UNDERSTANDING STUDENTS' PERCEPTIONS OF COMMUNICATION SKILLS IN FRESHMAN INTERIOR DESIGN STUDENTS: A DESCRIPTIVE CASE STUDY

Beth Huffman

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Doctoral Committee

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Elizabeth Boling, M.F.A.

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Krista Glazewski, Ph.D.

_____

Amy Pickard, Ph.D.

Date of Defense (April 5, 2024)

Beth Huffman

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Freshman interior design students at a large, urban, Midwest university are required to enroll in a design studio course during their first semester. The design studio is the primary pedagogy in design education utilized to teach students how to communicate graphically, verbally and through their writings (Schön, 1987; Shaffer, 2003). While effective communication in each of these domain competencies is expected, the focus of the design studio is often on design principles, with minimal instruction provided on communication skills development (Morton & O'Brien, 2005; Hynes & Kwon, 2018). This descriptive case study aimed to better understand students' self-perceptions of communication skills within a single section of a semester-long freshman interior design studio course. The students' communication skills were analyzed through the following data sources: one written reflection narrative assigned at the beginning of the semester, which prompted students to self-assess their perceptions of their communication skills across the three domain competencies (graphic, verbal and written); and a digital story, in which students reflected on their perceptions of communication skills development throughout the semester. This study analyzed the students' self-perceptions of their communication skills throughout one semester, with an emphasis on three domain competencies: graphic, verbal and written communication skills.

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Elizabeth Boling, M.F.A.

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Krista Glazewski, Ph.D.

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Amy Pickard, Ph.D.

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Chapter 1: Background and Introduction

Introduction

The design studio is the "primary pedagogy" for design education (Shulman, 2005). Unlike traditional lecture-based courses, design studios focus on students "learning by doing" and "reflecting in action" (Schön, 1987). Students utilize various forms of graphic artifacts, ranging from preliminary hand-drawn sketches to realistic three-dimensional renderings, to graphically communicate their ideas to the instructor. Moreover, instead of traditional assignments and assessments, the design studio predominantly relies on various forms of critique for feedback and assessment. Most frequently, students verbally explain their design ideas to their instructor in an informal critique, which usually takes place at one's workstation or desk. During these critiques, the instructor asks questions about the student's design, and also offers constructive critique and feedback about the student-produced graphic artifacts. This unique form of real-time feedback is often a new, and sometimes intimidating, experience for beginning design students. Even so, beginning design students are often given little guidance or instruction on appropriate communication within the design studio context (Morton & O'Brien, 2005).

Problem Statement

Historically, a well-defined focus on teaching discipline-specific design skills has existed in design studio education (Cennamo, et al., 2011; Gray, 2013). Within the context of an interior design studio, design skills include the following: technical drawings, such as floor plans, elevations and reflected ceiling plans, hand sketching and ideation drawings, mind maps and concept sketches, and three-dimensional drawings, created by hand or on the computer. However, communication skills are consistently named as one of the most desired soft skills for

success in the design industry (Clokie & Fourie, 2016; Dannels, Gaffney & Martin, 2008; Gale, Duffey, Park-Gates & Peek, 2017; Lee & Hagerty, 1996). Communication skills refer to an individual's ability to articulate oneself through various modalities (Trede, Macklin, Bridges, 2012). Specifically, the accrediting body for interior design programs, Council for Interior Design Accreditation (CIDA), states that an interior design program needs to be able to teach students to effectively communicate graphically, verbally and in written forms (CIDA, 2020). Moreover, within the design industry, graduates are expected to demonstrate both adequate design skills and communication competencies (Clokie & Fourie, 2016). This hybrid of skills and competencies can be further described as professional identity which is broadly defined as the sense of being a professional (Paterson et al., 2002). Professional identity encompasses both design skill and communication competencies. Utilizing this definition of professional identity, Paterson et al., (2002) posit that elements of professional identity include technical skills, interpersonal skills, professional judgment and reasoning, holistically encompasses both cognitive and affective skills. While professional identity will continue to develop over one's personal and professional life, scholars agree that professional identity formation begins in the context of the higher education classroom (Barnett, 2010, Barrow, 2006; Bramming, 2007; Clouder, 2005; Kunrath et al., 2017; Paterson et al., 2002).

Even so, teaching effective communication skills within the studio environment is much less integrated into the pedagogical practices of the design studio than that of a traditional classroom. (Morton & O'Brien, 2005; Hynes & Kwon, 2018). The expectation for interior design students is that they will be effective communicators through their writings, verbal presentations and graphic artifacts within the context of the studio environment, even though little instruction or teaching is provided on the subject of effective communication (Morton &

O'Brien, 2005; Hynes & Kwon, 2018; Dannels, Gaffney & Martin, 2008). While instructors, students and employers agree that communication skills are one of the most important attributes needed for success as a designer (Clokie & Fourie, 2016; Dannels, Gaffney & Martin, 2008; Gale, Duffey, Park-Gates & Peek, 2017; Lee & Hagerty, 1996), there is currently minimal focus on teaching, analyzing, and reflecting on communication skills (Morton & O'Brien, 2005). This may account for the observed lack of well-developed communication skills in many of the freshman students in this study, which was in a large, public setting in the Midwest.

Context

The context of this research study was at a large, urban, public university setting in the Midwest. With over 28,000 students, the University is home to students from dozens of countries and socio-economic backgrounds. As of January 2020, the interior design program at the University has 132 undergraduate students enrolled with over 95% of those students meeting the university's state resident requirement. The students in the program are 85% female and 15% male and 76% of the students are traditional age students.

Currently, the Interior Design program at the University includes little teaching or training within the interior design curriculum intended to help students build their communication skills. The Interior Design program at the University does have a two-hour, in-person freshman orientation during which student expectations are defined and discussed. This session introduces five operating principles of the Interior Design program at the University, one of which involves elements of communication, which is as follows: "We utilize a courteous and professional demeanor in all manners of conduct. This includes but is not limited to oral discussions, written communication and bodily behavior." This freshman orientation is currently

the only formal instruction in communication expectations that the University's interior design students are required to engage in throughout the program curriculum.

As a result of this perceived gap in the curriculum, this research study implemented an online educational module module which focused on communication skills for freshman interior design students. With an enrollment of 20 students in this introductory interior design studio course, this study utilized purposive sampling to identify four participants who were first year, first semester undergraduate, interior design students who were enrolled in one section of the entry level interior design course in the fall semester of 2023. The freshman course was titled "Introduction to Interior Design" and was only for first semester interior design students. The course provided an overview of the field of interior design and an introductory development of skills necessary to create interior project plans. In this course, students explored design elements and organizing principles as applied to the interior environment while also developing skills to hand-draft basic floor plans and elevations with architectural lettering; in addition, students also created professional quality sample boards and presented them to a client/group.

The data generated from this qualitative research study was disseminated to the full-time, interior design faculty members at the University upon the completion of this study. This study's data was utilized to inform potential curriculum changes within the introductory course to better prepare freshman interior design students for design studio courses through the inclusion of a communication skills module. The educational module focused specifically on developing effective communication skills, which included verbal and written communication, as well as graphic communication skills (Kunrath et al, 2020). Learners were required to reflect on their self-perception of their communication skills at the beginning of the semester through the use of a written narrative in the freshman level interior design course at the University. Learners also

created a digital story at the end of the semester which was intended to provide a multi-media artifact highlighting the student's self-perception of his/ her communication skills using the domain competencies of graphic, verbal and written communication as a framework for the digital story. The student narrative and the digital story were used as the two, student-created primary data sources for this research study which were then analyzed as a single body of data. The data analysis identified three interpretive themes which encompassed students' self-perceptions of communication skills development. As a former faculty member within the interior design program, the researcher chose to conduct this research study based on her and the faculty's perceptions of a perceived lack of communication competencies in the freshman interior design students. Because the program faculty and the researcher's perceptions regarding the students' lack of communication competencies were well-developed and often discussed, the researcher chose to analyze the students' self-perceptions to better understand what the students perceived as their strengths and weaknesses within the domain competencies of communication, which included graphic, verbal and written communication.

Theoretical Framework

Constructivist learning theory (Piaget, 1971) served as the foundational framework for the design and implementation of this research study. Constructivism argues that learners construct meaning through their experiences, both individually and socially. Piaget (1971) posited that learners' perceptions of their past and present experiences inherently shape how they create new knowledge. Similarly, this study aimed to better understand learners' perceptions of their communication skills development throughout a one semester introductory studio course. Constructivism was an apt choice for undergirding this research study since the primary means of inquiry was to better understand the learners' self-perceptions. These self-perceptions were

arguably shaped by both past experiences, good and bad, as well as the social fabric of the course environment.

Purpose

The purpose of this research study was to better understand the students' self-perceptions of their communication skills within a cohort of freshman students during an introductory, freshman-level interior design studio course at a Midwest, urban public university. The researcher designed an online educational module which focused on three domain competencies of communication skills that are paramount to the design profession: graphic communication, verbal communication and written communication (Dias, Freedman, Medway, & Par, 2013; CIDA, 2020). Student artifacts, including one written reflective narrative, which was used for students to self-assess their communication skills at the beginning of the semester, as well as a digital story, which served as an end-of-semester reflection, were used as student-created data sources. This data was analyzed as a single body to better understand the perceptions of students' communication skills throughout the duration of this one-semester course. Student perceptions were chosen as the vehicle for this study to bolster the students' awareness, or lack thereof, of their communication skills competencies.

Researcher Positionality

Qualitative research is inductive and interpretive by nature, as the data must be analyzed for both content and meaning (Merriam & Tisdell, 2015). As a result of this reality, stating the positionality of the researcher is pertinent to both understanding researcher analysis, as well as perceiving potential limitations of the researcher's perspective. The researcher has analyzed and interpreted the data through a certain lens, which inherently had an impact on the analysis and interpretations of the data.

In short, the researcher is a registered architect, interior designer and professor who has spent the last 16 years of her career teaching in various higher education settings. From 2013 until 2021, she was employed as a full-time instructor in the Interior Design program at the University. It was during her tenure at the University that she observed, in her own studio courses, the students' struggles with communication skills. Moreover, during faculty meetings and in final design reviews, her colleagues also commented on the freshman students' difficulties in effectively communicating their designs across the three communication domain competencies. These informal researcher observations, coupled with the informal observations of other faculty members at the University, were the initial conversations which ignited this line of inquiry. While the researcher is no longer affiliated with the Interior Design program at the University, she has an interest in bolstering students' aptitudes in communication, both at the University and in other contexts.

With a decade of full-time teaching experience in the Interior Design program at the University, the researcher recognized that her positionality, as well as her analysis, were affected by her previous experiences while employed at the University. Since departing the University in 2021, the researcher no longer knew any of the freshman students, thus affording her an appropriate distance and anonymity, which was necessary for the completion of this study. After teaching hundreds of students in this same program, however, it is impossible for the researcher to separate her previous experiences, both good and bad, from her analysis. Instead of ignoring or denying these past experiences or inherent biases, the researcher wished to acknowledge and appreciate her positionality as an integral component of her constructivist lens which she utilized in both the study design and analysis. As evidenced by each of the participants in this study, most, if not all, of the students' perceptions and perspectives were informed by their real-world

experiences. This interpretive approach was both appropriate and generally inherent within this qualitative research study, and within the discipline of interior design, specifically.

Research Questions

This qualitative research study sought to better understand freshman interior design students' self-perceptions of their communication skills across three domain competencies which included: graphic, verbal and written communication. Moreover, the study aimed to understand what factors the students attributed to their communication skills development. Specifically, this study addressed two research questions, as listed below.

RQ1: How do freshman interior design students perceive their communication skills in the context of a studio course in which those skills are explicitly included in the course design?

RQ2: To what do the students attribute the development of their communication skills?

Definition of Terms

Affective skills are described as interpersonal attributes, habits and personality qualities (Chamorro-Premuzic et al. 2010; Laker and Powell 2011)

Critique refers to a unique type of feedback given within the design context where an individual provides constructive feedback on a designer's design and design process. The studio critique ranges from an informal one-on-one conversation between a student and instructor, to a formal, final critique, where often external critics are invited to review the designer's final artifacts (Gray, 2013). Peer critiques, desk critiques and formal critiques are all frequent types of critique given in the studio environment setting (Dannels et al, 2008).

Design communication express ideas and their rationale in written communication involves the ability to listen to and interpret external information. Effective communication builds a case, promotes validity, and is persuasive in content and style. (CIDA, 2020).

Design skills include competencies such as technical abilities, cognitive skills, management skills and communication abilities (Kunrath, Cash & Yi-Ling, 2017). Design skills and competencies are one example of a type of hard skill, as is defined below.

Designer's professional identity (DPI) is a social and personal construct through which designers or design students are able to identify themselves (Kunrath, Cash & Yi-Ling, 2017)

Digital storytelling is a technology which showcases an audio-visual artifact that allows students to incorporate imagery, music and their own voice to address a particular reflection prompt or question (Armstrong, 2003).

Emotional intelligence is "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Mayer and Salovey, 1997).

Graphic communication refers to graphic artifacts that are commonly used in the design studio which include conceptual sketches, floor plans, elevations, three-dimensional drawings and renderings.

Hard skills are job specific competencies and technical skills (Huang and Lin 2011).

Personal attributes refer to one's social, emotional and motivational capabilities, specifically within a professional work or educational context (Kunrath, Cash & Yi-Ling, 2017). Similar to affective skills as defined above.

Professional identity is defined as a way of being, and a lens through which one evaluates, learns and makes sense of one's practice (Trede, Macklin, Bridges, 2012).

Soft skills are also referred to as affective skills and is defined above.

Verbal communication refers to communication within the studio context which includes how one responds to verbal feedback from the instructor and one's peers during both informal and formal critiques (Hacihasanoglu, 2019).

Written communication refers to one's ability to express ideas and rationale in written communication refers to communication within the studio context which could include drafting emails, concept statements, and developing design analysis narratives (CIDA, 2020).

Chapter 2: Literature Review

Literature Review Introduction

This chapter describes the main topics of research which informed the design and implementation of this research study. Special attention was given to studio-based learning and the pedagogy and curriculum surrounding the design studio, as well as the role of communication and critique within the design studio context. Related topics such as soft skills, affective learning, professional identity, design communication and interior design accreditation were also explored. The research on communication and communication skills was voluminous, so the researcher focused specifically on the role of communication within the design studio context, in order to provide a focused lens through which to distill the large body of research.

History of Design Studio

The concept of the design studio has been in existence since the beginning of the 20th century (Gropius, 1922). Originally, the design studio was an apprentice-driven model for understudies to learn under a master craftsman or artist (Nelson & Stolterman, 2014; Schön, 1985). Similarly, architectural apprentices would work alongside a master architect in a studio environment. The apprenticeship model later evolved into a professor led, studio based model, which allowed a larger group of architectural apprentices to be taught and trained (Boling et al,

2016). The professor's role in this studio model facilitated the "exchange of advice, help and criticism among the students" (Cret, 1941; Kuhn, 2001; Shaffer, 2003; Cennamo et al, 2011). Ideally, the same professor would follow this group of students on their learning journey for several years.

In present day, the design studio is the "signature pedagogy" for studies in architecture and interior design (Shulman, 2005). Despite its long history, definitions of design studio vary from discipline to discipline and from university to university (Boling et al, 2016). Even though there are operational differences among design studios, the primary pedagogy for the design studio is "learning by doing" and "reflection in-action" (Schön, 1987). The "doing" and the "reflecting" in the design studio typically occur through the use of various types of design critiques. The studio environment differs from a traditional classroom environment in that students are required to design, present and reflect on their work repeatedly throughout the studio course, which is vastly different from a lecture-based classroom model. The studio provides an interactive and collaborative environment in which the students and instructor frequently provide constructive feedback to the student, both formally and informally (Uluoğlu, B., 2000; Dannels & Martin, 2008). In the studio environment, the traditional, well-defined roles between student and educator which are present in a lecture-based classroom become blurry as the student and educator work together to solve design problems in the studio.

Design Studio Critique

Critique is one of the primary means of communication within the studio setting (Dannels et al, 2008; Schön, 1987). This form of communication involves the student verbally presenting his/her work and critics providing feedback. The critique can take many forms in the design studio, from informal to formal. Most commonly, the studio instructor performs desk critiques,

during which the student explains his/her process and design concept, and the instructor informally gives constructive feedback to help the student progress on his/her design. The frequency and duration of the desk critique vary widely among studios (Boling et al, 2016).

Another form of critique is a pin-up critique where students pin up or hang up their work and both instructor and peers provide constructive feedback on student designs. Each student is tasked with providing a verbal, written and graphic description of his/her design work and process, and then the student typically verbally responds to both instructor and peer feedback after his/her presentation.

Lastly, the most formal version of critique is typically at the end of a project or semester when outside design professionals, as well as the instructor, attend formal student presentations and provide constructive feedback to the students at the close of the project (Dannels & Martin, 2008).

