4, R14, R17, R33, R36).

Many of the respondents reported a partial understanding of the term active learning. The majority interviewed and surveyed reported that active learning was restricted to the activity and did not mention any notion of the reflective nature of the method. Erin, among others, noted that active learning was "hands-on learning." This concept was further expanded to include "hands-on learning where the students are problems solvers" as reported by R5. Several respondents included aspects of student-driven learning as the driving component of the process. A statement by Gary echoes others on the need for "meaningful engagement" in the learning process compared to the rote learning of an orthodox environment. Self-engagement was seen by R3 as a means to active learning arrangements that included the student seeing themselves as active agents in their own learning process. Finally, several respondents spoke of the half the active learning equation represented by "learning by doing," a limited perspective on the activeness of the method.

A scant few instructors identified active learning in its full definition as a method of activity and associated reflection as described by Bonwell and Eison (1991). David seemed to understand the concept best:

> I would describe active learning as a multiple of things. One it is taking a concept and getting them to think about "How do I apply that concept, and as I am doing that, what does it mean?" Secondly, it is thinking about things, not only on the level of, in terms of studio, what's this thing going (to) look like, but actively

> thinking about what does it feel like, what are the experiences, trying to develop more of a depth of understanding…

R4 supports David with the notion of "meaningful engagement and reflect(ion) in the learning process," as does R19 with the idea of "reflexive learning driven by meta-cognition." No other respondent reported any description that included learning by doing coupled with reflection in their responses.

Where some saw the design studio pedagogy as active learning, only a few seemed to understand fully what active learning entails: learning by doing and reflection on that learning.

The Instructor's Role in Design Studio

As noted by Kvan (2001), knowledge is produced, not disseminated, in the design studio, and as Ledewitz (1985) writes, "the student develops the knowledge through various forms of inquiry, action, reflection, and conversation—all intended to help them look at a problem in a new way" (p. 2). Only a fraction of the information distributed in the design studio was taught directly through lecture style. From the survey, the instructor was identified as resource, mentor, guide, critic, and questioner (R2, R3, R10, R25, R30, R39). R25 conceded that the content of most studios is articulated explicitly and taught directly. However, most contend that the studio content is largely implicit in the nature and in organization of the projects assigned.

Many respondents described instruction in the design studio as an act of facilitation (R3, R5, R10, R13, R15, R18, R23, R25, R20, R33, Beth, Carl, David, Erin, Franklin, Gary). Respondents related facilitation to the act of guiding, coaxing or otherwise providing some information to stimulate student exploration to achieve desired

learning outcomes. The term “prompt” was used as a descriptor of the project but also as an action by the involved faculty that supports the effort of the instructor as a questioner of the students and their work.

The instructor acts as a source of knowledge for the students and provides enough of a framework that students can actually move forward with their work (Green and Bonollo, 2003). Alex and Gary both stated that they do not give the students all the knowledge, just enough of the basics to spur curiosity. In the S2 observation, there was a perceived partnership during the desk crits in the formative phase of the design process. Moreover, according to Carl, a certain number of examples of projects or case studies are presented to the students. He acted as the gatherer:

> [I like to] find a project that is realistic. I find case studies that are like that project. You know, visual information that applies to that project. And then, when they have sort of gathered all that, they are sort of somewhat ready to dive into that project.

During the S1 and S2 observations, a fair amount of information was provided, with many questions posed to the group by the instructor. The information was imparted as more a discussion than a lecture, being open for all comments and opinions and, although the studio seemed to have a specific agenda and direction, students were encouraged to explore tangential topics as they arose. Carl cited the use of copious visual examples in lieu of lecture to stimulate design thinking in the design studio. Most of the instructors interviewed and surveyed supported this method of instruction. One notable outlier was Gary, who said he lectured several hours per week and during the S3

observation there were several instances of period-long lectures communicating specific technical instructions.

Erin described the act of "guiding students and helping develop life-long learning kind of approaches to knowledge and education and satisfying curiosity" while "developing their own kind of interest areas and skill sets." She saw instruction as a "loose structure" that is collaborative within the studio environment. Alex agreed, calling his teaching method "free range", in which the students were active agents in the design studio and took the initiative with guidance from the teacher. Franklin guided studio by being "ever ready to seize on the moment and go where the work is taking you" without a moment-by-moment plan for the period but with a goal toward achieving the course learning outcomes. How students get there, Franklin continued, is reflected by the "improvisational aspect to what we do" in the design studio.

There is clear agreement that the instructor acts as facilitator in the design studio. They are not disseminators of knowledge but rather act as sources of prompting and critique for students.

Impressions of Reflection in the Design Studio

Reflection is a fundamental component of SBL (Cennamo et al., 2011). Dewey (1933) and Schön (1987) each discussed reflection as vital for learning in education and continued growth in professional practice. Nevertheless, in the interviews, reflection was seen as inconsequential in the design studio practice, according to Alex and Hector. Beth talked of there not being enough time in the academic studio to engage the students in reflection. Carl and Gary both talked about using informal reflection-on-action (after the activity or during final critique) as a means of wrapping up an assignment. Erin and

David both spoke at length during their interviews about encouraging reflection through self-evaluation both in- and on-action. R32 did not guide or instruct in reflection but did require students to "reflect and reflect again." The survey also reflects several instances of self-reflection but does not indicate any prompt or guidance.

Reflection as an end product of a project or course takes the form of written work (R4, R5, R8, R13, R30, R24, R25, R27, R28, Carl, Erin), project debrief (Gary, R20, R34), and self-critique (R7, R14, R26, R33), described by one educator as "step-back moments" (R30). One instructor spoke of structured reflection but only as it relates to reading summaries (R16).

Reflection as a way to monitor teaching practice and efficacy in the studio classroom was noted by Erin as a means to clarify understanding during a project and was used by A8 at the end of the course to measure the efficacy of the teaching style and substance of the studio class.

Far fewer respondents mentioned an activity that emulated reflection-in-action as part of the studio process. R5 and R35 used written assignments or journaling to reflect on project process and iteration. Desk crits and discussion of work in real time were considered vital by R5, R13, and R29, while peer review during the design process was mentioned by R25.

Although much was written in the surveys, there was little empirical evidence of the use of active reflection in the observations. In the 34 observational periods, there was one instance of prescribed reflection in the studio observation (S2), in which the phrase "reflect on your building design and shape as it begins to inform the program of the place" was mentioned as an action but in an informal and incidental manner. However, in

observation S1, there were multiple incidents where students were prompted to “think” and “consider” during desk crits.

Self-critique is mentioned often in the data (R3, R13, R15, R19, R20, R26, R31), and the researcher wanted to determine whether the interview respondents were reflective in their own teaching and/or practice. Only two respondents, Erin and Franklin, mentioned incidents of reflective behavior in the form of peer conversations as it related to teaching.

There was no clear consensus as to how design studio instructors define reflection in the design studio. It was seen as independent and collective, thinking and writing, talking and drawing. It is either part of the process or occurs after the process, and it can be about what students learn or how they learn it. The onus of the practice seems to lie with the student, who defines what reflection is and how it is performed.

In sum, respondents seemed to agree that, for the most part, reflection occurs in the studio and is, to some small degree, a self-practice, but they disagreed regarding what that reflection looks like or why it is desirable as an activity.

The Culture of the Design Studio

There was a unique culture attributed to the design studio by the interviewees and witnessed during the observational sessions. Hector described the design studio as a place where he learned “from my peers more than the professors, because, practically, I spent a lot more time with my peers than professors.” Beth continued in the same vein, stating that the strength of the studio pedagogy lies in being able to “work alongside your peers and learn from them in, or be inspired by, what or how they are doing it.” That peer learning underlies much of the culture of the studio was also mentioned by Erin, David

and Franklin as a way to learn, evaluate and create connections in the studio setting that differs from the traditional classroom.

According to Alex, design is a discipline of "visual learners" who differ from "verbal learners". Alex continues that visual learners do not learn well from lectures and that the studio pedagogy needs to address this deficiency. Conversely, Erin, Franklin, and Beth observed a large talking component of the studio. Franklin stated that he asks a lot of questions and wants students "to talk. I try to leave them with a question rather than an answer. I try to give them enough rope but not enough to hang themselves."

Incidents of Personal Reflection in Teaching and Process

After the survey results and with some additional reading, I felt that an additional query needed to be explored. I chose to include a question in the interviews about self-reflective practice in teaching in design courses.

According to the literature, instructors who practice self-reflection are more effective in promoting and supporting student reflection (Russell, 2005). The instructors interviewed were asked if they actively reflected as part of their teaching, research or professional practice. Six of those interviewed indicated that they did not participate in reflective practice in at all. Only Erin and Franklin talked about reflective experiences in teaching. Both spoke of reflective conversations with peers. Erin mentioned that these conversations focus exclusively on teaching experiences and a reflection-on-action agenda. Franklin relayed how he reflected-in-action on the projects at hand with his co-instructor and teaching assistant to consider further direction and emphasis. No one offered any evidence that in professional practice, outside of university teaching, a reflective nature was employed. Although not asked directly about personal reflection,

the respondents to the survey did not indicate any reflective practice in their own teaching or professional practice when queried about reflective practice in studio. Alex and Franklin each believed that reflection makes them better instructors in the design studio and encourages them to practice what they require of their students.

There is some evidence that self-reflective practice by the design studio instructors is indicated in the data, but it represents a very small segment of the datum samples. It would appear that even with the instructors who require or encourage some nature of reflective practice, reflection nonetheless does not happen with the instructors themselves.

Summary

This chapter contains the results of the analysis, connects the analysis back to the research questions, and demonstrates the consistency of the analysis with grounded theory analysis. Eight participants were interviewed, 39 surveys were examined, and four studios were observed for this constructivist GT methodology study. Interview and survey questions were structured to help the researcher understand the factors that contribute to teaching in the undergraduate design studio in the landscape architecture discipline. All participants were instructors in the landscape architecture discipline, and the observed studios were accredited programs at U. S. universities.

Consistent with constructivist GT methodology, there were three levels of analysis: open coding, selective coding, and theoretical coding. Constant comparison analysis was exercised using Atlas TI 7 software to discover seven selective codes that emerged as categories from the open codes. Additional constant comparison analysis was used to discover the relationships between and within the open and selective codes,

leading to five themes. The five themes from the theoretical coding resulting from this study summarize the contributing factors that motivate pedagogic processes in the design studio as follows: (a) The model of SBL is a constant in the design studio process; (b) instructors aspire to for their instruction to serve the role of facilitator/coach; (c) the studio culture is a model of professional behavior; (d) active learning is a model of reflective pedagogy; and (e) reflection is a vital part of the studio pedagogy.

There were differences in the factors contributing to the design studio pedagogy and the processes described as SBL and as active learning. Additional data revealed the similarities and differences in reflective practice and classroom culture. While the design studio is seen as a viable pedagogic method, it is evident that there are variabilities between the proposition of the acts in studio and the actual methods employed in situ.

CHAPTER 6

DISCUSSION

The purpose of this constructivist GT study is to investigate the current design studio teaching approaches through SBL to determine if, and in what form, active learning exists in the landscape architecture studio pedagogy through an examination of the instructional processes in the studio. This chapter includes a discussion of the major findings related to the literature on the design studio, SBL, and active learning, as well as the implications that may be valuable for instructors in the landscape architecture undergraduate studio setting. Also included is a discussion of connections between active learning and studio-based pedagogies in the studio classroom. This chapter concludes with a discussion of the limitations of the study, areas for future research, and a brief summary.

This chapter contains discussion and future research possibilities to help answer the following questions:

- What is the extent to which studio-based learning is implemented by the undergraduate faculty in the landscape architecture design studio?
- In cases in which those strategies are used, can studio-based learning be considered as a model of the active learning method in the design studio?
- How does the nature of design studio instruction support the active learning model as revealed in the landscape architecture design studio?

The theory for the extent to which there is a correlation between studio-based instruction, SBL and active learning is multidimensional and comprises five themes: (a) The model of SBL is a constant in the design studio process; (b) instructors aspire to the role of facilitator/coach in interactions; (c) the studio culture is a model of professional behavior; (d) active learning is a model of reflective pedagogy; and (e) reflection is a vital part of the studio pedagogy. Some factors relate to the design studio pedagogy, some to the individual instructor's process in the design studio, and some represent the successful relationship of both. All of these factors help to contribute to an environment in which design studio education in landscape architecture challenges students and promotes life-long learning practices.

Research Limitations

The findings of this study must be viewed in light of some limitations, including the limited empirical research on the landscape architecture design studio, the sample size, and the limited timeframe of the study.

First, there was extremely limited published research on landscape architecture teaching and learning methods in the design studio. Therefore, research from other design fields and personal accounts from former faculty were accessed to fill in gaps in the literature review and attempt to piece together a picture of the historical design studio.

The second limitation concerns the sample size for the study. The small sample size was addressed, as discussed in the Methods chapter, through purposive sampling. The limited sample size did conform to purposive sampling, but a larger sample size may offer more robust results for a similar study.

Finally, there is the timeframe limitation. The design studio observational periods were limited by the resources of the researcher. A longer study could provide a broader view of the methods in the design studio and may bear out more comparisons with the narratives given by the instructors in the survey and the interviews.

Interpretation of the Findings

While the landscape architecture undergraduate design studio will continue as a main source of learning in the discipline, each of the five common themes were prominent motivational factors for the instructors involved in the study in their teaching in the design studio. These themes represent a prevalent culture of the design studio that speaks to the teaching process. Each theme is described in detail in the following section.

The Model of SBL is a Constant in the Design Studio Process

The primary structure and pedagogic approach for design studio training is SBL, which drives the design studio process and techniques (Brandt et al., 2013; Lackney, 1999). SBL represents a holistic framework for the design studio. When properly administered, SBL can significantly improve learning (Bull & Whittle, 2014). All respondents described some form of SBL as a process through which they engaged students in the design studio, but only a few described a full measure of the pedagogy.

In this study, the SBL model was described by most participants as an adequate standard for the development of landscape architecture professionals. The data show that participants agreed that the design studio is a place in which students are incorporating and developing new knowledge for themselves but also one in which they are testing the theories and methods they learn in other courses. The idea of teamwork was also advanced by many of the participants as an ideal for the studio, whether “working in

teams" or seeing the studio as a "collaborative effort." Collaboration, as supported in the literature (Wang, 2010), is perceived as the decisive way to promote an understanding of the professional office, which the academic studio desires to emulate. The idea of the design studio was connected with a professional practice/apprenticeship model in the data as well as in the literature (Boyer & Mitgang, 1996).

SBL in design instruction requires a discovery that allows learners to access deeper levels of cognitive and social skills (Crowther, 2013). Rather than defining the pedagogy as a whole, participants often recalled specific incidents in the undergraduate landscape architecture design studio that conveyed the context of what they considered SBL as it materializes in the design studio. Akin to the description offered by Brocato (2009), participants understood SBL to be a pedagogy that addressed ambiguous design problems, was instructor facilitated, was driven by hands-on assignments (through the design project), involved a process that includes analysis and synthesis, and relied on critique to refine knowledge.

The propose-critique-iterate sequence is also seen as an essential component of the SBL model (Brocato, 2009). However, the data show that in the course of the observational sessions, there came a time when what was happening in studio was being directly compared to what was said to be happening from the interviews. There was clear agreement that the assignments as well as the process were being accomplished, as the students proposed possible solutions that were routinely reviewed by peers and instructors to encourage further design iterations toward a sound solution. However, reflection, as an endorsed part of the SBL pedagogy (Boyer & Mitgang, 1996; Brocato, 2009; Cennamo et al., 2011), did not seem to be a concern of most participants when

describing the studio project process and was only discussed with prompting as outlined in the data. More discussion of the reflective nature of the design studio will be presented later in this section.

Instructors Aspire to the Role of Facilitator/Coach in Interactions

The instructors in the design studio are not traditional university faculty archetypes, such as the classroom authoritarian or the sage on the stage. The design studio instructor prompts and facilitates the structure of the class in the studio space using the SBL method of instruction (Cennamo & Brandt, 2012). The results indicate that the faculty in the studio focus on developing students' practical skills through hands-on learning. The data show that the instructor not only acts as a catalyst for instruction but also facilitates a culture of critique in the studio. This approach is consistent with the literature surrounding the design studio pedagogy and SBL. The instructional activities in the studio are viewed broadly as including "the orchestration and sequencing of design problems in the studio" and more granularly, e.g., situations in which the "instructor works more intimately through dialogue and example with students" during the design crits (Brandt, 2013. p. 333).