In all forms of design studio critique, students are expected to effectively communicate through their words, speech and graphics. Freshman students are typically new to the design studio environment, and studies have shown that critiques can be stressful for students (Smith & Lilly, 2016; Blair, 2007). Historically, no formal instruction has been given to students on how to effectively communicate within the various forms of design critiques (Morton & O'Brien, 2005). Even freshman students are expected to "learn by doing" (Schön, 1987) in design studio critiques, though their exposure to this unique type of feedback is limited or non-existent (Smith & Lilly, 2016).

Studio Based Pedagogy

While the studio environment is the primary pedagogy for various art and design disciplines, there is not an abundance of literature that investigates studio pedagogy for specific

disciplines (Orr & Shreeve, 2018). As a result of this research gap, studio pedagogy has been widely applied in similar manners across the majority of disciplines encompassed within the fields of art and design. Even though it is recognized that the grouping of all art and design disciplines is too broad for the effective application of the pedagogy (Trowler, 2014), there are similarities between each subject area within the fields of art and design. These similarities include the following: a flexibility in both the application and understanding of curriculum; an emphasis on practice and the art of making; and the expectation that students will work independently on their designs (Yorke et al. 2013). Moreover, Orr and Shreeve (2018) highlighted that critiques and ambiguity are categorized as pedagogical practices within the studio environment. These pedagogical practices come with specific opportunities and challenges for instructors and students alike. Specifically, the ambiguity and critiques present in design studio afford learners the opportunity to "learn by doing" which could enhance one's critical thinking skills, but the aforementioned ambiguity is not necessarily effective in teaching learners how to be effective communicators. In contrast, communication skills are more effectively developed when taught in a discipline-specific manner, and studies have shown that such integration has the potential to further develop one's communication competencies (Hynes & Kwon, 2018; Morton & O'Brien, 2005).

Studio Curriculum

The creation of studio curriculum has been in existent since the early twentieth century (Gropius, 1922). Walter Gropius published his famous "Manifesto" in Germany in 1919 which articulated a desire to unify design curriculum within the arts of sculpture, painting and architecture. From Gropius's Manifesto, the Bauhaus movement, which later became the Bauhaus School, was created. The Bauhaus School was fundamentally holistic, both in

curriculum design and in practice. The "workshop" was the basis of the Bauhaus method of teaching. In the "workshop," Gropius eliminated the terminology of professor and student replacing those terms with "master" and "apprentice." All apprentices began with completing the "preliminary course," also referred to as basic training, which was known for its rigor and immersion in the art disciplines. Specifically, the preliminary course afforded apprentices the opportunity to experiment with color, shape and materials with no specific goals or end results. This preliminary coursework was followed by practical work in further workshops. In 1922, Walter Gropius developed a "curriculum wheel" which indicated his representation of studio priorities and the curriculum known as the Bauhaus curriculum (Figure 1).

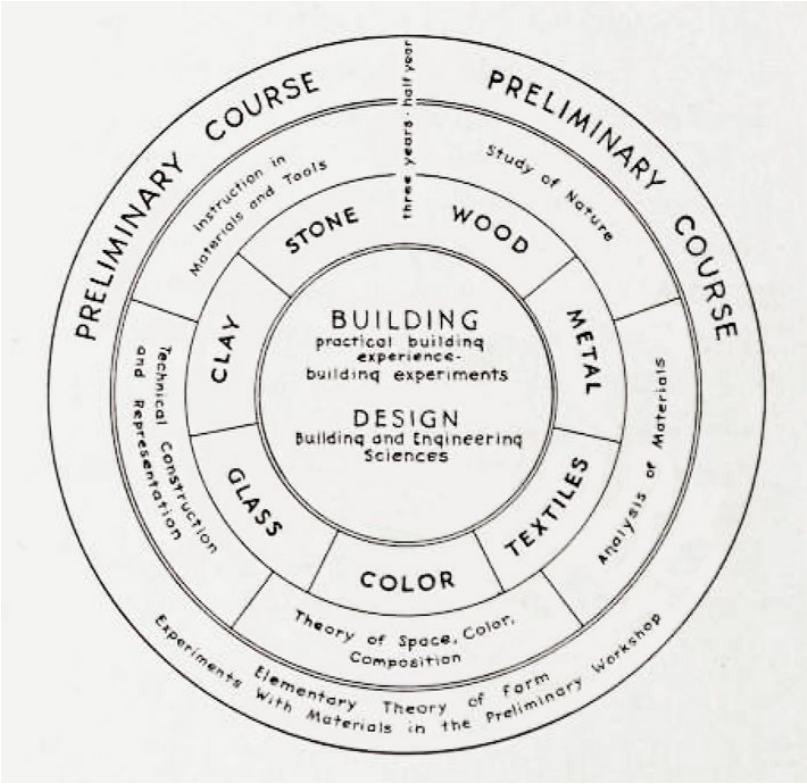


Figure 1: The Bauhaus Curriculum, page 10 (Gropius, 1922)

The Bauhaus curriculum was an integrated approach, with building and design being centralized in respect to all of the other related art disciplines. This curriculum was widely

adopted in the United States and has significantly influenced the curriculum of modern architecture and design. Moreover, Gropius's curriculum sought to provide language and structure for a historically ambiguous form of learning.

While studio curriculum has been widely discussed among researchers, a consensus surrounding the design and implementation of studio curriculum is not evident in the literature. Orr and Shreeve (2018) described studio curriculum as "sticky" due to the term's many meanings and connotations. Describing studio curriculum as "sticky curriculum" is pertinent as researchers, instructors and students all grapple with the reality of ambiguities in studio pedagogies. Specifically, "sticky curriculum" is summarized by Orr and Shreeve utilizing the following descriptors.

Sticky Curriculum

- it is messy and uncertain;
- values stick to it in ways that are difficult to see;
- it has an elasticity, being both sticky and stretchy;
- it is embodied and enacted – it sticks to the person;
- it is troublesome and challenging.

This summation of studio curriculum wholly embodies both the beauties and the challenges of studio curriculum, and further highlights why there is so much unclarity in studio curriculum as a whole. Moreover, the communication skills necessary for studio students are also implicitly embedded into this "sticky" curriculum, often requiring learners to "learn by doing" instead of explicitly integrating and articulating the expectations and competencies required in order to be an effective designer.

Student Engagement

Barnett and Coate (2005) stated that creative curriculum is a mixture of "knowing, acting and being," of which students are co-creators through their contributions of knowledge, actions and being. Ashwin (2014) noted that one of the challenges in the co-creation of this collective knowledge building is that all students carry different voices, values and levels of understanding, which inevitably impacts the quality and legitimacy of the knowledge created. This view of curriculum makes one implicit assumption about the students. The assumption is that students will be engaged with the learning and activities that are offered in the studio, though research has shown that this engagement and participation is not always the case (Mann, 2001; Logan, 2013). While studio expectations often describe characteristics such as diligence, motivation, focus and responsibility (Orr & Shreeve, 2018) as necessities for studio courses, students can also develop an identity of non-participation in the studio, as well (Wenger, 1998). Student engagement is considered to be a necessity for success in studio courses, but engagement in learning, or lack thereof, is a complex topic that is entrenched in an individual's values, culture, background and previous experiences (Orr & Shreeve, 2018). It bears noting that the subject of student engagement has been widely studied across various disciplines. The relevance of student engagement within the studio context revolves around the expectation, and often assumption, that all students are engaged and committed to the studio assignments and projects. This incorrect assumption of student engagement in studio courses bears remembering for this study, as well as future research studies because student engagement, or lack thereof, has the potential to influence both a student's perceptions and performance within a given course.

Studio Assessment

Student assessment within the studio environment is another unique characteristic of the this learning environment. In "traditional" college courses, the roles of instructor and student are well-defined and are widely understood by all parties. Studio courses blur the distinct lines between student and instructor through the frequent interactions of design critiques as well as the co-creation of creative design solutions between students and their instructors. Many instructors reported they would prefer not to grade studio work, as it is often seen as impeding the students' creative practice (Vidokle 2009). Regardless of personal opinions on the assessment of studio work, most studio courses are required to comply with university-wide assessment policies and procedures, which was true for this study at the University. Specifically, studio courses at the University are required to assign appropriate letter grades which are earned based upon each learner's performance on assignments, as outlined in the course syllabus. It is worth noting that the research on assessment in higher education is another voluminous body of work, which in and of itself, is an entire subject of inquiry for some researchers. Specifically, the relevance of studio assessment for this study was centered on students' skills development, as well as the University wide requirements for assessment and grading (Cennamo et al, 2013; Orr & Shreeve, 2018).

Professional Identity in Higher Education

Professional identity refers to an individual's self-perception of belonging to a particular professional group of people (Trede, Macklin, Bridges, 2012). Furthermore, professional identity has been defined as the sense of being a professional (Paterson et al., 2002). Utilizing this definition of professional identity, Paterson et al., (2002) posit that elements of professional identity include technical skills, interpersonal skills, professional judgment and reasoning,

holistically encompassing both cognitive and affective skills. While professional identity will continue to develop over one's personal and professional life, scholars agree that professional identity formation begins in the higher education classroom (Barnett, 2010, Barrow, 2006; Bramming, 2007; Clouder, 2005; Kunrath et al., 2017; Paterson et al., 2002).

Designer's Professional Identity

Designer's Professional Identity (DPI) refers to a social and self-perceptive construct that describes how designers view themselves as professionals (Kunrath, Cash, & Kleinsmann, 2020). Consisting of both personal attributes (PA) and design skills (DS), a designer's professional identity evolves over time. Designer's Professional Identity, or DPI, is a construct that describes how a designer identifies as a professional and how that individual interprets his/her belonging into a professional group (Cruess et al., 2016; Marquardt et al., 2016). One's ability to understand and identify into the professional group has the potential to drive the formation of one's attitudes and behaviors (Kunrath & Cash, 2020). Kunrath and Cash (2020) also posited that a Designer's Professional Identity is encompassed by both personal attributes and design skills, which are described below. In addition, Figures 2 and 3 provide visual frameworks of the linkage between the attributes and skills associated with a designer's professional identity, within the contexts of both the academic and professional settings. The Designer's Professional Identity (DPI) model illustrates the connectivity of various facets of an individual's communication skills, which was in alignment of the findings of this study. Specifically, the study's findings illustrated that students' perceptions were influenced by both their personal attributes and design skills, which are the two constructs of the DPI model. These two constructs were attributed to the students' perceptions of their individual's strengths and overall confidence within the three domain competencies of communication skills.

Personal Attributes (PA)

Personal attributes describe traits related to psychological characteristics such as values, emotions, attitudes and behaviors (Kunrath et al, 2020). Moreover, personal attributes are closely related to one's personality and character. A designer's personal attributes are important to one's identity as a designer because an individual's values, emotions and attitudes shape design solutions and decision-making processes. Personal attributes are the lens through which a designer sees desires, attitudes, thinking and being. The elements of personal attributes, as well as a summarized description is cited below in Table 1.

Element	Description
Confidence	Certitude of own personal abilities and professional competencies, being able to embrace innovative ideas and to start challenging projects, justifying own beliefs and (ethical) work.
Creativity	Spontaneous impulse to solve problems originated from an interaction with individual psyche and manifest as behavior.
Emotions	Sensitivity to external inputs, self-awareness, and management of personal feelings, also related to moral and empathetic aspects.
Empathy	Psychological capacity to identify with other's feelings and thinking, which enables helpful and supportive behavior.
Ethics	Awareness and positioning of possible environmental, social, health or design life performative consequences, or lack of compliance with legislation.
Leadership	Sense of autonomy and managerial attitude, searching and promoting ideas together with strategy and business, providing peers guidance and inspiration.
Motivation	Engagement in an activity due to an inner perception of enjoyability and inherent interest (intrinsic motivation), as well as because of its association with a value outcome (extrinsic motivation). Also, refers to one's curiosity and impetus for exploring and searching.
Openness	Acceptance and embracing of new and unusual ideas or methods, being able to deal with uncertainty and to make changes in a work plan by relying on ability to improvise and remake. Also refers to capacity to deal with different topics and to work with people from different cultures, ideologies or beliefs.
Responsibility	Willingness to learn and to assume responsibilities from mistakes, conscientiously assuming risks, taking care of project details, deadlines, and working within own beliefs.

Social Abilities	Perceived facility on the exchange of tacit knowledge via joint activities: being together, living in the same environment, sharing experiences, and transferring ideas to other people.

Table 1: Elements and Descriptions of Personal Attributes (Kunrath et al., 2020)

Design Skills (DS)

Within the framework of a designer's professional identity rests a set of both attributes and competencies. Design skills is the term given within this framework to identity tangible design skills, such as technical drawings, sketches and design ideation. Included elements of design skills also include cognitive abilities and strategies, as well and declarative knowledge competencies. Table 2 provides a summary of the associated elements and descriptions of the included skills incorporated under the definition of design skills (Kunrath & Cash, 2020).

Element	Description
Cognitive Abilities	Capacity of think 'designerly'; understanding the nature of the problem to be solved; developing a distinct way of thinking about the problem and solution spaces; demonstrating high level of abstraction for idea generation and evaluation rounds.
Cognitive Strategies	Ability to set strategies of learning, problem framing, solution development, and problem-solving that allows the flow of cognitive abilities.
Personal Communication	Capacity to communicate clearly and directly, attending to details and empathizing with an audience.
Interpersonal Communication	Awareness of communication ability in order to make public presentations, set collaborations, establishing rapport, and to communicate among a team.
Education-Based Knowledge	Awareness of basic and specialized technical knowledge in design that compounds the formal education, and domain of technical and design language.
Practice-Based Knowledge (know how)	Abilities based and developed through practice, expertise and know-how gain. Such as good imagination/representation, IT competencies, use of software, negotiation capacity, and appliance of previous knowledge.
Managerial Competency	Perceived competency for managing generic tasks, at a personal level and withcolleagues or among the team.
Project Management	Competence in developing and managing the project such as planning, progressing among the tasks and phases, and evaluating effectiveness and outcomes.

Table 2: Elements and Descriptions of Design Skills (Kunrath et al., 2020)

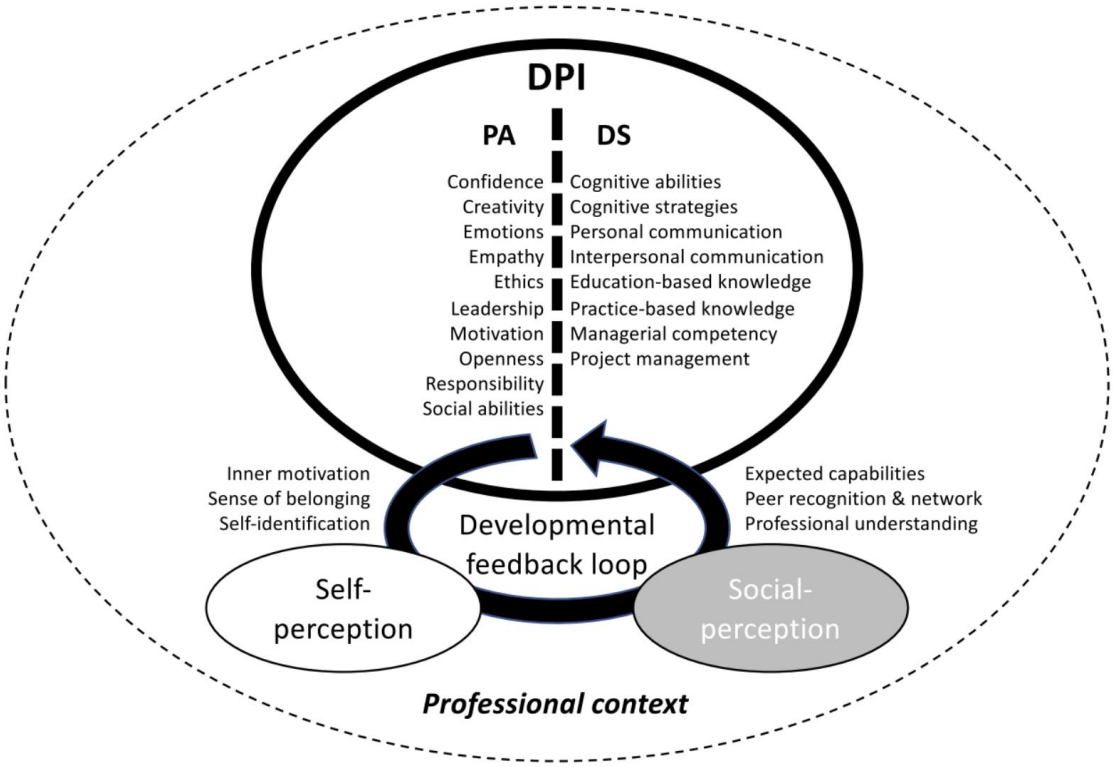


Figure 2: Designer's Professional Identity Framework (Kunrath & Cash, 2020)

The Designer's Professional Identity framework (Figure 2) was relevant to this research study as it highlighted the interconnectedness of the different facets of an individual's perceptions of his/ her communication skills, as well as one's attitudes and confidence surrounding one's communication skills development and competencies.