The analysis confirms that in the design studio, the instructor acts as a coach for individuals and collaborative groups to facilitate "deeper learning" in the design studio. The literature agrees, demonstrating that the physical studio setup aids in altering the instructional style from lecture-style classes to a social/collaborative learning situation (Cennamo & Brandt, 2012). In collaborative instances in the design studio observed in this research, the instructor freely commented on presented designs, thereby also helping

the students enter into reflective thinking on their design processes while they present (Cennamo & Brandt, 2012).

The desk crit is a unique aspect of the design studio (Brandt, 2013). The data analysis confirms that this form of critique is a pervasive part of the design studio instructional model. Respondents reflected on the desk crit or the one-on-one desk crit as "encouraging iteration" and offering tools for "mentoring." Instructors also used the project critiques to conduct meta-discussions about key ideas in their disciplines. Faculty used the project critiques as time to point out disciplinary conventions and also to push students to arrive at key ideas on their own (Cennamo & Brandt, 2012).

The peer as coach is another way that instruction can be facilitating in the studio. The data suggest that peer interaction, particularly in the form of critique can be as important as instruction interaction with the student. While the instructor guides most of the pedagogy, students too can introduce pedagogical activities through peer mentoring in the crits or when introducing unexpected resources to illustrate one's thinking for their peers and instructor (Brandt, 2013).

The Studio Culture Is a Model of Professional Behavior

One of the most important aspects of studio education is the culture fostered by the students and staff (Bull & Whittle, 2014). The design studio promotes a culture that encourages complex, insightful, personal reflection that is rarely encouraged in other learning settings (Cennamo & Brandt, 2012). The design studio is perceived to be the locus of a unique culture at the university. Elements of this culture include a "sharing ethos, being social, treating the space like a second home, maintaining a good work ethic, utilizing peer learning, and accommodating serendipity into interactions and learning"

(Bull & Whittle, 2014, p. 45). The data suggest that many of these aspects were recognized by the faculty as part of the unique culture surrounding the design studio. The results indicate that the studio culture "becomes almost like a family." It is a nurturing atmosphere—or can be, when the cohort chemistry is good.

The studio is seen as a place where students spend hours both inside and outside of class time (Morrison, 2020; Stoval, 2020). The studio is not a solitary environment and thrives instead on cohort interactions. The data expose the studio as a safe but challenging place where personal space is shared with peers. The culture incites the sharing of ideas, which is seen as an enormous advantage for the discipline. Peer interaction is a key element of the studio cultural setting (Brandt, 2013). The literature has suggested that interactions among students are an everyday practice in the design studio (Brandt, 2013; Burroughs et al., 2009). This assumption is confirmed by the data, which showed peer interactions in the form of peer-led seminars, peer critique, and peer interactions that see the students coming together and which occur continuously in the studio setting. The data also suggest that small group interactions create opportunities to be challenged and inspired by one's peers. Another strength of this space is being able to work alongside peers and learn from them or to be inspired by what or how they are working and thinking.

Active Learning Is a Model of Reflective Pedagogy

Active learning is commonly defined as any instructional method that engages students in the learning process. In short, active learning requires students to engage in meaningful learning activities and think about what they are doing (Bonwell & Eison, 1991). Although active learning and SBL run comparable scholastic courses, there is no mention in the literature of the two as parallel, or even similar, pedagogies, although there are

clear connections between the focus in active learning on learning by doing and thinking about that learning (Bonwell & Eison, 1991) and the ideas of studio-based learning focusing on the propose, critique, and iterate cycle (Cennamo & Brandt, 2012).
The data support that students learn through hands-on problem solving, i.e., "learning by doing," in a designated studio space. Furthermore, the study discusses the idea of a procedure involving critique (at many levels) and reflection to move toward new iterations culminating in a design solution.

The methods of active learning and SBL do diverge in a few areas. First, according to the data, in studio, critique is ubiquitous in the form of desk crits, self-critique, written evaluations, critical thought, peer critique, and group critique. The analysis confirms that critique is critical to student success in the studio. In active learning, however, little attention is given to the evaluation component of the process. Eison (2010) argued that critical thinking is evident in active learning. The other mentions of critique in the pedagogy are connected with experiential learning, in which critical analysis and critical thought connect knowledge to the situation (Atkins & Murphy, 1993; Mezirow, 1981; Ryan, 2013). There is no mention in the literature of critique outside of self-critique.

The second area in which there are conflicting opinions between the data and the literature is the process of reflection (Bonwell & Eison, 1991; Brame, 2016; Brocato, 2009; Cennamo & Brandt, 2013). Reflection is seen as a crucial aspect of the active learning pedagogy and of SBL. Despite its importance, however, the data do not indicate reflection as a constant in the design studio. The observation sessions bore out only one instance of direction for reflection in the studio. Moreover, the faculty interviewees did

not mention reflection in the studio process until prompted by the questions. Even when they discussed reflection, not all included the process in their teaching, and of those who did, most of the instances were incidental at best. Reflection was seen by many as inherent in the student character.

Reflection Is a Vital Part of the Studio Pedagogy

Reflection is seen in the literature as a vital part of the studio pedagogy. Reflection was considered by Schön (1987) as integral to knowledge building in education and was described by Dewey (1933) as an "active, persistent, and careful consideration" of knowledge. However, reflection is not always included as part of the studio design pedagogy, as noted in the data. While the majority of the respondents did recognize that some form of reflective practice happens during studio time, there were several respondents who did not encourage, require, or expect reflection in the design studio, and some even indicated that reflection was already inherent in the studio.

Reflection is commonly understood as the ability to examine one's actions so as to engage in a process of continuous knowledge building (Cennamo & Brandt, 2012): to learn from learning (Brockbank & McGill, 2007). Moon remarked that concrete activities must facilitate reflection. However, the data indicate that there are other meanings to reflection. Reflection, according to the respondents, ranged from small group discussions to written self-evaluations to face-to-face feedback (crits). What seems lacking in most respondent responses and in all studio observations, however, is a conscious plan or thought-provoking prompts for reflection from the instructor. More than one respondent indicated that time constraints of the studio course limit the ability to encourage reflection.

Reflection, as fundamental part of the SBL process, does not always present in the data as important or necessary. The act of reflection is considered by participants as, among other things, the students thinking and considering their design decisions and asking what could have been done differently or changed to make addressing the requirement easier (Bull & Whittle, 2014). Reflection is seen both as in-action, where the consideration involves what is occurring in the moment, and on-action, where it is an evaluation of previous work (Schön, 1987). In the data, however, some of the respondents did not feel that reflection was necessary. Few respondents saw reflection as activities "in real time," and most saw reflection as only on-action or after the fact as a way of "debriefing after presentations." Whatever the style, the intent in most manifestations seems to be reflecting-on-action without much attention to reflecting-in-action.

Self-reflective practice, as encouraged by Schön (1987) and Ryan (2013), allows the instructor to exemplify reflective practice for the students. A vital component to facilitating reflection and reflective practice is for instructors to engage in the practice themselves so that they can articulate and model such practices for their students to promote their engagement in reflective practice (Brockbank & McGill, 2007). Brockbank and McGill (2007) and Russell (2005) promoted instruction in reflective practice explicitly, directly, thoughtfully, and patiently using personal reflection-in-action and reflection-on-action to interpret and improve one's teaching of reflective practice to others. The data demonstrate only the faintest evidence of self-reflective practice by the instructors. According to the data, the instructors expected to students to demonstrate a reflective nature even though they did not model or explain such processes.

The theory of instruction in the design studio of landscape architecture pedagogy, developed from the data, states that landscape architecture is representative of a pedagogy that is instructive and replicable for other disciplines and methods of instruction. The landscape architecture method of teaching is part of the unique process used in the design disciplines. This design studio serves as an example to other pedagogic models through the inclusion of critique methods and cultures presented by the landscape architecture studio, bolstered by a more well-defined and persistent reflective component.

Implications for Scholarship

The landscape architecture design studio pedagogy has persisted nearly unchanged for 120 years in the United States. Today, the design studio remains a dynamic place that supports the SBL pedagogy, preparing landscape architecture students for professional life in practice. However, if the discipline is to remain viable at the university, in terms of enrollment and preparation for professional practice, the discipline should emphasize its strengths and bolster weak areas.

The results of this study imply that the landscape architecture design studio's actual procedures may not be as progressive as those in other disciplines, particularly those that adhere to an active learning pedagogy. The landscape architecture pedagogy lags behind in applying processes that emulate professional practice in the design studio, particularly in the area of reflective practice. Reflective practice is seen by many as the gateway to lifelong learning (Brandt et al., 2013; Bull & Whittle, 2014; Burroughs et al., 2009; Cennamo & Brandt, 2012; Cossentino, 2002; Schön, 1987). This area could benefit from a better understanding of how to aid the landscape architecture discipline in

continuing as a model pedagogy and should prompt the development of a standardized model for the reflective practice in the design studio classroom.

If the studio wants to continue to be considered as a model for the academic classroom pedagogy (Boyer & Mitgang, 1996), then it has to adhere more closely to SBL protocols. Landscape architecture is poised to lead the design disciplines through a strong example in professional practice (Schön, 1987). By continuing to follow the propose-iterate-critique mode, bolstered by a strongly configured reflective component, the design studio pedagogy can remain a standard for learning excellence.

Finally, active learning realizes a stronger presence from the inclusion of the processes of critique established in studio learning. Critique is seen as the standard form of evaluation in the design studio. In the project critiques, I often observed the instructor attempting to situate his/her students within the design problem and modeling for them the design-based thinking that underlies the norms of the discipline (Burroughs et al., 2009). Critique could elevate the active learning pedagogy to a higher level of learning and knowledge building through the continual practices of self-critique, peer critique, group critique, and the ever-present cornerstone of the design studio, the desk crit.

Recommendations for Future Research

While the researcher maintains that qualitative research was the right choice for this study, qualitative research tools such as interviews and observations are not designed to capture hard fact. More credibility could be given to this study with mixed-method research that both captures the personal stories and offers rigorous statistical analysis, which may offer more evidence to strengthen the data discovered using qualitative research tools. For example, a quantitative study could be developed to understand what

role class size plays in the activities and processes of the studio pedagogy. Several participants in this study cited student/instructor ratio as a problem in the design studio.

Several research areas may be pursued in a future study using a larger and more diverse population for the interviews. For example, comparing the perspectives of faculty with fewer years of service could offer a different perspective on the activities surrounding the design studio. A different participant demographic may also provide more insight into the development and improvement of processes in the design studio. Another demographic for the study may involve the demographic of former practitioner instructors, potentially even soliciting candidates who would be willing to answer survey questions over a 10- to 20-year period to determine if there are any shifts in the teaching and learning methods in the design studio.

This study explored the processes in the undergraduate landscape architecture studio. Future research may wish to focus on graduate programs to gain a potential alternative perspective on the methods of the design studio and how instruction affects teaching.

Finally, an alternative study to explore the efficacy of teaching in the studio classroom could be conducted from the student perspective. The students could provide invaluable information on the efficacy of the methods of teaching in the design studio. These stories and lived experiences might mirror those described by the instructors or prove to be different.

Conclusion

The notion of the modern-day design studio as a model for university classroom pedagogy is generally accepted in this study. The active learning model and the SBL

model run nearly parallel in the literature, but in the reality of the design studio, there are some overlooked opportunities to exploit the advantages of both modes, suggesting that neither is a perfect model for university teaching and learning. While the design studio is the vital requirement of landscape architecture pedagogy, the instructors nonetheless have work to do to help maintain a vibrant and robust discipline.

The results of this study suggested that there are five themes related to the theory of instruction in the design studio in landscape architecture pedagogy: (a) The model of SBL is a constant in the design studio process; (b) instructors aspire to a role of facilitator/coach in their interactions; (c) the studio culture is a model of professional behavior; (d) active learning is a model of reflective pedagogy; and (e) reflection is a vital part of the studio pedagogy. For the design studio, SBL coupled with structured or instructed reflection is necessary for a robust discipline.

The neglected elements in the design studio pedagogy may not be evident to the instructors as the studio plays out in the classroom, but the data reveal a missing part of the pedagogy. The ownership of the design studio pedagogy lies with the instructors and must be addressed to move the discipline forward. Active learning offers a model that provides a stronger message regarding reflection than the propose-iterate-critique model of SBL. The results of this study suggest that SBL is a good starting point for the landscape architecture design studio but that there is room for improvement, specifically in regard to reflective practice for students and instructors. Hopefully, in future studies, there will be strong evidence that reflection is an active part of the design studio pedagogy.