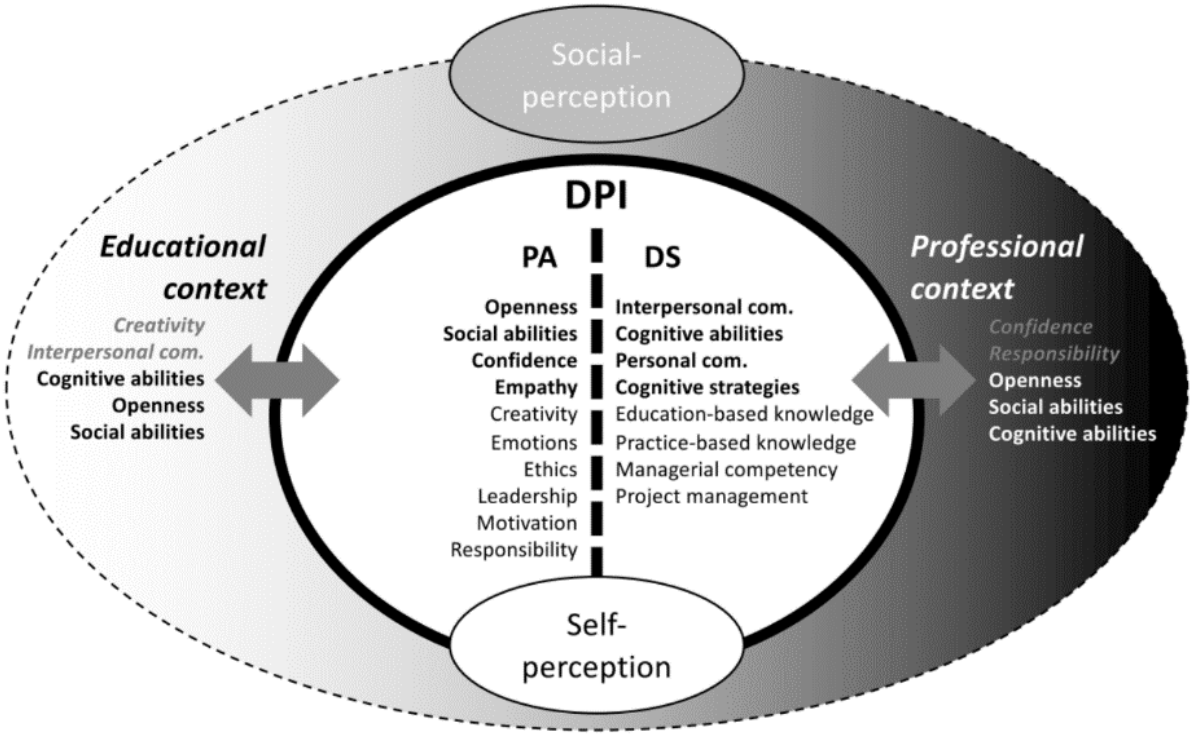


Figure 3: Differences in Social and Self-Perception in Designer's Professional Identity (Kunrath & Cash, 2020)

Interior Design Accreditation Standards

Universities with professional interior design programs are accredited through the Council for Interior Design Accreditation (CIDA). Specifically, the accreditation standards from CIDA have a focus on communication skills, with an entire accreditation standard devoted to the domain competencies of communication in interior design students (CIDA, 2020). Currently, there are over 160 interior design programs in the United States that are accredited through CIDA. Every six years, each of these programs goes through a rigorous accreditation process which includes compliance with 20 principles and standards for providing a robust and well-

rounded interior design education. Within these 20 standards, communication is Standard 9 and includes the following description and requirements.

CIDA Standard 9: Communication

"Interior designers are effective communicators. This standard ensures that graduates are effective communicators and are able to deliver a compelling presentation visually and verbally, as well as in writing. Design communication also involves the ability to listen to and interpret external information. Effective communication builds a case, promotes validity, and is persuasive in content and style.

Students are able to effectively:

a) interpret and communicate data and research

b) express ideas and their rationale in oral communication.

c) express ideas and their rationale in written communication.

d) express ideas and their rationale developed in the design process through visual media: ideation drawings and sketches.

e) express project solutions using a variety of visual communication techniques and technologies appropriate to a range of purposes and audiences.

The interior design program provides opportunities for:

f) exposure to evolving communication technologies.

g) students to develop active listening skills in the context of professional collaboration. Active listening requires listeners to evaluate what they are hearing from several points of view, including but not limited to: speaker credibility, logic and meaning of the message, underlying assumptions of the message, and value of the message" (CIDA, 2020).

As outlined above, CIDA places a strong emphasis on the development and mastery of communication skills. These guidelines require design students to communicate effectively through various forms of expression, which the researcher has summarized broadly across three different domain competencies: graphic, verbal and written communication. In order to align the intent of this study with the corresponding professional standards, the researcher utilized the three domain competencies of communication which are graphic, verbal and written communication, to organize this research study.

Affective Skills in Higher Education

The affective domain of learning was developed as part of Bloom's taxonomy of learning in 1956. According to Bloom et al., the affective domain includes one's values, motivations, and one's ability to manage emotions. It is reported that affective skills, sometimes referred to as soft skills, may actually be more important to employers than the cognitive skills, or hard skills (NACE, 2016; Hart Research Associates, 2015). Two large studies reported that the most desirable affective skills for college graduates to exhibit are: effective communication, critical thinking, analytical decision-making, ability to work in a team, and a strong work ethic (Hart Research Associates, 2015; NACE, 2016).

Some scholars have estimated that up to 80 percent of an individual's personal and professional success is attributed to one's affective skills and attributes (Hart Research Associates, 2015, Goleman, 1995). While it is well-documented that more than cognitive skills are desirable and necessary for successful college graduates, the intentional integration of affective skills into higher education coursework is limited (Edsurge, 2019). Affective skills

development is often implicit in the university classroom, instead of explicitly educating students in a manner similar to cognitive skills development.

Communication Skills in Higher Education

The ubiquitous term of communication skills is a very broad term which encompasses an individual's competencies within the domain of communication. Communication skills include numerous competencies and abilities which widely vary throughout the research. To narrow the broad definition, the term communication competence has been proposed by researchers (Rickheit, Strohner, & Vorwerg, 2008). Moreover, communicative competence includes not only the ability to send signals in such a way that others may deduce their intentions and achieve their interpersonal goals, but also the ability to receive messages sent by others. As a result, a significant portion of the cognitive processes involved in communicative skill entail inferring the speaker's intentions (Rickheit, Strohner, & Vorwerg, 2008).

Within the context of higher education, communicative competence ought to focus on the development of competencies which are desirable to future employers. While the specific competencies desired by employers may vary between the disciplines, research has indicated that interior design employers desire the following communication competencies: interpersonal skills, verbal communication skills, written communication skills and presentation skills (Clokie & Fourie, 2016).

Three Communication Domain Competencies

The term communication skills embody a broad range of competencies and modes of communication. Similarly, communication skills are often referred to as a facet of soft skills or affective skills, which further adds to the vastness of the definition (Gaffney, 2011). Interior design students rely heavily on computers to visually communicate design ideas through

computer-generated design solutions, (Soliman, et al, 2019). Even with the inclusion of electronic and graphic technology, employers still cite communication skills as one of the most desired skill sets affecting graduate employability (Finch, Nadeau, & O'Reilly, 2013; Nickson, Warhurst, Commander, Hurrell, & Cullen, 2012; Remedios, 2012; Rynes, Orlitzky, & Bretz, 1997).

For the purpose of this study, communication skills included three domain competencies of communication within the realm of interior design education: graphic, verbal and written communication (CIDA, 2020). These three domain competencies are commonly used in design education, as well as in the workplace, as both students and designers are tasked with communicating through graphics, words and text.

Graphic Communication

Students in interior design studios are commonly exposed to the seven principles of interior design, which include the following: balance, unity, rhythm, scale/proportion, contrast, emphasis and detail (Ching, & Binggeli, 2018). These principles are often used to create effective graphic communication artifacts in the design studio, which include a variety of sketches, drawings or graphics that are utilized to communicate a student's design process and product (see Figures 4-7). Students also need to use the seven interior design principles to effectively craft presentation boards and appealing design presentations which are utilized to further illustrate the student's design ideas and process. Students consistently produce sketches, technical drawings, and presentation boards as typical forms of communication through their studio courses. Graphic communication is a predominant focus in the design studio environment, as well as a focus in the accreditation of interior design programs (CIDA, 2020) across the United States.

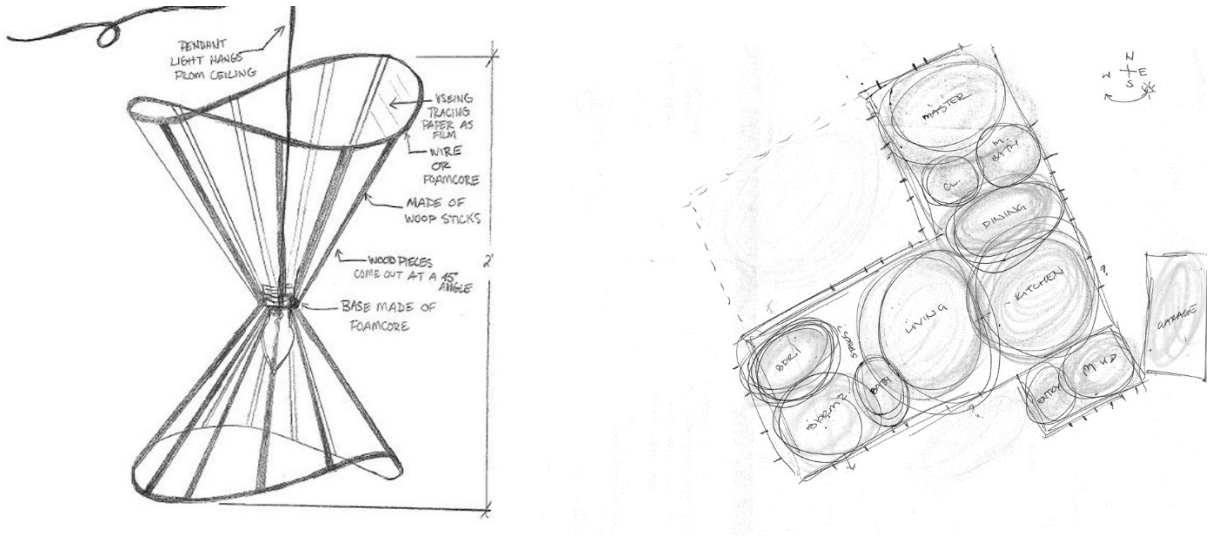


Figure 4: Examples of preliminary and process sketches produced in a design studio course