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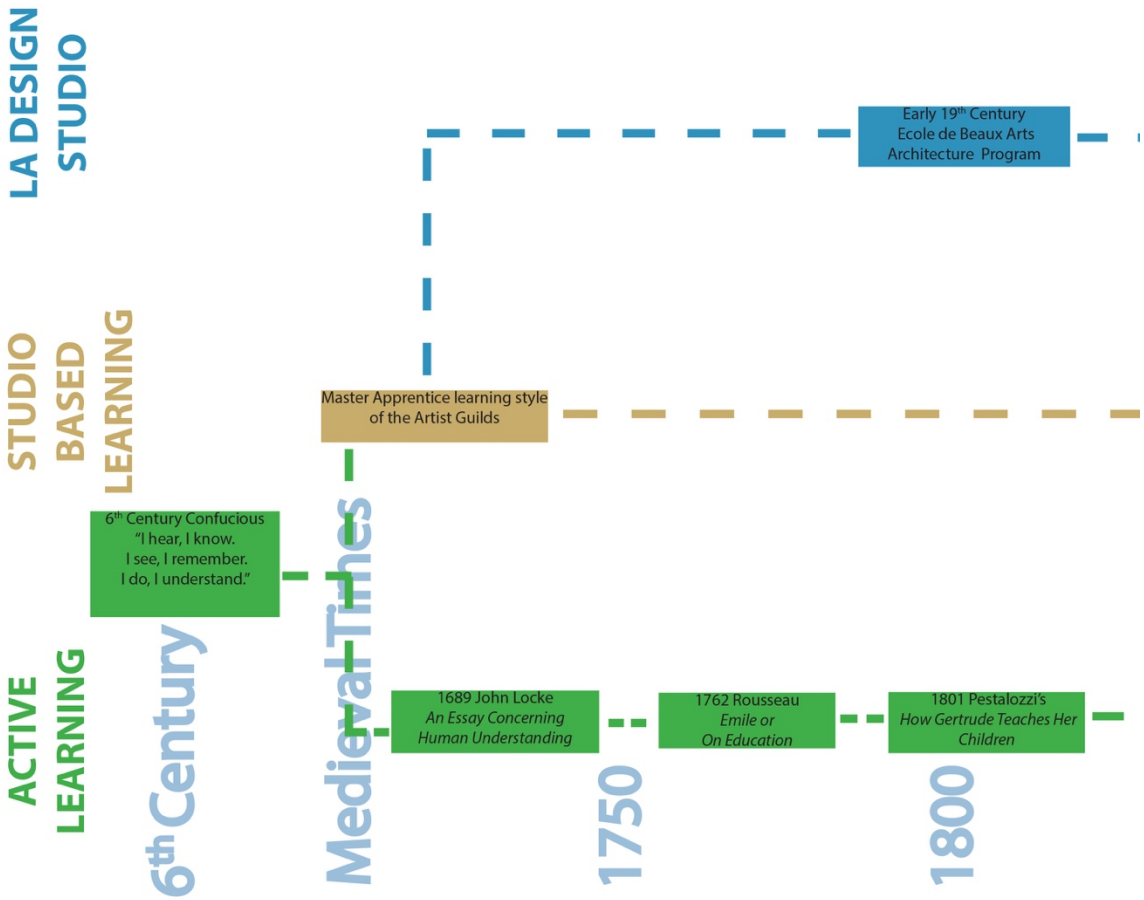
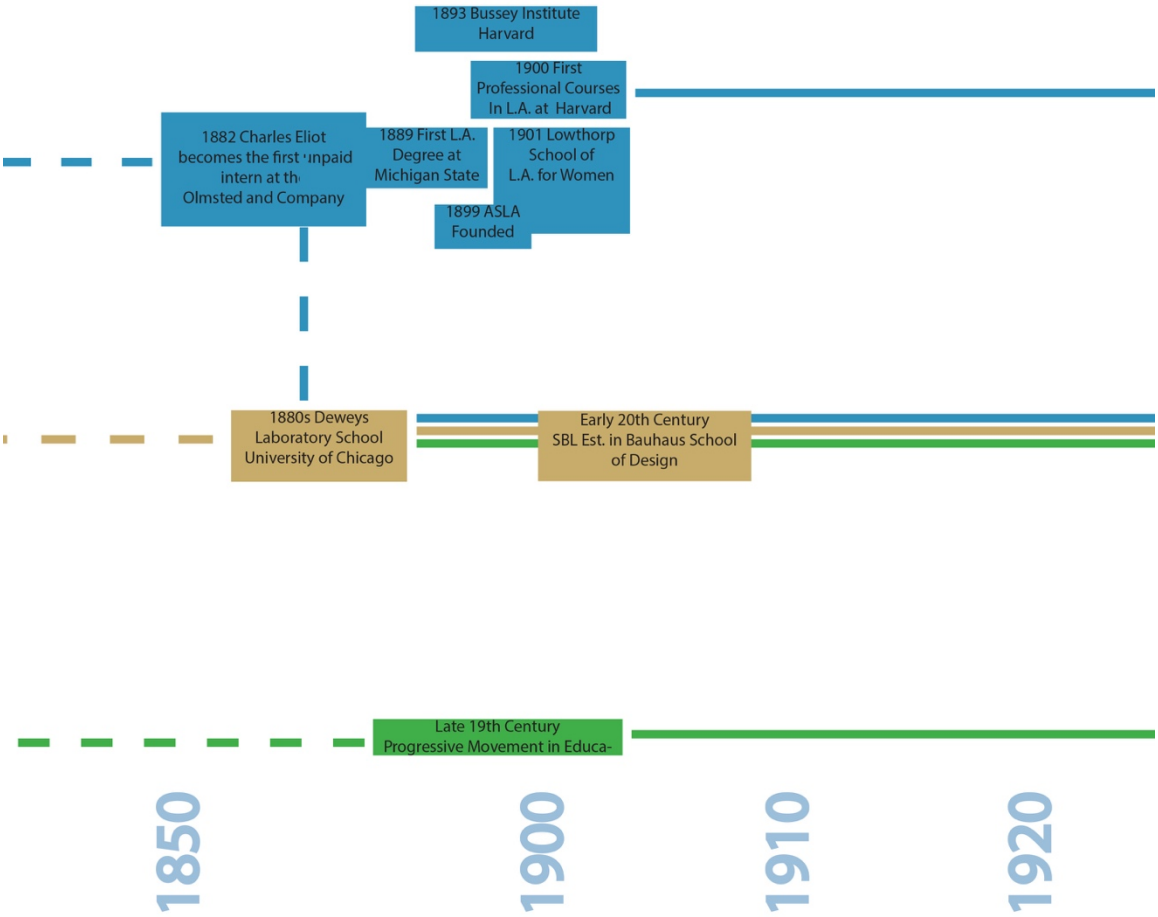
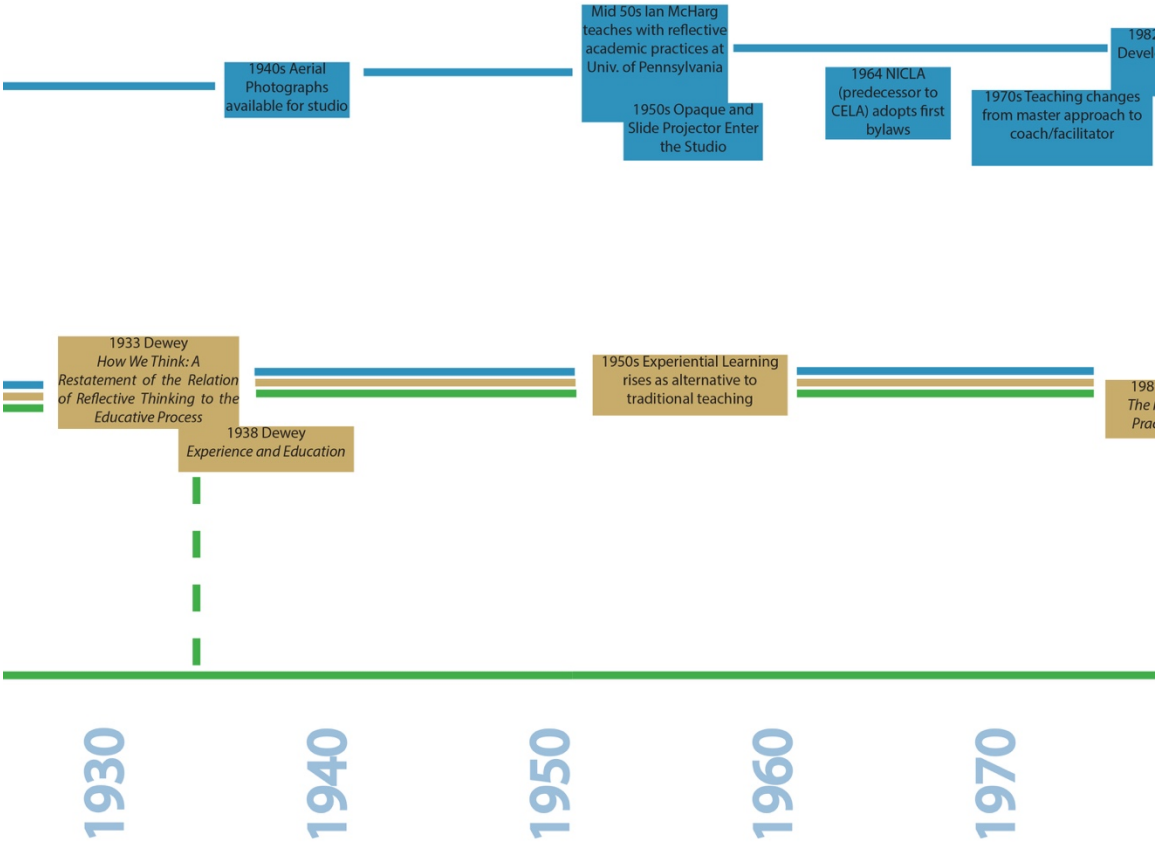
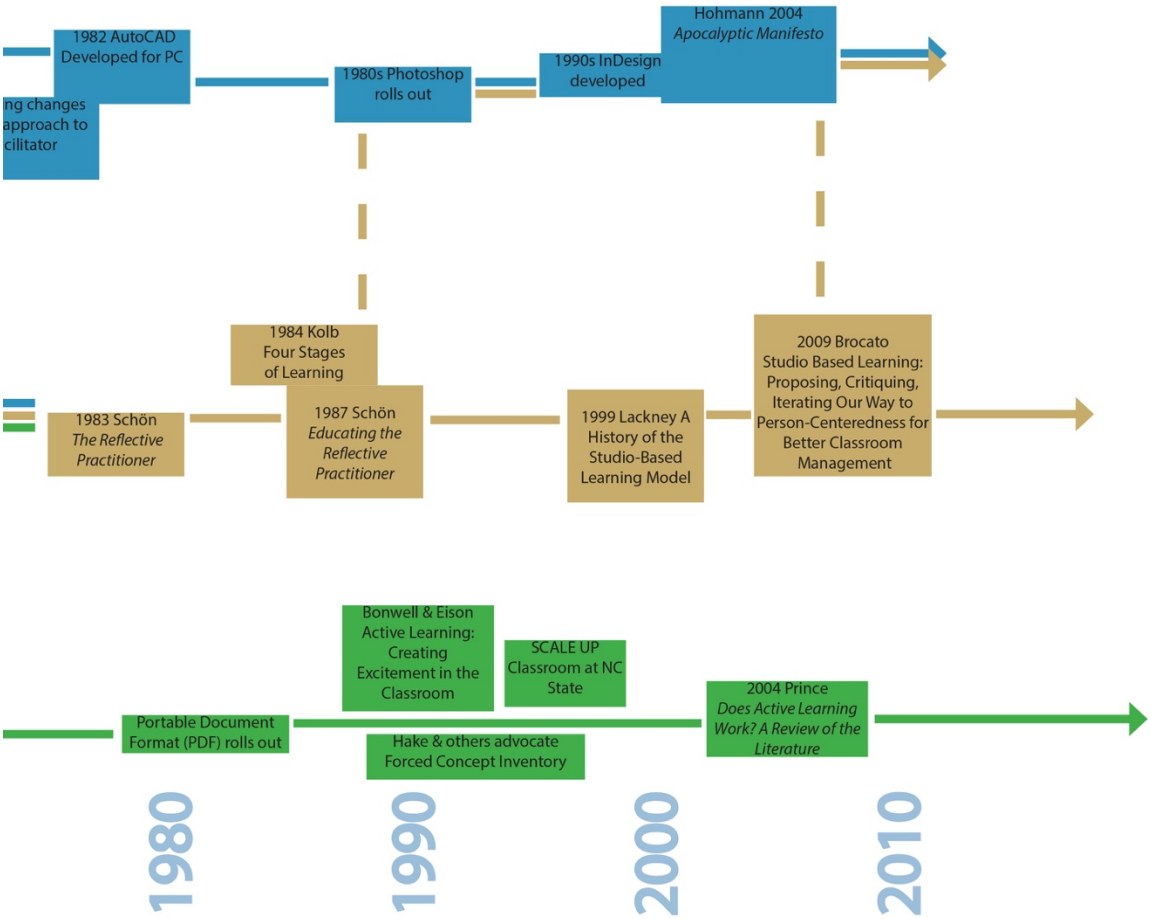
APPENDIX A