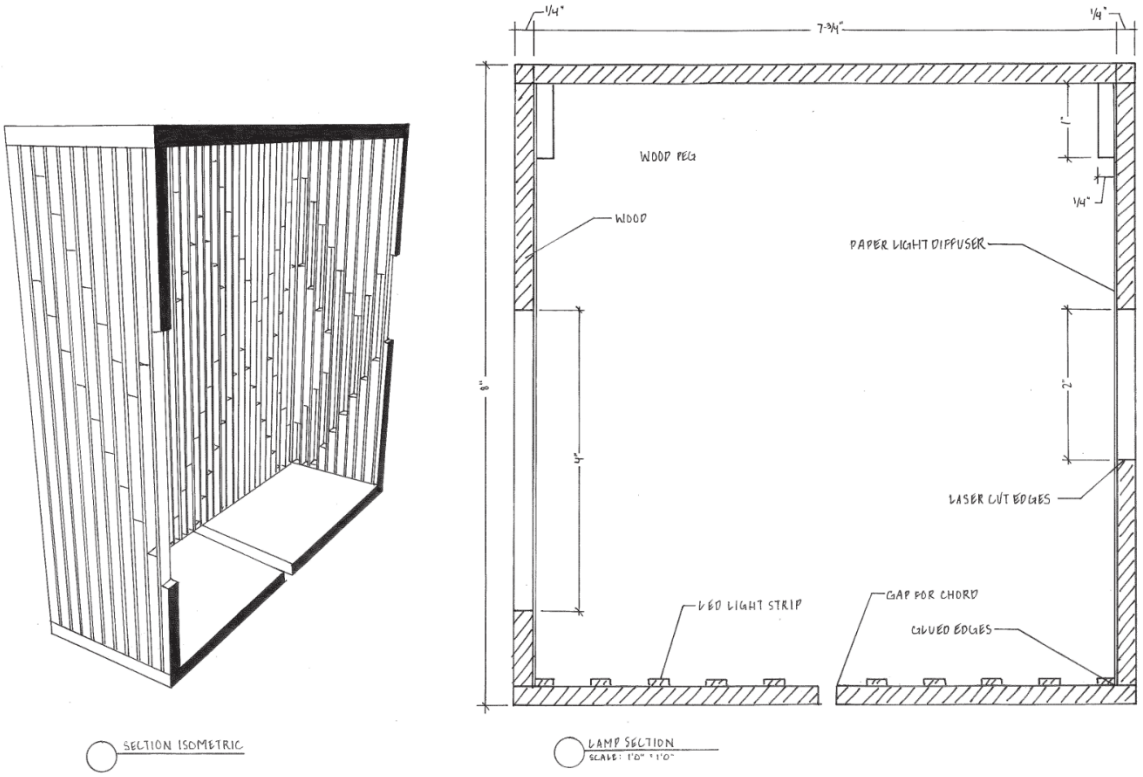


Figure 5: Examples of technical drawings produced in a design studio course

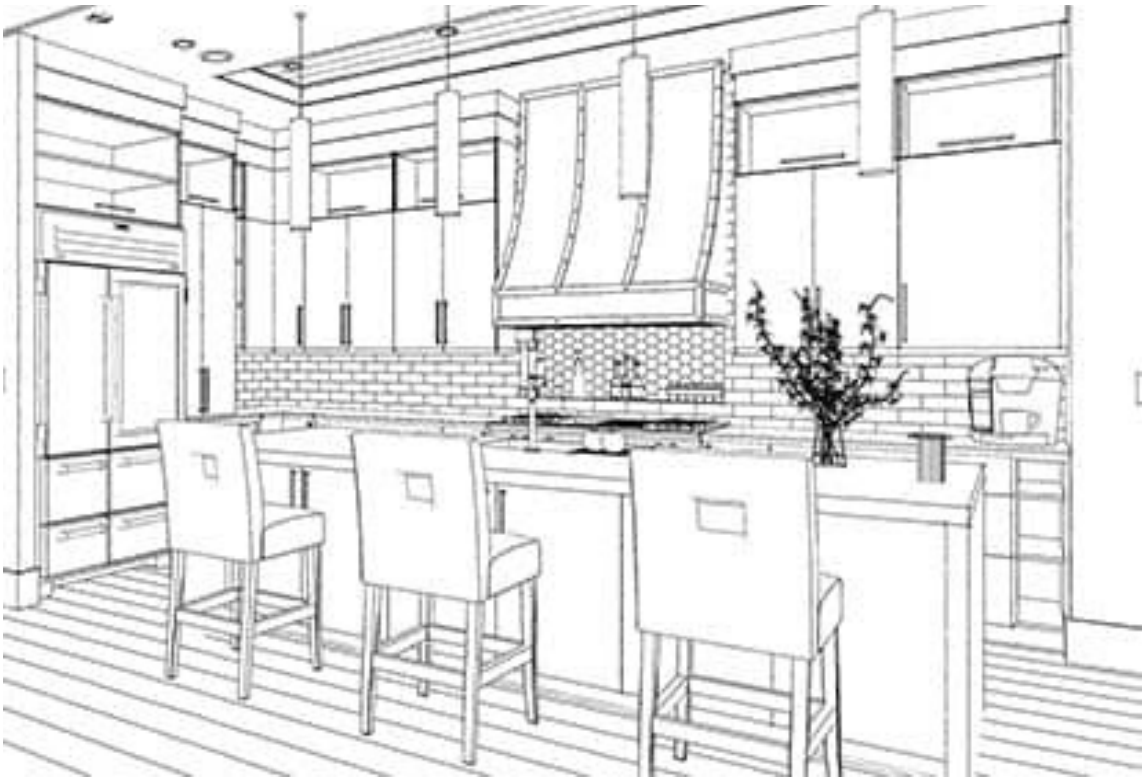


Figure 6: Example of an interior rendering produced in a design studio course

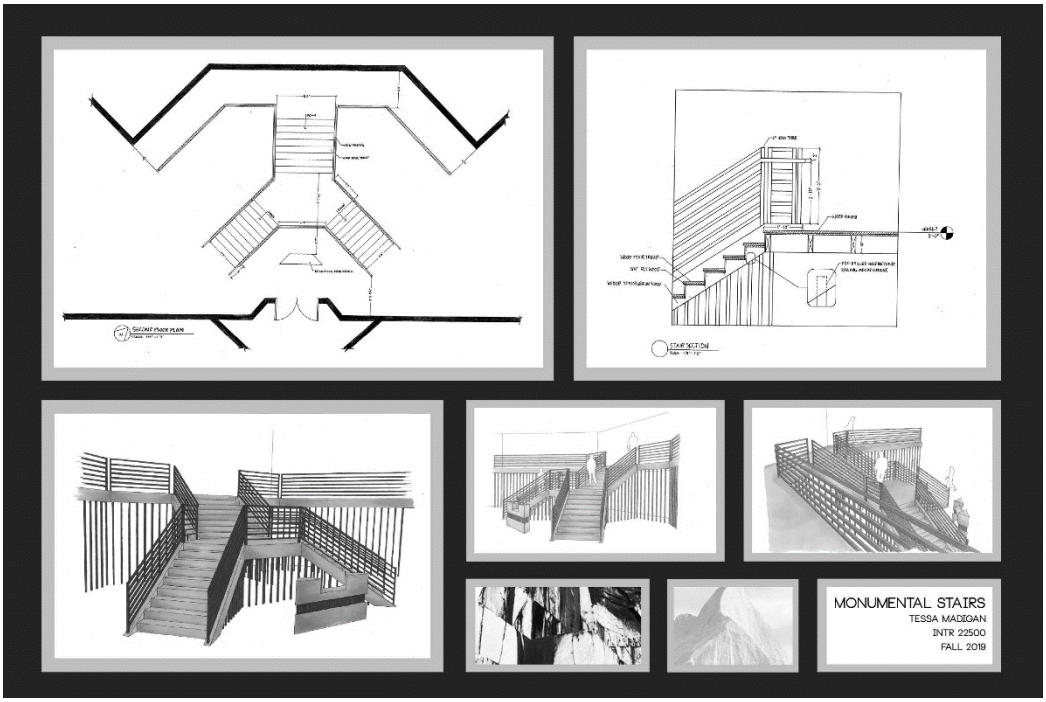


Figure 7: Example of a presentation produced in a design studio course

Verbal Communication

Verbal communication in the design studio refers to both formal and informal verbal descriptions or presentations of one's design. The primary purpose of verbal presentations within the design studio is to further describe and highlight the student's design process and design solutions (Hynes & Kwon, 2018). Effective verbal communication skills also encompass a student's ability to give meaningful verbal feedback to peers during a studio critique, as well as an ability to respond articulately to feedback from both peers and the instructor (Hacihasanoglu, 2019).

Written Communication

Written communication in the design studio requires students to write design narratives, to respond to design problems and to provide written reflections on their design process (Thu, 2020). While the design studio does not typically require students to write large research papers or other complex literary artifacts, design students do need the ability to communicate effectively through the use of persuasive and informative design briefs, summaries and design analysis as displayed in Figures 8 and 9. These specialized forms of communication are necessary both in the studio and in the workplace (CIDA, 2020).

"While we started our programing in the beginning of February, we were given the task to complete 2 trash paper ideas and a criteria matrix. My conceptual idea that was chosen was about what Amalgamate really meant. When I researched this exact word, the definition came back as, "To combine or unity to form one organization or structure." As I thought about this definition more it made me think about things that physically work together to form a structure and I came up with "gears" to symbolize this meaning. Gears to me resembled how people can work together and collaborate as one to form a working organization or possibly be independent to have something working properly. With the concept being surrounded around gears, I still wanted a more sophisticated environment within the space. With that being told I wanted to incorporate a combination of blues and oranges in the space to create a visual of a clean gear and a rusted gear. This concept came from just thinking about how we are humans are, especially in the work force, some of us can be rusty or good as new some days, so I really liked the color combination I chose and the meaning behind it."

Figure 8: Example of a Design Analysis

"Located in the city, the Recreational & Gardens Center aims to foster community engagement by providing a free "third space" for young adults. It includes a half basketball court on the bottom floor, a garden lounge room on the top, and outdoor seating. The building was designed to maintain a small footprint in order to remain proportional to its surroundings, and all planters would include flowers as well as fruits & vegetables, free to take, hoping to ease some food insecurity given that it's located in a lower income area."

Figure 9: Example of a Design Brief

Communication in the Disciplines

Communication researchers are largely in agreement that discipline-based communication modules are more effective than generalized communications curriculum (Arkoudis & Starfield, 2007; Dannels & Martin, 2008; Dannels, Anson, Bullard, & Peretti, 2003; Darling & Dannels, 2003; Dias, Freedman, Medway, & Paré, 2013; Haber & Lingard, 2001; Lingard & Haber, 1999; Winsor, 2003). These scholars have posited that discipline-specific communication instruction allows learners to utilize scaffolding to build upon previously constructed knowledge within their situated discipline. More specifically, communication in the disciplines (CID) is a framework that has been defined throughout the literature to more clearly articulate the importance of communication instruction situated within a learner's discipline.

Effective Communication in Interior Design

Several studies have shown that the integration of communication skills into discipline-specific modalities has been proven to be more beneficial to students than a separate course or teaching regarding communication (Morton & O'Brien, 2005). Design students would likely find more benefit with an integrated and discipline-specific approach to effective communication instruction within the context of the design studio (Hynes & Kwon, 2018). This integrated approach is further supported by communication-in-the disciplines framework (Dannels, 2001)

which posits that students gain more applicable and effective communication skills as a result of the integration of these skills into their major area of study.

Learning Theories

Constructivism

Constructivist learning theory (Piaget, 1971) places learners at the center of their own learning, and it broadly aims to better understand how people learn. Each learner constructs knowledge both individually and socially, according to constructivist theory. According to Hord (2009), constructivist learning theory is driven by six principles which are summarized in Table 3. In short, constructivism posits that knowledge is best gained through action, reflection and collaboration.

Principles of Constructivist Learning Theory	
1.	Learners bring unique prior knowledge, experience, and beliefs to a learning situation
2.	Knowledge is constructed uniquely and individually in multiple ways, through a variety of authentic tools, resources, experiences, and contexts.
3.	Learning is both an active and reflective process.
4.	Learning is a developmental process of accommodation, assimilation, or rejection to construct new conceptual structures, meaningful representations, or new mental models.
5.	Social interaction introduces multiple perspectives through reflection, collaboration, negotiation, and shared meaning.
6.	Learning is internally controlled and mediated by the learner.

Table 3: Six Principles of Constructivist Learning Theory (Piaget, 1971)

Connectivism

In 2005, Siemens built on the theory of constructivism and introduced a new learning theory referred to as connectivism. Connectivism is a relatively new learning theory which posits that learners make connections and link previous knowledge to future connections (Siemens, 2005). This theory relies on a learner's ability to make connections with between fields, ideas and concepts as one of the primary skills of this theory. Similarly, connected learning theory describes learning that is socially embedded, interest-driven, and oriented toward

educational and professional opportunities. Described by eight different principles of learning (Table 4), connectivist learning theory posits that learners create nodes and linkages between previous and future knowledge.

Principles of Connectivist Learning	
1.	Learning and knowledge rests in diversity of opinions.
2.	Learning is a process of connecting specialized nodes or information sources.
3.	Learning may reside in non-human appliances.
4.	Capacity to know more is more critical than what is currently known.
5.	Nurturing and maintaining connections is needed to facilitate continual learning.
6.	Ability to see connections between fields, ideas, and concepts is a core skill.
7.	Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
8.	Decision making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Table 4: Eight Principles of Connectivist Learning (Siemens, 2005)

Connected Learning

Connected learning theory (Ileo et al, 2013) builds on the connectivist learning theory by bridging a learner's networks and links, including personal, social, and career connections. While originally intended to describe an online learning environment, the principles of connected learning can apply to both virtual and in-person course delivery methods. Moreover, the framework of connected learning aims to provide equitable access and resources to learners. The principles of the connected learning framework are illustrated below in Figure 10.

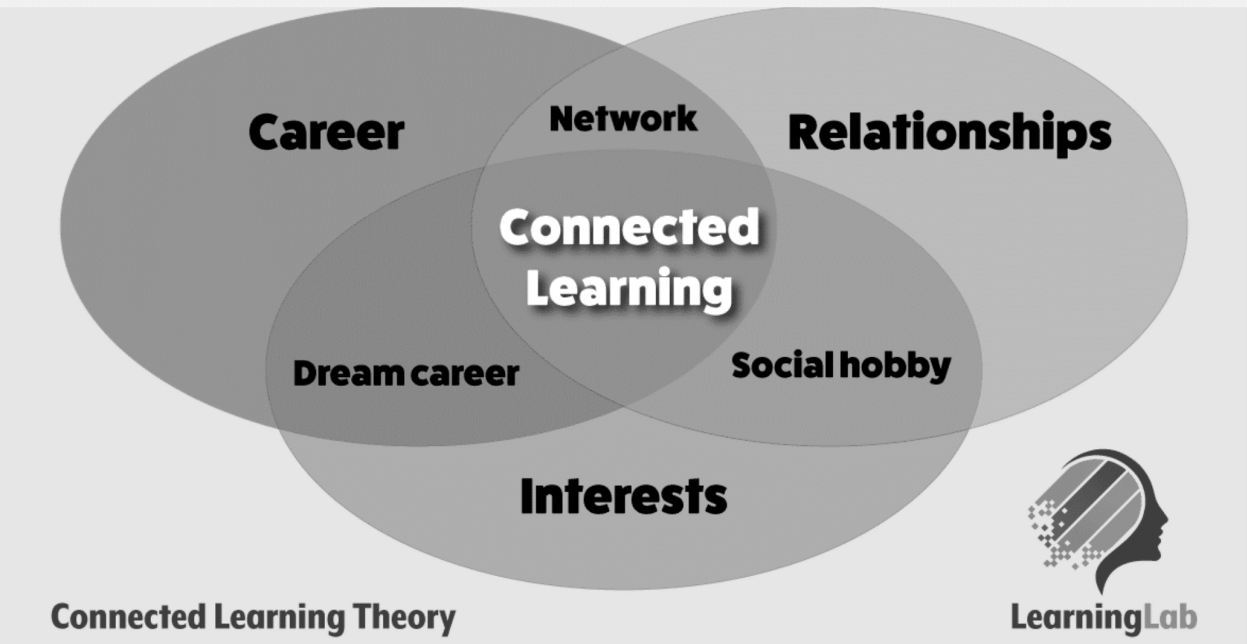


Figure 10: Diagram illustrating the theory of connected learning (Ileo et al, 2013)

Emotional Intelligence (EI)

The concept of emotional intelligence has existed for centuries, perhaps stemming from Socrates' declaration to "know thyself." This frequently quoted phrase captures the essence of emotional intelligence, which includes an awareness of emotions as they arise (Goleman, 1995). Similarly, there are several related terms, all having unique competencies, which will be briefly described below.

While the traditional framework of measuring one's intelligence is IQ, or intelligence quotient, it is well-documented that IQ alone does not equal success outside of an educational setting. Furthermore, academic intelligence provides virtually no preparation for unexpected, life circumstances, both positive and negative (Gardner, 2011; Goleman, 2005; Herrnstein, & Murray, 1997). At best, Gardner (2011) determined that IQ accounts for around only 20 percent of life success, which suggests that 80 percent of life success after university is attributed to

other factors. One significant factor contributing to the remaining 80 percent of success in life is one's ability to interact with people, and appropriately manage one's emotions (Gardner, 2011). Goleman (2005) has further defined these attributes as emotional intelligence (EI), which is an aptitude which can determine how well one can use all of the other skills one has, including cognitive abilities and intelligence quotient. The section that follows further described the various models of emotional intelligence.

Mayer and Salovey

The term emotional intelligence first became an area of interest in 1990, when two articles were published regarding this construct (Mayer, DiPaolo, & Salovey, 1990; Salovey & Mayer, 1990). Mayer and Salovey (1990) first defined emotional intelligence "as the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions." Furthermore, Mayer and Salovey categorized emotional intelligence as an ability, meaning that one can learn, and increase, one's emotional intelligence. Emotional intelligence is comprised of four different dimensions according to Mayer and Salovey (1997). These dimensions include the ability to: perceive emotions, access and generate emotions, understand emotions, and effectively regulate emotions.

The first branch of the ability EI model is perceiving emotions. This branch refers to one's ability to accurately detect and decipher emotions within oneself, and also includes an ability to be sensitive to others' emotions, as well. The second branch of the ability EI is facilitating thought through emotions. This branch includes the integration of emotions to facilitate thoughts. The process of facilitating thought through emotions is accomplished through one's ability to reflect upon, and solve problems based on the perspectives of others.

The third branch in the EI model is understanding emotions. This branch relies on one's ability to comprehend connections between various emotions, with the realization that one's emotions can change with situations or time. The last branch of the trait EI model is managing emotions. The management of emotions includes one's ability to regulate emotions, both positive and negative, as well as the management of one's response to any given circumstance. Figure 11 provides a visual representation of the ability EI model (Mayer and Salovey, 1997).

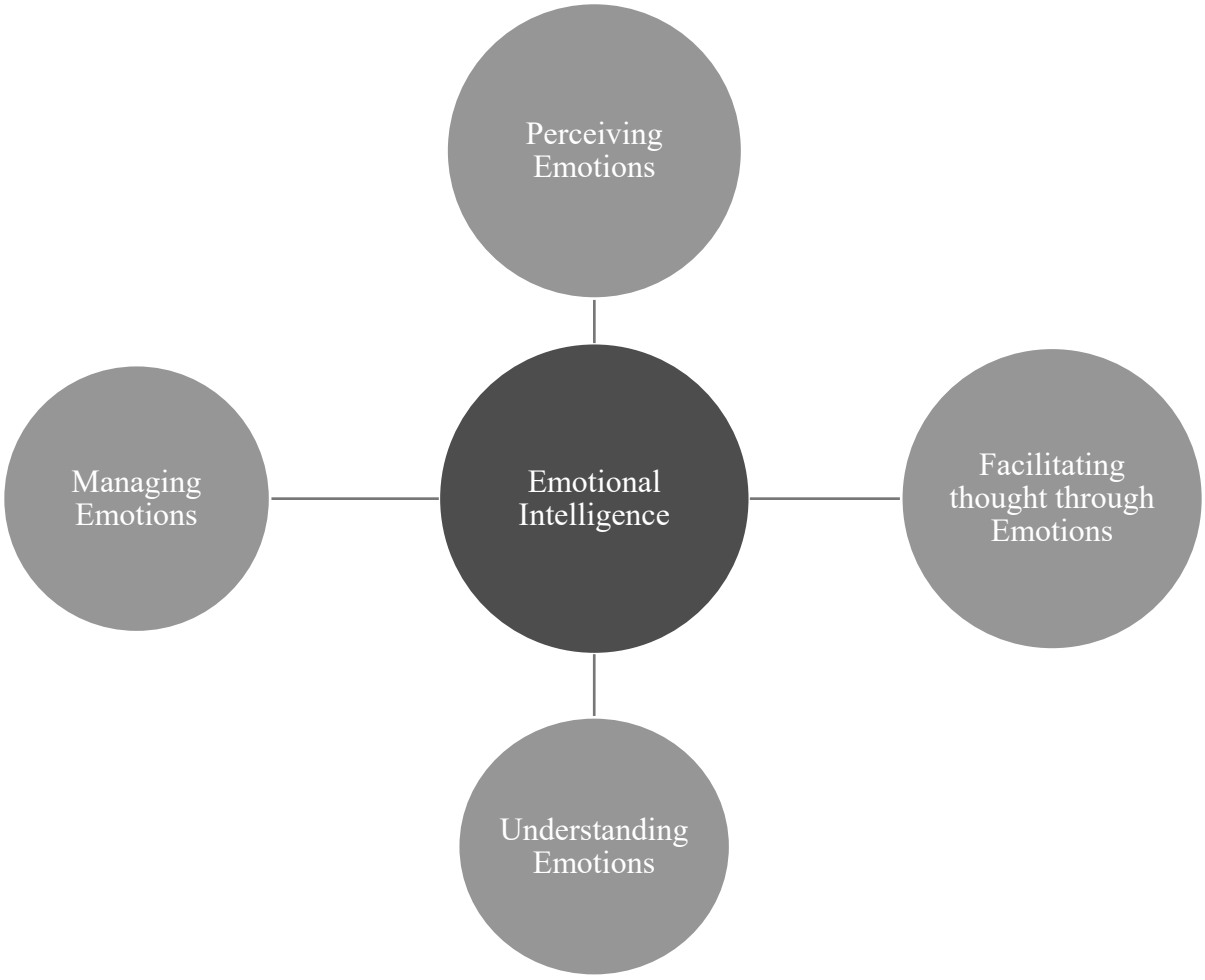


Figure 11: Trait-Based Model of Emotional Intelligence (Mayer & Salovey, 1997)

Goleman

Goleman (1995) defined emotional intelligence as "the ability to perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth." Goleman further extrapolated his definition of emotional intelligence to include a body of skills that represents character. He has divided emotional intelligence into five parts: knowing emotions, managing emotions, motivating oneself, recognizing emotions in others, and handling relationships.

Bar-on

Bar-on (1997) characterized emotional intelligence as "an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures." Bar-on's characterization of emotional intelligence separates the skills into interpersonal and intrapersonal functions. Bar-on's model of emotional intelligence includes five parts: a) the ability to recognize, understand and express emotions and feelings; b) the ability to understand how others feel and relate with them; c) the ability to manage and control emotions; d) the ability to manage change, adapt and solve problems of a personal and interpersonal nature; and e) the ability to generate positive affect and be self-motivated.

Petrides and Furnham

Trait emotional intelligence is a "constellation of emotional self-perceptions located at the lower levels of personality hierarchies and integrates the affective aspects of personality" or dispositions, and often refers to an individual's emotional self-efficacy (Petrides, Pita, & Kokkinaki, 2007). Specifically, trait EI encompasses emotion-related behaviors and self-

reported emotional abilities. Most recently, in 2000, a trait emotional intelligence model was developed by Petrides and Furnham. As the name implies, the four main components of trait EI focus on one's main personality traits, which are the following: well-being, sociability, self-control, and emotionality (Petrides & Furnham, 2000). Trait EI can further be conceptualized as a mixture of established traits (Petrides & Furnham, 2000), which includes empathy, assertiveness (Goleman, 1995), social and personal intelligences (Thorndike, 1920; Gardner, 1983), and ability EI (Mayer & Salovey, 1997). Trait EI has also been positively correlated with the Big 5 factors (Gonzalez & Ruiz, 2014). The Big 5 factor model includes the constructs of openness, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1985). While the Big 5 and trait EI are separate models, there is overlap in some of the personality traits and dispositions included in both models.

Petrides (2011, p. 667) describes it well: More recent studies have found that high trait EI is associated with lower levels of stress and higher levels of perceived job control, job satisfaction, and job commitment (Petrides & Furnham, 2006; Platsidou, 2010; Singh & Woods, 2008). Other research has suggested that high trait EI may be conducive to entrepreneurial behavior (Zampetakis, Beldekos, & Moustakis, 2009), protects against burnout (Platsidou, 2010; Singh & Woods, 2008), and predicts internal work locus of control (Johnson, Batey, & Holdsworth, 2009).

Emotional Intelligence Model Selection

Although each of the aforementioned models of emotional intelligence has merit and applicability, the researcher discerned that the ability-based model of emotional intelligence developed by Mayer and Salovey (1997) was the most pertinent for this research study. With a focus on both perceiving and understanding one's emotions, this model of emotional intelligence

was in alignment with the intent of this research study, which was designed with the purpose of developing a better understanding through the students' perceptions.

Reflection

For this research study, the researcher utilized reflective artifacts, as they have been shown to be effective tools for the design process (Van Dooren et al, 2014; Lousberg et al, 2020). Reflection in education has grown and evolved in both popularity and in definition (Lousberg et al, 2020). Dewey (1933) describes reflection as one's thinking and emotions in a practice setting, where Schön (1987) describes reflection as "reflective learning" and "thinking about while doing," and Moon (2004) describes reflection as a "means to engage in making sense of experience in situations that are rich and complex and which do not lend themselves to being simplified by the use of concepts and frameworks that can be taught." Schön (1987) further describes reflection as "reflection in-action" and "reflection on-action" within the design studio. Reflection-in-action (Schön, 1984) refers to reflecting on one's decision making while the activity is taking place. In contrast, reflection-on-action (Schön, 1987), refers to reflecting on an activity after the activity has concluded. Additionally, reflection gives design students an opportunity to more effectively communicate through written practice (Kolb, 1984; Moon 2004; Ash & Clayton, 2009).

Design Reflection

Models of reflection relevant to studio are considered in this section along with the rationale for choosing the one used in the study. Schön (1984) was one of the first researchers to investigate the nuances of reflection in the design disciplines. Schön argues that the design studio environment is inherently reflective in nature as designers work to solve ill-defined problems through the design process. In general, the design process is iterative in nature, and is

therefore well-situated for reflection. Design reflection is differentiated from other types of reflection due to the inclusion of reflection on one's design, as well as one's design process and learning about design. Design activities and processes can inform one's design reflection, which includes one's reflections about his/her designs. The relevance of Schön's model is that it was specifically designed for reflection within the design studio context (Figure 12). However, the model proved difficult to utilize for this study due to the researcher's role as an asynchronous individual, which made it implausible to ensure that students were reflecting in action, or in present time. Although this model has inherent utility for design studio instructors, the researcher was unable to effectively utilize this model for this research study due to the lack of presence with the study participants in real time.

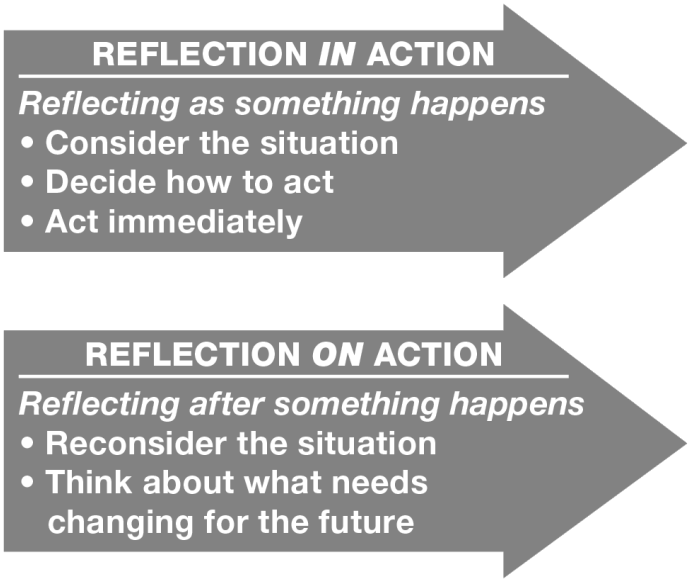


Figure 12: Schön's Reflective Model

Kolb's Reflection Model

Kolb's reflection model (1984) is one of the most straightforward models on reflection. Using just three steps, experience, reflection and action (ERA), Kolb developed this model

specifically for the integration of reflection with experiential learning (Figure 13). While the simplicity of this model has utility within a design studio context, the researcher believed that it did not provide enough structure for the creation of the student artifacts.

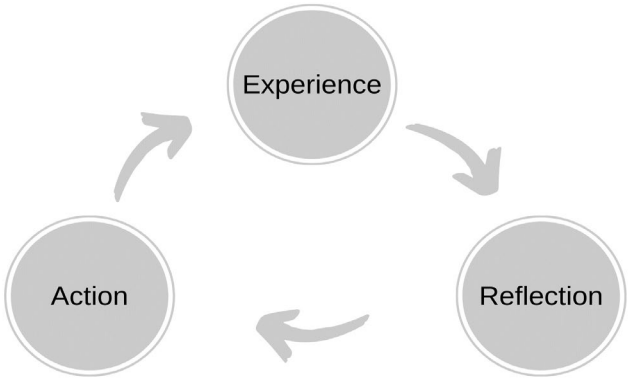


Figure 13: Kolb's ERA Model of Reflection

Gibbs Model

The reflective model developed by Gibbs (1988) seeks to provide a structure for better understanding an experience. The model is cyclical in nature, which makes it a good option for experiences which will be repeated frequently. Gibbs' reflective model includes six steps, which are as follows: description, feelings, evaluation, analysis, conclusion, and action plan. Gibbs' model focuses on a continuous cycle of improvement for the learner, and it differs from the other models through the inclusion of one's emotions as a dedicated step in his reflective process (Figure 14). Gibbs' model is a logical choice for design studio projects since the design process also depends on the cyclical nature of process. However, for the purposes of this study, the cyclical nature of this model was not a good fit since the artifacts that were produced by the students were based on perceptions at the beginning and end of the semester.

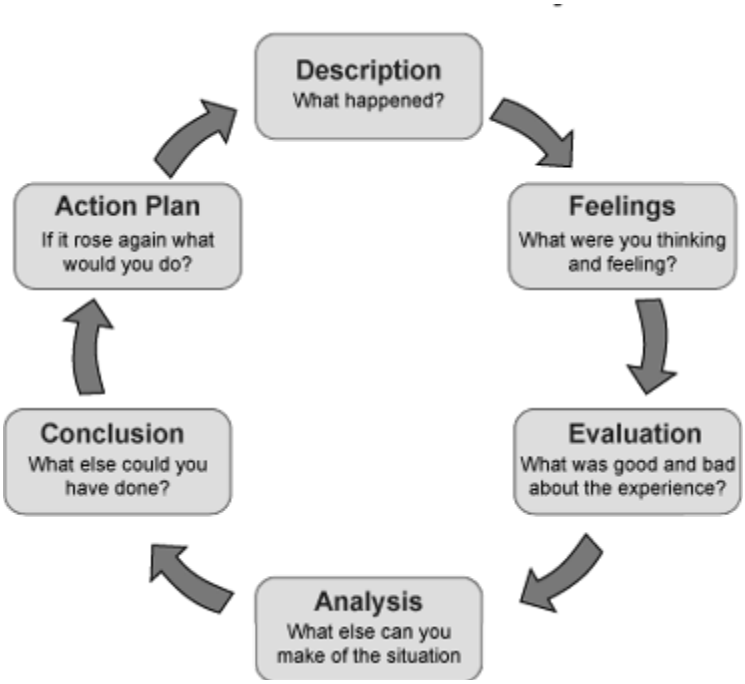


Figure 14: Gibbs' Reflective Cycle

DEAL Model

Ash and Clayton (2009) developed the DEAL model to improve the quality of learning and reflection within the setting of applied learning (Tolar & Gott, 2012). The acronym denotes steps for critical reflection, which include describing, examining and articulating learning.

The first step in the DEAL model is to describe the experience, by providing answers to the questions of what and where did something happen, as well as when did something happen, and who was or was not involved. The next step in the DEAL model requires learners to examine their own learning experiences, with intentional focus on the desired learning outcomes or subject matter. The final step is to articulate learning, which is further understood by answering four questions: a. What did I learn? b. How did I learn it? c. Why is it important? d. What will I do because of it? (Ash & Clayton, 2009). The DEAL framework was a logical choice to utilize when the researcher crafted the student-produced artifacts because of its linear

process in structuring one's reflection (Figure 15). The process of describing, examining and articulating one's learning provided the necessary structure and steps, in order to create the instructions of the two student-produced artifacts.

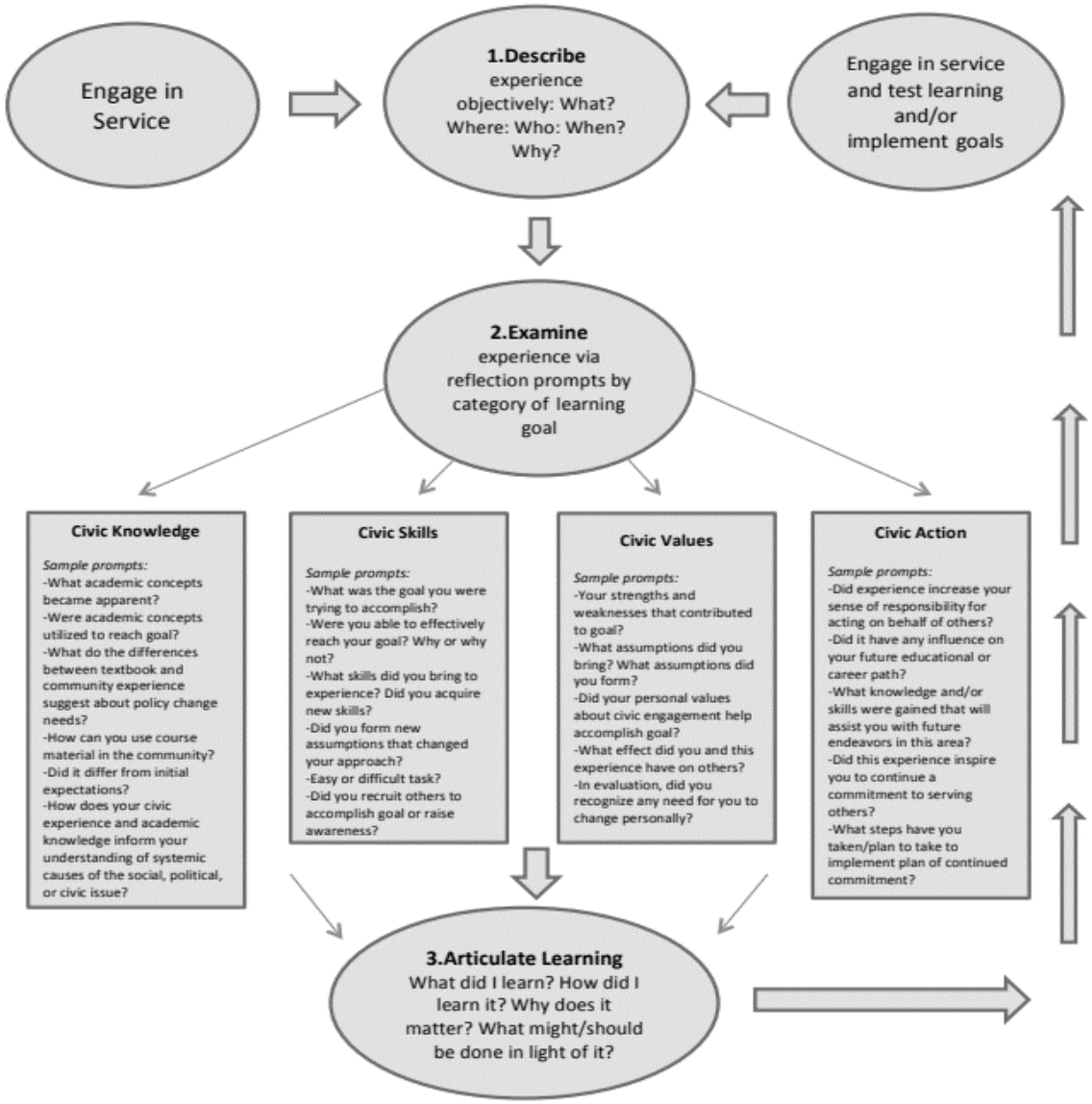


Figure 15: DEAL Model (Ash & Clayton, 2009)

Reflection Framework Selection

After reviewing each of the reflection models described above, the researcher chose to utilize Ash and Clayton's DEAL model (2009) as the framework for the creation of the assignment instructions for both the written narrative and digital story. This model provided a structure for comprising the artifact instructions of the two, student-created data sources. Moreover, this reflection model was chosen for several other reasons. First, the DEAL model was selected because of its focus on the students' perceptions and descriptions of their learning, which is in alignment with the two research questions. Secondly, this model was selected for its relative simplicity when compared to the other reflection models. Lastly, this model strives to enable learners to effectively articulate their learning through their self-perceptions, which aligned well with the intent of this research study. The DEAL model was only utilized for the creation of the two, student-created artifacts, and was not utilized for the assessment of the artifacts.

Digital Storytelling for Reflection

In education at all levels, digital storytelling provides a space for students to tell their story (McCarthy, 2022). Digital storytelling is a technology which showcases an audio-visual artifact that allows students to incorporate imagery, music and their own voice to address a particular reflection prompt or question (Armstrong, 2003). Studies have shown that the use of digital stories have enhanced students' communication abilities, especially within the domain competencies of graphic and verbal communication (Robin, 2008; Kearney, M., 2011). This form of communication incorporates all three domain competencies of communication included in this study through the use of text, a verbal narrative and graphics (Table 5). This multi-media artifact includes one's graphic communication through the use of visual artifacts, verbal

communication through the use of one's recorded voice in the story, and written communication through the creation and authorship of the narrative script. Digital storytelling has been categorized as a high-impact practice when used effectively. Scholars have found that the inclusion of the digital story incorporates many domain competencies of effective communication (Alismail, 2015). While the content of a digital story can vary widely, the basic framework of a digital story typically includes the following: a point of view, a dramatic question, emotional content, a soundtrack, imagery and approach pacing (Center for Digital Storytelling, 2003).

The Seven Elements of Digital Storytelling
1. Point of View – what is the perspective of the author? 2. A Dramatic Question – a question that will be answered by the end of the story. 3. Emotional Content – serious issues that speak to us in a personal and powerful way. 4. The Gift of your Voice – a way to personalize the story to help the audience understand the context. 5. The Power of the Soundtrack – music or other sounds that support the storyline. 6. Economy – simply put, using just enough content to tell the story without overloading the viewer with too much information. 7. Pacing – related to economy, but specifically deals with how slowly or quickly the story progresses.