TIMELINE




1893 Bussey Institute Harvard
1900 First Professional Courses In L.A. at Harvard
1882 Charles Eliot becomes the first unpaid intern at th Olmsted and Company
1889 First L.A. Degree at Michigan State
1901 Lowthorp School of L.A. for Women
1899 ASLA Founded
1880s Deweys Laboratory School University of Chicago
Early 20th Century SBL Est. in Bauhaus School of Design
Late 19th Century Progressive Movement in Educa-
1850
1900
1910
1920


1940s Aerial Photographs available for studio
Mid 50s Ian McHarg teaches with reflective academic practices at Univ. of Pennsylvania
1950s Opaque and Slide Projector Enter the Studio
1964 NICLA (predecessor to CELA) adopts first bylaws
1970s Teaching changes from master approach to coach/facilitator
1933 Dewey How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process
1938 Dewey Experience and Education
1950s Experiential Learning rises as alternative to traditional teaching
1930
1940
1950
1960
1970


1982 AutoCAD Developed for PC
ng changes approach to cilitator
1980s Photoshop rolls out
1990s InDesign developed
Hohmann 2004 Apocalyptic Manifesto
1984 Kolb Four Stages of Learning
1983 Schön The Reflective Practitioner
1987 Schön Educating the Reflective Practitioner
1999 Lackney A History of the Studio-Based Learning Model
2009 Brocato Studio Based Learning: Proposing, Critiquing, Iterating Our Way to Person-Centeredness for Better Classroom Management
Bonwell & Eison Active Learning: Creating Excitement in the Classroom
SCALE UP Classroom at NC State
Portable Document Format (PDF) rolls out
Hake & others advocate Forced Concept Inventory
2004 Prince Does Active Learning Work? A Review of the Literature
1980
1990
2000
2010

APPENDIX B

IRB APPROVAL LETTER

UNIVERSITY OF GEORGIA

Tucker Hall, Room 212
310 E. Campus Rd.
Athens, Georgia 30602
TEL 706-542-3199 | FAX 706-542-5638
IRB@uga.edu
http://research.uga.edu/hso/irb/

Human Research Protection Program

EXEMPT DETERMINATION

October 15, 2019

Dear Daniel Nadenicek:

On 10/15/2019, the Human Subjects Office reviewed the following submission:

Title of Study:	Engaging Z-Generation Students in Doing and Thinking: Active learning in the Design Studio
Investigator:	Daniel Nadenicek
Co-Investigator:	Leslie Palacios
IRB ID:	PROJECT00000953
Funding:	None
Review Category:	Exempt 2(ii)

We have approved the protocol on 10/15/2019. Please submit a Progress Report by 10/15/2019.

Since this study was determined to be "exempt", please be aware that not all future modifications will require review by the IRB. For more information on modifications that will require review and approval by the IRB prior to implementation, please see Appendix C of the Exempt Research Policy. (https://research.uga.edu/docs/policies/compliance/hso/IRB-Exempt-Review.pdf) As noted in Section C.2, you can simply notify us of modifications that will not require review by using "Add Comment".

Please close this study when it is complete.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103).

Sincerely,

William Westbrook, IRB Analyst
Human Subjects Office, University of Georgia

APPENDIX C

SCHOOL AUTHORIZATION TO CONDUCT RESEARCH

SCHOOL AUTHORIZATION TO CONDUCT RESEARCH

Date:

Dear Institutional Review Board:

The purpose of this letter is to inform you that I give *Dan Nadenicek and Leslie Palacios* permission to conduct the research titled *Engaging Students in Doing and Thinking: Active learning in the Design Studio* at Virginia Tech, College of Architecture, School of Landscape Architecture. We have agreed to the following study procedures:

- **Observational session over the course of nine class periods in two (2) undergraduate landscape architecture studios**
- **Provision to conduct interviews with faculty**

This also serves as assurance that this school complies with requirements of the Family Educational Rights and Privacy Act (FERPA) and will ensure that these requirements are followed in the conduct of this research.

Sincerely,

<Nam

<Title of Signatory>

Professor and Landscape Architecture Program Chair

APPENDIX D

SUBJECTIVITY STATEMENT

As a student and teacher of landscape architecture, the researcher has inherent bias that needs to be explored and elucidated prior to describing the results of the data collection phase.

I recognize that I have bias toward my subject, as a former student of landscape architecture, as a current university PhD student, and as a landscape architecture educator. According to Peshkin (1988), subjectivity is the personal bias that can have an effect on results of all aspects of research, in the form not only of personal biases but also emotional and prejudicial subjectivities that affect one's research—what Peshkin calls the "Subjective I". When I bring myself and my qualities, my "I," into the research, I am being subjective, which can be "virtuous" (Peshkin, 1988, p. 18) through its very distinction to the contribution in research (Peshkin, 1988). I have identified four "I"s to which I need to be responsive: Association I, Historical I, Glass-Half-Empty I, and *A priori* I.

I started my study in landscape architecture in the mid-1980s and completed my undergraduate degree in 2009, culminating in a master's degree in 2012, all at Virginia Tech. There was a 20-year gap between the beginning and completion of my studies, and upon my return, I re-entered the landscape architecture studio classroom at Virginia Tech as an undergraduate and found that little had changed: studio was still scheduled in multiple hour blocks; lengthy lectures were followed by hands-on activities culminating

in projects involving landscape and environmental design, with substantial work expected to happen outside scheduled studio time. In my early days, in the 1980s, I remembered lectures on the cultural landscape that were two-hour slideshow lectures in a darkened lecture hall from 7:00 p.m. to 9:00 p.m. I recalled little of the information presented during these lectures. There were also lectures associated with studio class that seemed interminable. Later, when I returned in 2009, lectures remained dominant for some classes, but some courses were filled with discussion between instructors and students that piqued my interest and garnered my attention. In the third-year design studio, as many as two of three classes per week began with a 90-minute or longer lecture with no discussion, yet a theory class was filled with homework reading, and the class time was reserved for open discussion with prompts from the instructor. Although this is just a snapshot of the classes I attended, I remember much of my time as a student as it has been very influential in my life. This experience carried on through to my time teaching at the University of Georgia. Both these academies feature as sites for my data collection because I have had a personal relationship with each. Though it is now 2020, and change is inevitable in the academy, my academic life has been heavily influenced by an Association I. My familiarity with these universities and a sense of underlying loyalty may have clouded my judgement and is a known entity as I move forward.

My knowledge of what goes on in the landscape architecture studio at the academy is primarily limited to my personal experience, as little has been published on the subject. The Historical I is influenced by my experiences, both new and old, in the studio, and I am cognizant of not only where I am but, temporally, when I am. Personal

history can alter perception of the events as they are presented, and I recognize that this history may have influenced what was presented during the data collection process.