Table 5: The Seven Elements of Digital Storytelling

Digital storytelling is an effective and impactful way to give students a meaningful platform to reflect on their experiences and values. Previous studies have shown that digital storytelling is also an effective research tool for visual arts-based research methods (de Jager et

al., 2016; Gamlin, 2011), and has been found to provide meaningful value to both the researcher and the participants. For this study, the digital story serves as a window into students' perceptions of their communication skills development throughout the semester, and afforded students the ability to provide graphic, verbal, and written evidence to support their reported skills development. Digital stories have been shown to produce "deeper listening" and "richer data," when compared to traditional interviews (de Jager et al., 2017).

Digital stories can be analyzed for both competencies and quality of reflection (Urbieta & Peñalver, 2021). Morell (2015) outlined an analysis method which focuses on evaluating various aspects of digital storytelling through two modes of communication, auditory and visual, and are categorized by the modality perceived by the audience (Table 6).

Assessed Aspects of Digital Storytelling (Morell, 2015)		
Modes used by the speaker	**Features assessed**	**Modality used by the audience**
Spoken	Vocabulary Adequacy Grammatical accuracy Phonological control Cohesion and coherence	Auditory
Written	Vocabulary Grammatical accuracy Adequacy	Visual
Non-verbal	Audio-visual design Camera and editing techniques	Visual & auditory
Body	Proxemics kinesics	Visual

Table 6: Assessed Aspects and their Modes in Digital Storytelling (adapted from Morell, 2015)

For this research study, the digital story was analyzed with the intent of better understanding the students' perceptions of their communication skills development throughout the semester. The researcher did not analyze the digital story for the audio-visual competencies listed in Morell's (2015) digital storytelling assessment instrument, but instead focused on how

students' perceptions of their communication skills were affected in this course. In contrast with the written reflective narrative assigned at the beginning of the semester, the purpose of the digital story assignment was to give participants a different method of reflection for their communication skills development at the end of the semester,

Literature Review Summary

While the design studio has been in existence, in some form, for two centuries (Gropius, 1922), there is continued debate surrounding the development of effective curriculum and instruction within the design studio context. It is evident that the collaborative nature of the design studio presents unique opportunities for the co-creation of knowledge and design solutions for all engaged participants, but this collaboration attributes to the complexity surrounding the "sticky curriculum" of the design studio.

Specifically, studio expectations exist surrounding assumed student motivation, engagement, participation, and commitment to design projects within the studio course. Additionally, studio critiques introduce a unique form of communication, which is embedded in the ethos of the studio context. Often, students are tasked with "learning by doing" instead of receiving any formal instruction as to their role in the critique process and paradigm. While the critique is labeled as a core strategy of the design studio, design students are not typically familiar with this type of practice, and are required to develop their communication skills through trial and error within the various formats of critiques. Through the collaborative nature of the studio environment, as well as both informal and formal critiques, students have numerous opportunities to bolster their design and communication skills. While much research was found surrounding the history, pedagogy and curriculum in design studios, very little literature was found regarding the inclusion of communication skills teaching and instruction within the

context of the design studio. This perceived gap in the research and observed difficulty in the studio classroom regarding the inclusion of communication skills development within the design studio context was the impetus for undertaking this study. Moreover, the study addressed two research questions, which focused on students' perceptions of their communication skills across three domain competencies of graphic, verbal and written communication.

Research Questions

RQ1: How do freshman interior design students perceive their communication skills in the context of a studio course in which those skills are explicitly included in the course design?

RQ2: To what do the students attribute the development of their communication skills?

Chapter 3: Methods

Methods Introduction

This chapter describes the research methods and methodological underpinnings that were utilized to inform the design of this research study, which sought to better understand students' perceptions of their communication skills in the interior design studio. This descriptive and qualitative case study was positioned and aligned with the methods and philosophies detailed in the paragraphs which follow.

Research Philosophy

The research study incorporated data which was strictly qualitative in nature which sought to understand how the participants interpreted their experiences, and, subsequently, what meaning they constructed from their experiences. Because the aim of this study was to better understand students' self-perceptions of communication skills development, a qualitative, and therefore, an interpretivist approach was utilized as the underpinning philosophy of the research design.

Interpretive Research

Interpretive research assumes that there is no single reality to be observed, but rather presumes that reality is asocial construct, meaning there are multiple interpretations of realities of a single event (Merriam & Tisdell, 2015). The term constructivism is frequently used interchangeably with interpretivism, as both are rooted in the assumption that reality is constructed by one's personal perspective, meaning that there are multiple interpretations constructed, depending on each individual's personal perspective.

Descriptive Case Study

The research design utilized the theoretical tradition of qualitative case study research which aims to provide "an in-depth description and analysis of a bounded system" (Merriam & Tisdell, 2015). Yin (2014) further expounds on the applicability of a case study by positing that the case study seeks to investigate a particular phenomenon (the case) within its real-life context, specifically where the case and the context cannot be easily separated. Utilizing this cohort of students as a bounded system (the case) and this particular classroom as the real-life context, a descriptive case study was an appropriate research design method. The findings from this descriptive case study were first organized into an aggregated list of findings, which was then utilized to develop interpretive themes.

Study Design

This research study utilized a qualitative case study design to describe and analyze the student-produced reflection artifacts. The case study was an appropriate framework due to the bounded nature of this study. The aim of this study was to better understand the student perceptions of their communication skills within one cohort of interior design students (the bounded system). This aligned with the defining characteristic of a case study, which aims to

understand only one thing well (Stake, 2005). The students who were enrolled in this particular course served as the unit of analysis, which was bounded in nature (Merriam & Tisdell, 2015).

Reflection Framework

Students' perceptions of their communication skills were studied through two, student-created reflection artifacts. The first reflection artifact (SA1) was created by the students in the first week of the semester. This narrative gave students an opportunity to reflect on their perceptions of their communication skills at the beginning of the semester. At the end of the semester, students created a digital story (SA2) in which they reflected on their communication skills development throughout the semester.

In order to provide a structure for the students' reflection artifacts, Ash and Clayton's DEAL model (2009) for reflection was utilized as a framework for the written narrative and digital story as assigned to the students. The DEAL model is a framework that includes the following steps: describe, examine and articulate learning. This reflection model was chosen as a framework for the creation of the student artifact assignments for several reasons. Specifically, the DEAL model was chosen because of its focus on the students' perceptions and descriptions of their learning, as well as the relative simplicity of the model when compared to other reflection models. With intentional focus on examining one's learning during both the examining and articulated learning phases, this model aims to assist learners with effectively articulating their learning through their self-perceptions, which aligned well with the intent of this research study.

By utilizing the DEAL model for the student-created reflection artifacts at both the beginning and the end of the semester, the students were provided with a useful and consistent structure to better understand and describe their experiences. Three main domain competencies

of communication skills were further utilized to organize and categorize the data for this study: verbal communication, written communication, and graphic communication (Robinson et al., 2005), (reference pages 34-39 for a more in-depth description of each.)

Study Limitations

The limitations of this study included the bounded nature of this case study. The case studied provided data for only one context and was not intended to be generalized to other populations. Additionally, the study was initially designed to collect and analyze data within the pre-determined category of the three domain competencies (graphic, verbal and written communication). However, during data analysis, the researcher discovered that utilizing these pre-determined categories was not an effective method of organizing the data because many of the students' perceptions transcended the three categories. While the findings of this study are not inherently generalizable, it is likely that beginning design studio courses at other universities within various design disciplines could benefit from the findings discovered within this research study.

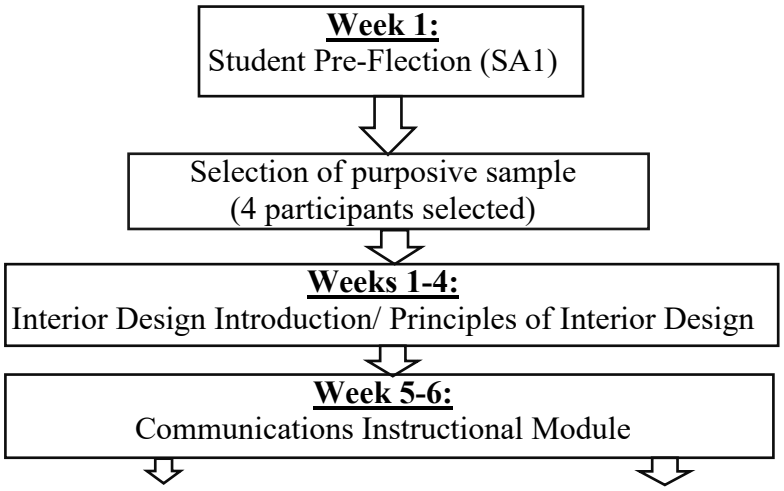
Study Design

Context

The context of this research study was a large urban public university setting on a campus in the Midwest. With over 28,000 students, this University is home to students from dozens of countries and socio-economic backgrounds. As of January 2020, the interior design program at the University had 132 undergraduate students enrolled with over 95% of those students meeting the University's state resident requirement. The students in the program were 85% female and 15% male, and 76% of the students are traditional age students, which was between the ages of 18 to 23 years of age.

Currently, the Interior Design program at the University includes little teaching or training within the interior design curriculum intended to help students build their communication skills. The Interior Design program at the University does have a two-hour, in-person freshman orientation during which student expectations are defined and discussed. This session introduces five operating principles of the Interior Design program at the University, one of which involves elements of communication, which is as follows: "We utilize a courteous and professional demeanor in all manners of conduct. This includes but is not limited to oral discussions, written communication and bodily behavior." This freshman orientation is currently the only formal instruction in communication expectations that the University's interior design students are required to engage in throughout the program curriculum.

The course utilized for this study was an introductory interior design studio in the fall 2023 semester and a weekly course outline is provided in Figure 16.



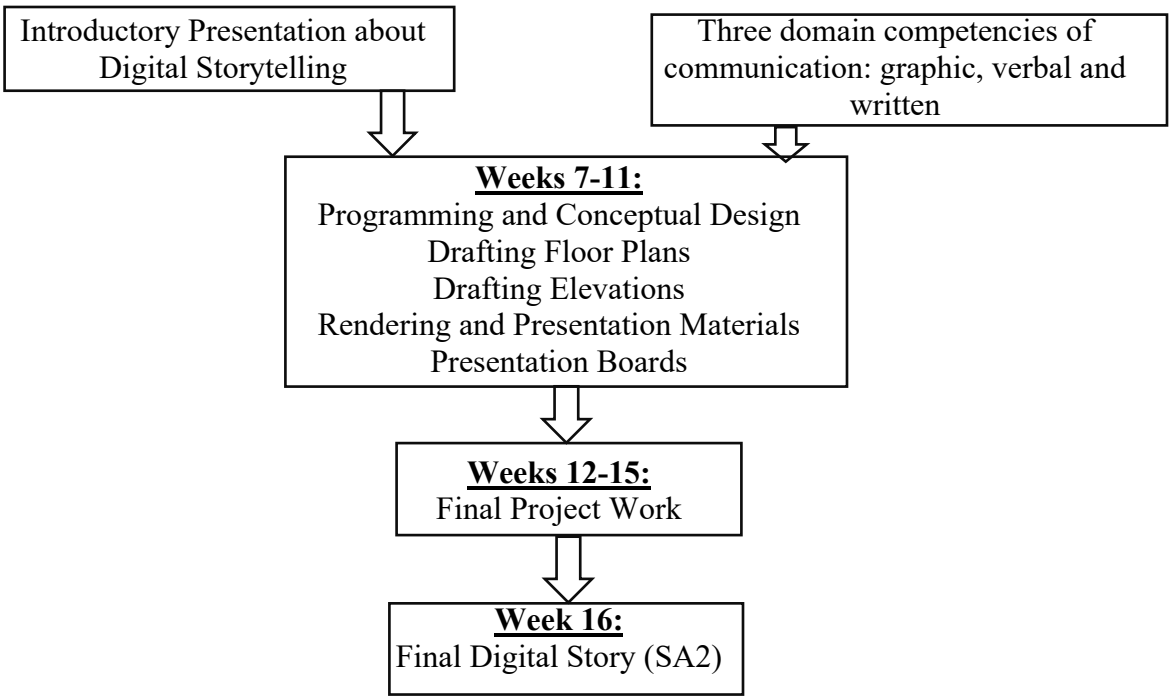


Figure 16: Preliminary Course Outline

Participants

The purpose of this research study was to better understand the students' perceptions of their communication skills development within this semester-long, freshman interior design studio course. From the 20 enrolled students, four participants were chosen utilizing purposive sampling for this study. Because the study utilized a case study framework, the use of this sampling method was justified, since the findings were applied specifically to this cohort of students, instead of being generalized to other populations. The sample was selected based on the participants' completion and thoroughness of the coursework overall, with an emphasis on the completion, quality, and rigor of the two analyzed artifacts. This selection criterion was utilized as an effort to sample the "average" participant enrolled in this course.

The course provided an overview of the field of interior design and an introduction to the development of skills necessary to create interior project plans. In this course, students explored

design elements and organizing principles as applied to the interior environment while also developing skills to hand-draft basic floor plans and elevations with architectural lettering; in addition, students created professional quality sample boards and presented them to a client/ group.

Instrumentation

An online, educational module was utilized in the course which served two functions. First, the module was intended to engage students in reflection on their communication skills with the aim of development and improvement throughout the semester. Secondly, the module provided two data sources for this study. Lastly, the online module sought to develop an awareness of the students' communication skills development within the introductory studio environment.

The instruments utilized in this study were two, student-created artifacts. In the first artifact, (Student Artifact 1), learners were required to reflect on their self-perception of their communication skills at the beginning of the semester through the use of a written narrative in the freshman level interior design course at the University. In Student Artifact 2, learners also created a digital story at the end of the semester which was intended to provide a multi-media artifact highlighting the student's self-perception of his/ her communication skills using the domain competencies of graphic, verbal and written communication as a framework for the digital story. The student narrative and the digital story were used as the two student-created primary data sources for this research study and were qualitatively analyzed by multiple cycles of coding and subsequent interpretive themes.

Description of Data Sources

The two data sources for this study were both integral parts of the learning module which was conducted asynchronously in this studio course. Data sources for this research study included one student-written narrative reflection per participant at the beginning of the semester, in which students described and self-assessed their communication skills utilizing the DEAL reflection framework (Ash & Clayton, 2009). At the end of the semester, students created a digital story, which provided a multimedia video artifact in which the students reflected on their perceptions of their communication skills. The digital story gave students the opportunity to craft a well-written narrative and to answer a descriptive prompt reflecting on their perception of communication skills, utilizing the DEAL reflection framework (Ash & Clayton, 2009) as a structure for their stories. Furthermore, the digital story gave students the opportunity to graphically communicate, as well as verbally communicate in one of their final artifacts of the semester. The two means of collecting data cover several modalities of expression and two temporal points within the class and were analyzed as a single body as data.

Written Narrative (Student Artifact 1)

The first student-created artifact (SA1) was a written narrative that was crafted during week 1, which served as a beginning data source for students' initial perceptions of their communication skills. The written narrative assignment instructions are detailed below in Table 7. Students were tasked with describing and evaluating their communication competencies within the domains of graphic, verbal and written modalities. An example of a student's written narrative is included below (Figure 17) for reference.

Assignment Instructions: Draft a narrative that answers the following questions.

1. **Describe:** Please provide 1-2 paragraphs that describe, in your own words, what communication skills are necessary for you to be successful in your design studio courses.
2. **Examine:** Please provide 1-2 paragraphs for each of the three areas listed below, for a total of 3-6 paragraphs for this question. Describe, in your own words, your current communication skills in the following areas:
a. Graphic communication
b. Verbal communication
c. Written communication
3. **Articulate Learning:** Describe, in your own words, what communication skills you need to improve within the three areas of communication in order to be successful in this design studio course.

Table 7: Assignment Instructions for Student Artifact #1 (SA1)

"My communication skills are unlike others. I am a shy soul unless I am confident in what I am doing or talking about. Along the lines of verbal communication, I like to present in class and be on stage. I grew up stepping outside of my comfort zone when participating in school musicals, so I believe that transferred over to presenting in class. I am also not afraid to talk to new people and branch out. Written communication is more of an easier communication skill for me. When I am in person and want to communicate my feelings to someone, I become too scared and too emotional to do so. Written communication helps me get my feelings across without becoming overwhelmed with my emotions. As far as graphics, I can place my feelings and emotions into a design. Growing up, every time I would walk into a room, I would envision in my mind how I could make the space more beneficial for the owner. With design, I feel as if I can bring about people's desires and really portray what they are feeling. I am excited to work on deepening my communication skills in order to benefit my clients and to put the best work into my designs."

Figure 17: Example of Student Artifact 1 from Donna (Participant 4)

Digital Story (Student Artifact 2)

The second student-created artifact (SA2) was the digital story that was crafted throughout the semester and was submitted at the end of the semester (Table 8). The digital story highlighted the students' perceptions of how their communication skills were affected throughout the semester. Excerpts from a student's digital story are included below in Figure 18.

"Moving along to my interior design class: the class I look forward to every single week. I have always had the drive to become an interior designer, but now that it was here, I became more scared than anything. Scared I wouldn't be able to keep up with the grades or the ability of my classmates. Ever since becoming friends with some of my peers, I've learned to communicate face to face and over text. Their help has made the class all the better. I now have friends I can rely on because I learned to lean on those who I can trust, and they will support me to get better. In this class, our final project involves a client of our own, but it's one of our classmates. I learned how to partake in interview questions, pick materials and designs that fit their desires, and execute a final design that suits them. This project helped me gain experience in graphic, written, and verbal communication skills. I had to form a concept statement for the written skills, design a floor plan and execute the final presentation boards for the graphic skills, and communicate with my client and present my project to the class as my verbal communication."

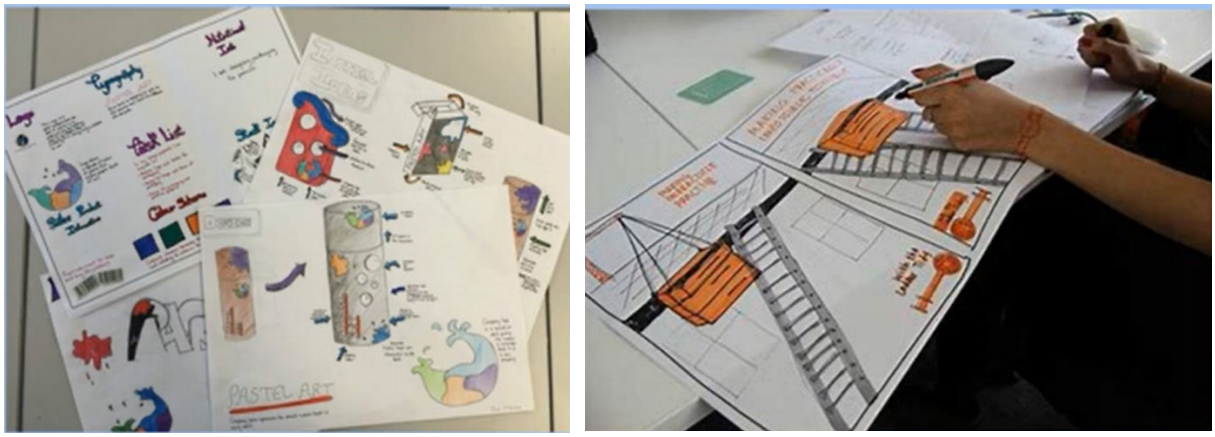


Figure 18: Written and Graphic Excerpts from Participant 4 (Donna) Digital Story

Assignment Instructions: Create a digital story which addresses the prompts below. Please note that many digital storytelling resources can be found online. Please view this link for a general overview for what your digital story needs to include:

https://www.youtube.com/watch?v=NipDAd3_7Do

1. Develop your digital story script, which should be 250 – 500 words that describes, from your point of view, how your communication skills have changed over the semester. Please be sure to include examples of how your skills have changed over the course of the semester in the following three areas: a. Graphic communication b. Verbal communication c. Written communication
2. Please provide visual imagery from your course assignments that provide evidence of how your graphic communication skills have changed over the course of the semester.
3. Please provide an audio soundtrack that will enhance the mood and emotion of your digital story narrative and graphics.

Table 8: Assignment Instructions for Student Artifact 2 (SA2)

Design Case

The course provided an overview of the field of interior design and an introduction to development of skills necessary to create interior project plans. In this course, students explored design elements and organizing principles as applied to the interior environment while also developing skills to hand-draft basic floor plans and elevations with architectural lettering; in addition, students created professional quality sample boards and presented them to a client/group. This beginning studio course was the freshman interior design students' first experience with a studio-based course, as well as their first course within the subject of interior design. The course content and assignments for this in-person course were organized by weekly modules within the University's Learning Management System (LMS), Canvas. The course

included in-class exercises (noted below as labs/ studio work), which focused on the principles of interior design and also encompassed two client-based design projects, which took place throughout the semester. Each week, the course had a studio assignment, required readings, as well as an assignment based upon the week's lecture content. An outline of the topics and assigned lab/ studio work presented in this introductory studio course is shown below. All course content, including the communication module in weeks five and weeks six, were taught by the course instructor, not the researcher. Unlike lecture-based courses, studio courses are held for three hours at a time, twice per week. The course content during these six hours was a mixture of lecture content and studio work time, where the students work on their design projects while the instructor meets with students one-on-one to review design progress and to provide informal design critiques on an individual basis.

In addition to the typical content presented in this course by the instructor (Figure 10), the researcher designed and implemented three online, communication skills modules (Tables 9-11) to further the students' awareness of the three domain competencies (graphic, verbal and written) in communication that apply to studio courses. The online, educational module was assigned as out of class work and was completed during weeks five and six of the semester. Lastly, an overview of the semester is detailed below in Table 12, with features pertinent to the research study shown in bold and with corresponding cells highlighted in gray.

Semester Course Outline					
Week Number	Lecture Content	Lab/ Studio Work	Assignments Due	Required Readings	Homework for next class
1	Course introduction Syllabus review	Introduce the case study students will be a part of this semester –	**Case Study Narrative: Upload to Canvas (Student Artifact #1)**	Interior Environments: Profession & History:	

	Lecture: Design profession and history	Narrative on their perception of their communication skills: graphic, verbal, and written.		Elements & Principles Study Guide: Color, Lettering Drafting with Lead	
2	Lecture: Elements of Interior Design Review *Design Analysis Project* Introduction to Architectural Lettering	Lettering Card Series 1		*Interior Environments*: *Elements & Principles* Ch. 3 *Study Guide*: Review Elements & Principles	1. Gather interior images for Design Analysis Project 2. Complete Lettering Card 3. Study for Quiz #1 |
3	Lecture: Principles of Interior Design Review for Quiz #2	Introduce Design Analysis Practice Assignment	Quiz #1 Lettering Card 1	*Interior Environments*: Chapter 1 *Visual Presentation*: Chapter 2	1. Study for Quiz #2 - Elements and Principles 2. Complete Design Analysis Practice
4	Lecture: The Design Process	Return lettering card 1. Review Instructor comments for Lettering Card Series 1 Work on Lettering Card Series 2 **In-class critique**	Quiz #2 Design Analysis Practice	*Interior Environments*: Part IV *Visual Presentation*: Chapter 1	Study for Quiz #3 - Design Process Complete Lettering Card Series

5	Lecture: Space Planning Rooms to Buildings – read before class	Introduce Lab #1: Residential Floor Plan Analysis Design Analysis Practice	Quiz #3 DUE: Lettering Card Series 2	*Interior Environments*: Chapter 7 *Study Guide*: Scales	Complete Residential Floor Plan Analysis and bring to class Continue to work on Design Analysis Project **Begin online communication modules (Table 7)**
6	Lecture: Space Planning Furniture to Rooms	Introduce Lab #2A - Architectural Scale Work on Design Analysis Project	Lab #1 Residential Floor Plan Analysis Lab #2A Architectural Scale	*Interior Environments*: Appendix A *Study Guide*: Time Sheet, Concept Statements	Complete Lettering Card Series 3 Complete Design Analysis Project **Finish online communication modules (Table 9)**
7	Lecture: Programming & Conceptual Design & Time Keeping	Introduce Lab #2B Space Planning a Room Introduce Final Project & Assign Client Meet with client and create client questions **In-class critique**	Design Analysis Project Lettering Card Series 3	*Study Guide*: Floor Plans, Sections	1. Complete Lab #2B and bring to class 2. Complete preliminary concept statement based off the questions answered by the client.

8	Lecture: Drafting Floor Plans Creating Image Boards Review Mid-Term Exam	Introduce Lab #3 Draft floor plan *Final Project:* Review concept statement with client and instructor. **In-class critique**	Lab #2B Space Planning a Room	*Study Guide*: Elevations *Visual Presentation* Chapter 2	1. Concept Statement per Instructor & client comments 2. Complete Inspiration Board and bring to class 3. Study for Midterm Exam 4. Complete Lab #3 Draft floor plan
9	Lecture: Drafting Elevations class Final Project Space Plan options	Introduce Lab #4A Draft Elevation *Final Project*: Client and Instructor Sign-off on Concept Design **In-class critique**	Final Project Conceptual Design (Concept statement & Inspiration Board) Lab #3 Draft Floor Plan Midterm exam	*Visual Presentation*: Chapter 3 & Chapter 4	1. Final Project: create 2-3 space plan options 2. Complete Lab #4A Elevation assignment
10	Lecture: Rendering and Presenting Materials & Finishes	Introduce Lab #4B – Rendering the Floor Plan from Lab #3 and Elevation from Lab #4A. Make copies of plan and elevation before rendering. *Final Project:* Schematic Design Space Plan Review	Final Project Schematic Design Space plan options for client & instructor review Lab #4A Draft Elevation	*Visual Presentation:* Chapter 6 & Chapter 9 *Study Guide:* Sample Boards	1. Complete Final Project Schematic Design: sketched space plan & material/finish options 2. Complete Lab #4B Rendering and bring to class.

		and Sign-off with client Work on Material/finish selections and furniture. Work on Final Schematic Design Space Plan **In-class critique**			
11	Lecture: Presentation Boards	Introduce Lab #5 – Sample/ Label Mounting *Final Project:* Schematic Design Final Floor Plan (bring at least 2 options) and Materials Sign off with Client and Instructor. Material/ Finish & Furniture Selections **In-class critique**	Lab #4B Rendering Floor Plan & Elevation Final Project Design Final Space Plan and Material Options sign-off.		1. Complete Final Project Drafted Floor Plan 2. Refine Final Project Materials/Furniture 3. Complete Lab #5Sample/Label Mounting and bring to class 4. Draft elevations
12	Lecture: Presentation Boards	Introduce Lab #5 – Sample/Label Mounting *Final Project:* Schematic Design Final Floor Plan (bring at least 2 options) and	Lab #4B Rendering Floor Plan & Elevation Final Project Schematic Design		Complete Final Project Drafted Floor Plan Refine Final Project materials/ Furniture

		Materials Sign off with Client and Instructor. DD Material/ Finish & Furniture Selections **In-class critique**	Final Space Plan and Material Options sign-off.		Complete Lab #5 Sample/ Label Mounting Draft elevations
13	Commercial Design – Final Project Q&A	Final Project: Final DD sign-off Review of Final Elevations Work on adding notes to final floor plan with furniture. **In-class critique**	Final Project DD for Sign Off (Floor plan, elevations, materials, and furniture Lab #6 Finish Board and Title Block		Continue working on Final Project.
14-15		Meet with instructor individually to address any outstanding issues **individual critiques**			
16		**Formal critique**	Final Design Project Due **Final Digital Story Due (Student Artifact #2)**		

Table 12: Semester Outline of Design Case

Description of the Learning Module

The educational module focused on introducing freshman students in the Introduction to Interior Design studio course to three domain competencies of communication for designers: graphic, written and oral communication. There were three modules in total, with each module focused on one domain competency of communication. The communication module began in week five of the semester, after the course instructor taught the students the seven principles of interior design (Ching & Binggelli, 2018) during the first four weeks. Figure 10 provides for the overall course outline for the fall semester of 2023.

Module 1: Graphic Communication

The first module (see Table 7) focused on graphic communication, specifically, how to communicate effectively through design drawings and presentation boards. This module concentrated on applying the seven principles of interior design to graphic artifacts with an emphasis on presentation boards and material boards. The program faculty, including the course instructor, have noted that previous freshman students have demonstrated a lack of graphic communication effectiveness, specifically in the layout of presentation materials. As a result of the faculty feedback, module one included content on effective graphic communication for all design artifacts, with an emphasis on presentation materials.

Module 1: Graphic Communication
Overall Description: The purpose of this module is for learners to understand how to apply the seven principles of interior design (balance, unity, rhythm, scale/proportion, contrast, emphasis and detail) to their graphic communication artifacts, including presentation boards and design drawings.
Learning Objectives:
LO1: Learners will be able to assemble a visual presentation utilizing the principles of good design.

LO2: Learners will be able to critically self-assess a previously created visual artifact utilizing appropriate design terminology. LO3: Learners will be able to critically reflect on their graphic communication skills.			
Topic 1: Seven Principles of Interior Design			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Review: Seven Principles of Interior Design	Learning to Apply the Principles: - Balance - Unity - Rhythm - Scale/ proportion - Contrast - Emphasis - Detail	- Direct instruction - Interactive instruction - Peer review - Self-review	**Evaluate:** Find design presentation boards online that effectively utilize design principles.
Topic 2: What is Effective Graphic Communication in Design Studio?			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Graphic Communication: Defining effective graphic communication in interior design	- Audience - Intent - Design process	- Direct instruction - Interactive instruction - Self-review - Peer review	**Self-Assessment:** Describe how effective design principles have been used (or not) in previous design presentations.

Table 9: Module 1 Overview

Module 2: Written Communication

The second module focused on effective written communication (see Table 8) within the design studio environment. While formal research papers and essays are uncommon in the

studio, students are often tasked with creating design narratives and providing written feedback for their peers (Sabatelli, 2020). First, students were asked to "reflect-on-action" (Schön, 1987) meaning they crafted a written narrative which analyzed a classmate's use of design principles in a previous project, prior to the beginning of the communication module. Next, students were required to "reflect-in-action" (Schön, 1987) meaning they produced a written design brief in narrative form describing their current design process for the project which was introduced by the course instructor during the first four weeks. Eportfolios were also introduced to the students during this module. In addition to an overview and explanation of eportfolios, each student drafted a written narrative for his/her personal biography, as well as a narrative for his/her professional goals. These narratives were then incorporated into the student's personalized eportfolio, which was populated throughout the duration of the semester. Lastly, students were tasked with providing written critique of one of their peers' designs. The student's written feedback incorporated his/her perceptions of their peer's design process and design artifacts. Utilizing the seven principles of interior design as a framework, the student's written critique focused on describing their peer's design artifacts.

Module 2: Written Communication			
Overall Description: The purpose of this module is for learners to understand how to effectively communicate through written narratives and design briefs within the context of the interior design studio.			
Learning Objectives:			
LO4: Learners will be able to critically self-assess a previously written artifact. LO5: Learners will be able to critically reflect on their written communication skills development.			
Topic 1: Narrative Writing in Design Studio			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**

Narrative Writing: Defining narrative writing	Learning to Apply the Principles: - Description - Point of view - Analysis	- Direct instruction - Interactive instruction - Peer review	**Evaluate:** Write a descriptive narrative which analyzes one of your classmate's use of design principles in a previous project.
Topic 2: Genre Writing in Design Studio			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Genre Writing: Defining genre writing and its application to design narratives and design briefs.	- Story telling - Persuasive - Design process - Descriptive	- Direct instruction - Interactive instruction	**Genre Writing Practice:** Write a design brief for the course project utilizing the concepts of genre writing.
Topic 3: ePortfolio Introduction			
Content Heading:	**Key Points**	**Instructional Techniques**	**Applied Practice**
ePortfolio: Description and benefits of eportfolios	- Storytelling - Individual branding - Design process - Design products - Written narratives	- Direct instruction - Interactive instruction	**Crafting a Biography:** Utilizing the principles of narrative and/or genre based writing, craft a professionally written personal narrative for your eportfolio.

Table 10: Module 2 Overview

Module 3: Verbal Communication

The final module in the educational module was focused on effective verbal communication techniques and strategies (Table 9). Since there were no previously recorded verbal presentations on which the students could self-reflect, the focus of this module was on the

principles of effective verbal communication, specifically for the student's design presentation and the subsequent critique (Swales et al, 2001). Specifically, students were introduced to a genre-based style of verbal communication, which utilizes a rhetorical strategy to verbally communicate one's design ideas (Morton & O'Brien, 2005).

The goal of this module was to help students learn how to use their verbal presentations to "animate" their designs rather than "diminish" them (Forty, 2000). A previous study (Morton and O'Brien, 2005) found that the use of a genre-based approach in verbal presentations proved to be more effective than the student presentations that utilized the more generic, public speaking approach to verbal communication (Anthony, 1991). The students were encouraged to utilize the principles of genre-based communication, which focuses on the use of storytelling to engage and persuade one's audience (Johns, 2002; Swales, 2001).