I remember the lecture during studio time. From my first days in studio, lectures were part of most class periods through my master's program studios in 2010. Some lectures were approximately 30 minutes, while other lectures stretched well over an hour in multiple periods throughout the semester. The longer the lecture was, the more my mind detached from reality and stumbled onto other things. As far back as 1972, Bligh wrote about how lecture does little to promote critical thinking, and others have reported that lecture attendance is primarily seen as a means to pass a test rather than to gain useful information (Newman-Ford, Fitzgibbon, Lloyd, & Thomas, 2008). It is well documented that attention span in college students waxes and wanes dramatically throughout a class period, yet better capture can occur through varied activities and teaching styles incorporated throughout the period (Johnstone & Percival, 1976; Paul, Baker, & Cochran, 2012; Wilson & Korn, 2007). I experimented with this approach in my own teaching and find validity in these claims, having observed that a moment of varied activity can reinforce focus and restore energy levels. For my Glass-Half-Empty I, I saw the extended lecture as a flaw in instruction that warranted my attention, but I knew that, objectively, I was present to gather and report data, not to correct a perceived wrong nor to question the material content in order to break up any monotony.

Active learning attracted my attention during my final years at Virginia Tech. My spouse (the director of the department of Educational Technology) and I have had long discussions about pedagogy in the college classroom. The more I read on active learning methods and principles of learning by doing, flipping the classroom, and the success rate

seen through assessment in retention and application, the more I saw some correlations between that approach and what was happening in studio. This is not to say that all studio activities are or are not active learning. Studio is, in fact, long, spanning multiple hours several times a week, and that time is usually split among hands-on project work, lectures, site visits, and/or presentations. Although lectures are shorter in the contemporary college studio, there is little variation on what happens day to day. Because of the nature of learning by doing, every event witnessed may not fulfill an active learning agenda or the intention of the studio-based pedagogy of landscape architecture. I was careful to observe my activity and to understand my motivation in order to record the data properly. A priori I is prone to having readings, lectures, and discussions arise during observation and interview time.

I knew that there were subjectivity risks associated with the observational and interview portions of my research but, by being aware of my bias, I was able to recognize when it was unduly influencing my data collection. A potential advantage may have occurred because I attempted to use my bias to increase my thoughtfulness when listening to the respondents' stories (Corbin & Strauss, 2008). The aspiration here was to listen to what was said with sensitivity and to seize on significances with "the creativity and feeling that give qualitative research its soul" (Corbin & Strauss, 2008, p. 90).

APPENDIX E

LANDSCAPE ARCHITECTURE UNDERGRADUATE EDUCATORS SURVEY

Landscape Architecture Undergraduate Educators Survey

Q5 What year did you receive your undergraduate degree?

_____

Q3 What degree(s) do you hold at present

- Bachelor's Degree
- Master's Degree
- PhD
- Other

Q4 Please describe your educational background and the institute (ex. BArch - Ohio, MLA - UVA, PhD History - Harvard)

_____

Q1 What is your instructional experience with Landscape Architecture undergraduate studio pedagogy

- I currently teach undergraduate studio
- I have taught undergraduate studio in the past
- I currently teach undergraduate design studio but not in landscape architecture
- I have taught undergraduate design studio but not in landscape architecture
- I have not taught any undergraduate design studio

Q6 When did you start teaching landscape architecture studio classes? Please indicate year.

_____

Q2 How many total semesters have your taught undergraduate studio

_____

Q7 How long did you work in professional practice in landscape architecture or architecture?

- 0-5 years
- 6-10 years
- more than 10 years
- I have not worked in the industry

Q9 What is your opinion on the following studio instruction structure:

	Strongly Disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Scheduled design studio time is preferable for face to face instruction such as lecture and discussion							
Students learn better in groups than working independently							
Studio time should focus on practice of principles and technical skills of the discipline							
Students work better outside scheduled studio time on design problems							

Q10 What are your opinion on current studio tools and style at your institute:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
Current studio practice is most like current professional practice							
Current studio projects resemble real-life projects							
Physical studio furnishings and physical studio space arrangements are like professional practice set up							
Project schedule/timing is in sync with professional norms for real-life projects							
Studio tools and technology resemble current professional practice tools and technology							

Q21 How do you assess learning objectives on theory, process and principle learning? Please check all that apply.

- Inclusion in studio projects
- Graphic projects
- Test (final assessment)
- Series of independent quizzes
- Series of cumulative quizzes
- Essay
- Student Presentation (Pin-up, PowerPoint style, etc.)
- In class discussion

Q23 How do you re-enforce learning objectives? Please check all that apply.

- Assessments (quizzes, surveys, testing)
- Application of lecture/reference material in design process
- Student led discussions
- Application of lecture material in final artifact (completed project)
- In class discussion
- Sketchbook/Journal review

Q24 If using online lectures or lessons, what is the follow up? Please check all that apply.

- Roundtable class discussion
- Test, Quiz, Survey
- Evidence of meaningful application in studio work
- Relating the content in presentation
- There is no formal follow-up
- I do not use online lectures or lessons

Q26 Indicate with the slider what percent of lecture in your studios are face-to-face or virtual/online (self-paced) (total should not exceed 100%)
Face to Face: _____
Virtual/Online: _____
Total: _____

Q25 Choose your top three that describe the majority of your lecture content formulated for undergraduate studio classes.

- Technical skills
- Principles and theories of design
- Cultural Theories
- Ecological Theories
- Planning theories
- Placemaking
- Design thinking

Q33 Please select the answer that best applies to your personal instructional style for students in undergraduate design studio. You may select more than one answer.

- believe learning is student centered and personalized, and the educator's role is that of a facilitator.
- believe students require active participation in order to learn, and actions are a consequence of thinking, instructors' role is as researcher
- believe students begins as a clean slate and behavior is shaped through positive reinforcement or negative reinforcement
- believe students learn through experience, clarify the key points and apply the lessons to get practical results and only be assisted in discovering new truths by instructor/coach
- believe students learn from thinking about their own thinking with instructor prompting "What are you learning?' as well as 'How are you learning?'
- believe the interaction between a student and an instructor who helps them finish a task that they could not do alone
- believe that students interact with others and the culture they live in shape their mental abilities – instructors are part of "others"

Q11 On average, during a typical scheduled design studio, please indicate the percent of time spent on the following activities for a typical undergraduate project (excluding final year project) (total should not exceed 100%)
Lecturing: _____
Desk Critique: _____
Pin Up Critique: _____
Project Presentation: _____
Coaching/Mentoring/Advising: _____
Describing project parameters: _____
Students independent /group work: _____
Site Visit/Field Trip: _____
Total: _____

Q28 Are you familiar with the term 'active learning' as it applies to scholarly teaching and learning?

- Yes
- No

Q35 How have you learned about active learning. Select all that apply

- I have received formal instruction in active learning
- I have explored active learning through periodicals and reference books on my own
- I consulted with colleagues in order to learn more about active learning

Q30 Please describe your understanding of active learning

_____

Q29 Briefly, describe how you use active learning in your studio.

_____

Q27 Reflective learning as described by Donald Schön, John Dewey, and David Boud and others is practice of experiential learning that guide reasoning about practice. Do you require students to reflect-in-action and/or reflect-on-action in your studio teaching?

Yes

No

Q34 How do you instruct students on how to reflect?

_____

Q13 Do you conduct research on your teaching, industry practice or studio pedagogy? (Please select all that apply)

I conduct research on my teaching

I conduct research related to industry practice

I conduct research on studio pedagogy

I conduct research on other topics

I do not conduct research on any of these topics

Q15 Indicate your level of knowledge and current use

	Knowledge of Practice		Use of Practice		
	Familiar	Unfamiliar	Currently use	Have used in the past	Have never used
Flipped Classroom					
Blended Curriculum/Pedagogy					
Reflective Teaching					

Q31 Would you agree to be contacted in order to be interviewed for additional insight, for my PhD dissertation, regarding your teaching and instruction?

Yes

No

APPENDIX F

INTERVIEW QUESTIONS

Interview Questions for Faculty

1. How long have you been teaching landscape architecture design studio? Do you mainly teach undergraduate or is it a mix between graduate and undergraduate?
2. Can you describe your educational background? What about your professional experience in the Landscape architecture?
3. Have you ever taken any teaching and learning courses? What did they entail?
4. How would you describe your teaching philosophy?
5. What about your teaching style? If you had to describe how you teach studio courses what would you say?
6. What do you feel the learning process in design studio involves? What do you feel is the process for producing disciplinary knowledge in the design studio?
7. Have you heard of the active learning method of teaching and learning?
8. What do you feel is meant by active learning? Do you think that active learning goes on in your studios? What does that look like?
9. What, do you feel, are the strengths of the design studio?
10. What do you identify as limitations in today's design studio pedagogy at the university?
11. Are you familiar with the idea of reflection as a part of the learning process? Specifically, what does that reflection look like in the design studio?
12. Do you feel you are reflective in your practice? Your teaching? What does that reflection look like?
13. What kind of reflection do you require as part of the design process? How does that reflective learning look?
14. Schön relates that reflection in and reflection on action is learnable and coachable but not teachable. How do you feel that you coach or encourage the learning process or such reflection in the studio setting?
15. What manner do you see design students bringing prior knowledge or testing in situ and applying it from one design to the next or from one design studio to the next? In other words, how do the students learn and retain understanding of design studios discoveries?

APPENDIX G

INITIAL CODES

Facilitating

Self-engagement

Design process

Engage

Reflect

Learning process

Project-based

Real-world

Hands on

Problem solvers

Actively engaged

Participation

Defining Goals

Objectives

Studio process

Design Problems

Engage

Experiential learning

Learning through doing

Collaborative

Student oriented

Pro-active

Individual

Discussion

Participatory

Involved

Integrating

Principles

Summative

Formative

Initiative

On their own

Analysis

Real sites

Clients

Learning opportunities

Evaluation

Constructing

Apply knowledge

Strategies

Support of faculty

Critical thinking

Follow through

Interactive

Peer critique

Pin-ups

Resource person

Mentor

Iterative process

Student defined

Guided

Experimentation

Process

Synthesis

Self-evaluate

Active learning

Guiding

Reinforcement

Conversations

Design problems

Performance based

Critique

Principles

Autonomy

Visual

Facilitator

Gatherer

Jargon

Fuzzy Definition

Control learning

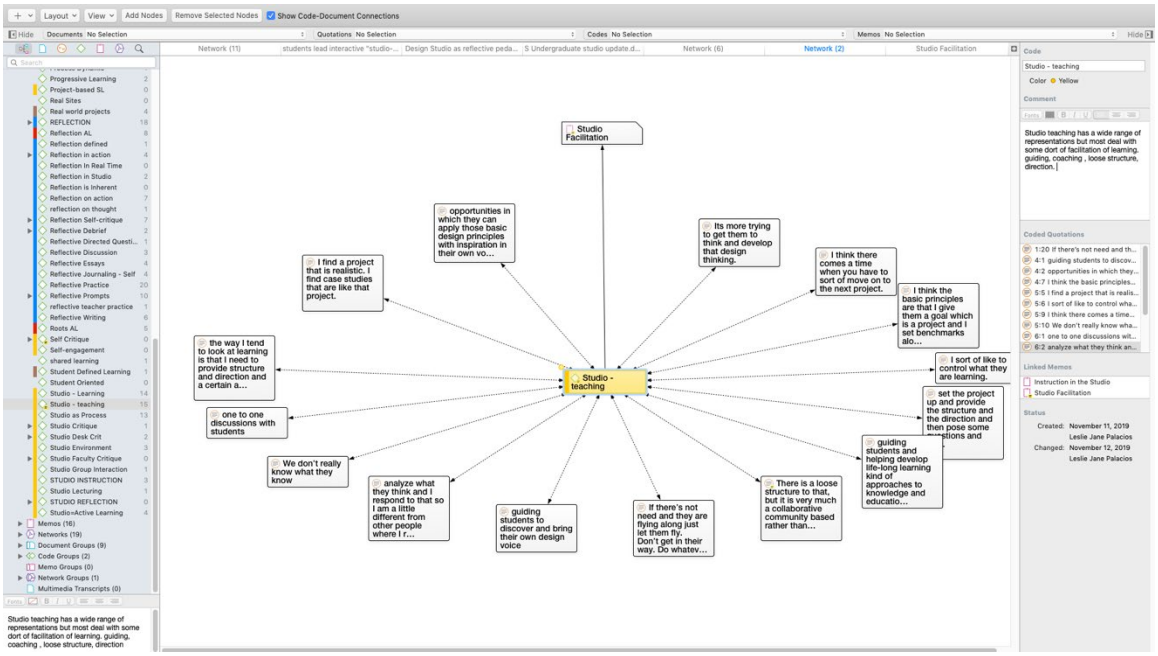
Trend

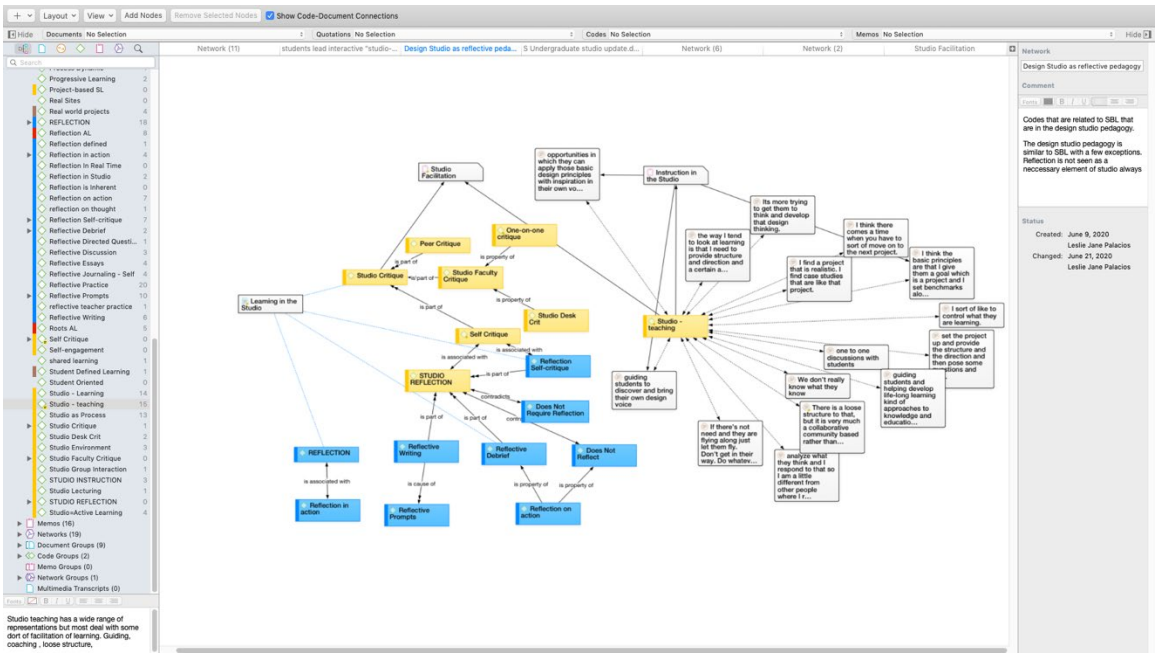
Research

Studio Environment

APPENDIX H

ATLAS TI 7 EXAMPLE




Studio Facilitation
opportunities in which they can apply those basic design principles with inspiration in their own vo...
Instruction in the Studio
Its more trying to get them to think and develop that design thinking.
I think there comes a time when you have to sort of move on to the next project.
the way I tend to look at learning is that I need to provide structure and direction and a certain a...
I find a project that is realistic. I find case studies that are like that project.
I think the basic principles are that I give them a goal which is a project and I set benchmarks alo...
One-on-one critique
Peer Critique
Studio Critique
Studio Faculty Critique
Learning in the Studio
Studio Desk Crit
Studio - teaching
I sort of like to control what they are learning.
Self Critique
set the project up and provide the structure and the direction and then pose some questions and
one to one discussions with students
Reflection Self-critique
STUDIO REFLECTION
guiding students to discover and bring their own design voice
We don't really know what they know
guiding students and helping develop life-long learning kind of approaches to knowledge and educatio...
Does Not Require Reflection
There is a loose structure to that, but it is very much a collaborative community based rather than...
If there's not need and they are flying along just let them fly. Don't get in their way. Do whatev...
analyze what they think and I respond to that so I am a little different from other people where I r...
REFLECTION
Reflective Writing
Reflective Debrief
Does Not Reflect
Reflection in action
Reflective Prompts
Reflection on action
Network
Design Studio as reflective pedagogy
Comment
Codes that are related to SBL that are in the design studio pedagogy.
The design studio pedagogy is similar to SBL with a few exceptions. Reflection is not seen as a neccessary element of studio always
Status
Created: June 9, 2020
Leslie Jane Palacios
Changed: June 21, 2020
Leslie Jane Palacios
Studio teaching has a wide range of representations but most deal with some dort of facilitation of learning. Guiding, coaching , loose structure,