Lastly, the students were introduced to the various elements of a digital story. Students utilized the principles of genre-based communication to craft their digital story script, which aimed to answer the reflection prompt written by the researcher. The reflection prompt required students to evaluate and provide artifacts of their communication skills development throughout the semester. A written script is typically the first artifact crafted for a digital story. After an initial script was drafted, it was then evaluated by both the student and the instructor for clarity and effectiveness, utilizing the genre-based framework. Towards the end of the semester, each student recorded his/her own voice while reading his/her script, which functioned as the verbal soundtrack in the student's digital story. Components of the digital story were compiled throughout the semester, with the final digital story being uploaded to Canvas at the end of the semester.

Module 3: Verbal Communication

Overall Description: The purpose of this module is for learners to understand how to effectively communicate through verbal presentations and interactions within the context of the interior design studio.			
Learning Objectives:			
LO6: Learners will be able to critically reflect on their verbal communication skills development. LO7: Learners will be able to meaningfully participate in peer critiques utilizing appropriate design terminology.			
Topic 1: Principles of Effective Verbal Communication			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Genre-Based Presentations: Defining and describing the aspects of genre-based presentations	- Storytelling - Point of view - Persuasion - Enhancing student designs	- Direct instruction - Interactive instruction - Self-assessment	**Evaluate:** Write a descriptive narrative which analyzes one of your classmate's use of design principles in a previous project.
Topic 2: Professional Verbal Communication in Studio			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Communication in Studio: Interacting in studio critiques	- Desk critiques - Pin-up critiques - Formal critique	- Direct instruction - Interactive instruction	**Partner Practice:** Provide verbal critique of a provided graphic artifact to a classmate.
Topic 3: Digital Storytelling Introduction			
Content Heading	**Key Points**	**Instructional Techniques**	**Applied Practice**
Digital Storytelling: Description and overview of digital storytelling	- Storytelling - Design process - Mood - Point of view	- Direct instruction - Interactive instruction	**Writing a digital story script:** Begin to draft your digital story script which will be recorded in your voice at the end of the semester.

Table 11: Module 3 Overview

Learning Objectives

Graphic Communication:

LO1: Learners will be able to assemble a visual presentation utilizing the principles of good design.

LO2: Learners will be able to critically self-assess a previously constructed visual artifact utilizing appropriate design terminology.

LO3: Learners will be able to critically reflect on their graphic communication skills development.

Written Communication

LO4: Learners will be able to self-assess a previously written artifact.

LO5: Learners will be able to critically reflect on their written communication skills development.

Verbal Communication

LO6: Learners will be able to critically reflect on their verbal communication skills development.

LO7: Learners will be able to meaningfully participate in peer critiques utilizing appropriate design terminology.

Learning Module Goals

The study accompanied an online, educational module in a required first-year course ancillary to all courses in the interior design curriculum. The primary goal of this educational module was to provide the students with a better understanding of three main domain competencies of communication (verbal, written and graphic), which led to a conscious

awareness of how they were using, not using, or developing these skills in their interior design courses (Tables 9-11) for domain competencies of communication. Through the use of direct teaching, online videos and in-class examples of the three communication domain competencies targeted specifically for interior designers, students were expected to gain a better understanding of communication skills. Students were given an opportunity at the beginning of the semester to self-reflect on their communication skills in each of the three domain competencies through a reflective writing prompt. At the end of the semester, students completed a digital story which was a short three-to-five-minute video that highlighted each student's perception of his/her communication skills across the three domain competencies.

Research Questions

RQ1: How do freshman interior design students perceive their communication skills in the context of a studio course in which those skills are explicitly included in the course design?

RQ2: To what do the students attribute the development of their communication skills?

Participants and Sampling

The participants in the study included one classroom-based section of a freshman-level interior design course entitled "Introduction to Interior Design." The maximum enrollment for this course was set at 20 students. The exact number of students enrolled at the beginning of the fall semester of 2023 was 20 students. During the first week of class, students in the course were verbally informed about the research study. Because the research study was embedded into the required course content and course objectives, all students participated and completed the educational module. In addition, all students completed the student artifacts as required student assignments. Even though all students participated in the research study, the researcher utilized purposive sampling to help manage the amount of qualitative data.

Purposive Sampling

Purposive sampling refers to a type of sampling in which the researcher utilized his/ her own judgment to select a sample, which he/she believed, based on prior information, provided the data that was needed for the research study (Fraenkel et al, 2012). Purposive sampling was utilized for this study to identify four participants whose self-perception of their communication skills at the beginning of the semester demonstrated basic reflectivity and average writing proficiencies. The above selection criteria was applied in an effort to sample the "average" or "typical" participant within this course. Purposive sampling was an acceptable sampling method for this study because the intent of the study was to describe students' communication skills from the perception of the one cohort of students in an introductory interior design studio course at the University, and the data was not intended to generalize findings to other populations or majors.

Data Collection Methods

The two student-created data sources were collected through the course's online learning platform, Canvas. All student-identifying information, including student names and course grading, were not collected or utilized by the researcher. Participant pseudonyms were created to protect the identity of the participants in this study.

Data Analysis Methods

The study first utilized descriptive coding as the foundational approach for the first cycle of coding (Miles et al., 2014). This approach began with researcher-created deductive codes, categorized within the three domain competencies of communication. Miles et al (2014) posited that the codes that emerge during data collection are often more empirically based. Next, inductive coding was utilized to further summarize and categorize similar codes, in order to capture the emergent codes and subsequent themes which arose from the data.

The researcher utilized the process of thematic analysis as outlined by Braun and Clarke (2006), which included a multi-phase process (Table 13). The first phase was getting familiar with the data, from which the researcher generated initial codes. These codes led to an inquiry of initial themes, followed by a review of themes, furthered by then naming and defining themes and developing corresponding subthemes, which were then utilized in writing the findings.

Phases of Thematic Analysis (Braun & Clarke, 2006)	
Phase	Description of the process
1. Familiarize yourself with the data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generate initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Search for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Review themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Define and name themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Produce the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Table 13: Phases of Thematic Analysis (Braun & Clarke, 2006)

Ethics of Study

Prior to the beginning of this study, the researcher obtained all necessary permissions from the institution's Internal Review Board (IRB). The researcher explicitly stated the purpose of the research to both the participants and the IRB. The researcher obtained IRB approval to ensure compliance with the institution.

Chapter 4: Findings and Analysis

Introduction

Each of the four participants in this study was given a pseudonym, which will be used in the pages that follow. Pseudonyms were given to coordinate with the first four letters of the alphabet, Andrea, Betsy, Cami and Donna, in order to easily categorize each of the four participants' data. The individually created artifacts are available in the appendices for reference. The three interpretive themes which emerged from the dataset are detailed throughout this chapter.

First, the researcher utilized descriptive open coding to categorize and construct meaning from the student artifacts. Next, the researcher completed a second cycle of coding in order to sort and summarize the initial codes into a smaller number of categories and corresponding emergent themes. The researcher continued with an iterative code cycling until no new themes or codes arose from the data. The emergent themes were then analyzed per participant to evaluate each individual's artifacts, in an effort to construct further meaning of each participant's experience. An additional analysis was completed to aggregate the data of all four individuals in such a way as to identify similarities and differences between the individuals. Next, the results were organized and analyzed to correspond with the two primary research questions. The findings were guided by the research questions:

RQ1: How do freshman interior design students perceive their communication skills in the context of a studio course in which those skills are explicitly included in the course design?

RQ2: To what do the students attribute the development of their communication skills?

Findings

During the research synthesis and analysis, three major themes emerged from the data regarding the experiences and factors that shaped students' perceptions of their communication skills development throughout the introductory interior design studio course. First, the data was initially coded per participant as the primary unit of analysis within this bounded system. Next, the codes were categorized by initial themes, and then categorized by research question. Lastly, after several cycles of coding, the findings were described and categorized by the three emergent themes. The interpretive themes and subthemes will be described and detailed in this chapter. Table 14 provides a summarized list of interpretative themes, as well as associated definitions and sample quotations from the student artifacts.

Introduction of Interpretive Themes

The researcher analyzed the data through multiple cycles of coding, with a focus on the creation of meaning from the coding process. Once several cycles of coding were complete, the researcher identified three emergent themes which included the following: personal attributes, variability in communication competencies, and attributions to communication competencies. Within these three themes, several subthemes emerged to further describe the students' perceptions of their communication skills development. The themes and subsequent subthemes are described and detailed in this chapter.

Theme 1: Personal Attributes

The participants' perceptions of their communication skills were shaped by their personal attributes, both positive and negative, regarding the three domain competencies in communication. For this study, personal attributes refer to one's attitudes, emotions, and beliefs surrounding their communication skills. This definition of personal attributes is in alignment

with the construct of Designer's Professional Identity, or DPI (Kunrath & Cash, 2020). A designer's professional identity has the potential to influence the formation of one's attitudes and behaviors (Kunrath & Cash, 2020), and the student artifacts supported this concept. Kunrath and Cash (2020) also posited that a Designer's Professional Identity was encompassed by both personal attributes and design skills. Personal attributes focus on a designer's soft skills, while design skills focus more on an individual's competencies, or hard skills. Similarly, within this study, the participants' perceptions of communication skills development were informed by both their personal attributes, as well as their design skills. While both are valuable aspects of a designer's professional identity formation, the first interpretative theme focused on the participant's personal attributes, which influenced their perceptions of communication skills development.

Subtheme 1: Attitudes

Personal attitudes refer to an individual's disposition and motivation towards a certain task or event (Kunrath et al., 2020). One's reaction and attitude toward a task can also be determined by the degree of the participants' motivation, or lack thereof (Oxford & Shearin, 1994). Moreover, personal attitudes are also informed by an individual's previous experiences, either positive or negative (Orr & Shreeve, 2018). Among each of the four participants, every individual had personal attitudes and subsequent opinions regarding the three domain competencies of communication at both the beginning and end of the semester. These attitudes, both positive and negative, shaped the participants' perceptions of their communication skills development. For instance, while two participants displayed a positive perspective and overall enthusiasm regarding verbal presentations, the other two participants had negative perceptions of verbal communication skills. Similarly, in Student Artifact 1 (SA1), each of the four

participants displayed positive attitudes and intrinsic motivations surrounding the domain competency of graphic communication. At the beginning of the semester, each participant expressed excitement and enthusiasm for learning more about graphic communication. Without exception, each participant expressed a personal desire and positive attitude regarding the process of learning the techniques and principles of graphic communication competencies. Overall, the participants all displayed a positive attitude towards the domain competency of graphic communication at both the beginning and end of the semester. There were mixed attitudes surrounding the domain competencies of verbal and written communication. While two participants indicated their positivity towards verbal communication, the other two participants expressed a negative perception of verbal communication. Participants displayed either neutral or positive attitudes regarding written communication. Two participants expressed a positive attitude towards creative writing, while the overall attitude at the end of the semester was a consensus that written communication was not utilized much within the course. While the personal attitudes in the communication domain competencies varied between participants, each individual expressed both positive and negative attitudes regarding the three domain competencies of communication.

Subtheme 2: Emotions

Attitudes and emotions are similar, yet different constructs of one's personal attributes. The primary difference between attitudes and emotions is the speed with which they can change (Kunrath et al., 2020). Attitudes, while able to change frequently, and sometimes rapidly, tend to have a more stable state than one's emotions (Mayer and Salovey, 1997). It is not uncommon for an individual to experience a multitude of emotions at one time, or in rapid succession. On the contrary, this range of emotions affects an individual's overall attitudes towards a certain task

or subject matter. Moreover, emotions inform one's attitudes on various tasks and event, thus making one's attitudes the more static of the two constructs (Kunrath et al., 2020).

Within the student artifacts, there was a range of emotions, both positive and negative, reported by the participants regarding their communication skills perceptions. Each of the participants in this study was an interior design major, so it was not surprising that all participants expressed excitement and enthusiasm for learning more about graphic communication in the studio course. Without exception, the findings illustrated positive emotions of excitement, anticipation and intrigue surrounding the domain competency of graphic communication.

Verbal communication was the domain competency that elicited the largest, and strongest range of emotions, both positive and negative. Two participants were excited and enthusiastic at the exposure to verbal communication, while the other two participants expressed anxiety, dread, and panic. Both Donna and Cami were eager to develop their verbal communication skills, while Andrea and Betsy reported feeling panicked and anxious at the thought of giving verbal presentations or interacting with clients, instructors or peers through verbal communication in a face-to-face setting.

In contrast, there was not a well-defined display of emotions surrounding the domain competency of written communication, as this was reported to be the least utilized domain competency within the course. The mention of emotion in written communication was tied to personal interest and enjoyment. Cami mentioned her enjoyment of letter writing as a hobby, while the other participants did not express any emotions surrounding the domain competency of written communication.

Mayer and Salovey (1997) developed a model of emotional intelligence (EI) which defined EI as a four-branch, trait-based construct, which specified that cognitive processing is implicated in emotions, and related to general intelligence. The four-branch, ability emotional intelligence model is comprised of four hierarchically linked ability areas, or branches: perceiving emotions, facilitating thought using emotions, understanding emotions, and managing emotions.

Within the subtheme of emotions, the participants were not only able to state their emotions regarding communication, but they displayed an understanding of their own emotions, as well as an awareness of others' emotional perceptions, which corresponded with the trait-based model of emotional intelligence (Mayer and Salovey, 1997). Moreover, the student artifacts demonstrated their ability to facilitate thought through emotional expression. Overall, this wide range of emotions, and the ability to manage those emotions, contributed to the participants' perceptions and attributes of communication skills development, as well as demonstrating variable degrees of emotional intelligence, as defined by the trait-based EI model (Mayer & Salovey, 1997).

Subtheme 3: Beliefs

Of the three descriptors (attitudes, emotions, beliefs) of personal attributes, one's beliefs are the most static in nature (Orr & Shreeve, 2018). An individual's beliefs shape both one's attitudes and emotions regarding oneself, situations, tasks, and learning. Understanding the importance of learners' beliefs in various academic fields has led to an increasing amount of evidence suggesting that these beliefs are crucial to learning experiences and accomplishments (Schommer, 1990). Moreover, these beliefs have the potential to have a significant impact on learning behavior and outcomes (Weinert & Kluwe, 1987). Multidisciplinary research

demonstrates the importance of belief systems and cognition in intellectual performance (Schoenfeld, 1983). This research also suggests that learners' perceptions and their expectations of their success in learning can have a direct impact on their performance, with unrealistic expectations demotivating and disappointing learners.

For the purpose of this study, beliefs are defined as what an individual believes about a particular task, situation or oneself, either positive or negative, as it relates to their communication skills (Orr & Shreeve, 2018). Related to attitudes and emotions, beliefs were a subtheme which arose from the data within the interpretive theme of personal attributes. In the data analysis, student beliefs shaped their perceptions of their communication skills development and competencies. Their prior beliefs regarding a certain domain competency of communication informed their judgement regarding their emotions and attitudes of a particular competency. Specifically, the participants all mentioned personal confidence, or lack thereof, when describing their communication skills. A participant's belief about their own communication skills competency was evident in each of the two artifacts. While some students had negative beliefs about their communication skills and others more positive beliefs, each student demonstrated belief formation at the end of semester by reporting increased confidence and competence in their communication skills development. Exposure to the three domains of communication was reported as a primary attribution to the participants' belief formation.

Theme 2: Variable Perceptions of Communication Competencies

Traditionally, a competency refers to an acceptable level of declarative skills within a certain domain (Merriam & Tisdell, 2015). Communication competencies refers to the three domain competencies of communication previously described in this study, and as determined by the accrediting body of interior design programs (CIDA, 2020). The three, pre-determined

categories that were used for the creation of the assignment instructions for the two, student-created artifacts were: graphic, verbal, and written communication. The second interpretive theme was a high level of variability was reported by the participants in their descriptions and evaluations of their communication competencies. The participants' varying perceptions of competencies were influenced by both previous experiences, as well as the amount of practice and emphasis placed on a certain competency within the semester-long studio course.

Subtheme 1: Variability in Perceptions of Graphic Communication Competency

Within the context of an interior design studio course, graphic communication competency was defined as one's ability to adequately incorporate the seven principles of interior design in one's design process and design artifacts. Specifically, participants were tasked with utilizing the following design principles: balance, unity, rhythm, scale/proportion, contrast, emphasis, and detail. Competent graphic communication skills were displayed by participants' abilities to craft presentation boards, design drawings and conceptual sketches which incorporated each of these principles in various ways.

Participants reported in student artifact 2 (SA2) that their graphic communication competencies were perceived as "drastically" affected and "positively improved" throughout the semester. As the emphasis in design studio education is predominately focused on design and its subsequent student-created graphic artifacts, graphic communication was perceived by the participants as the domain competency with the most emphasis and exposure provided to the participants throughout the semester. The participants found the depth and breadth of exposure to various types of graphic communication skills beneficial to their overall graphic communication skills development. Students reported creating preliminary sketches, technical drawings, as well as physical presentation boards throughout the semester. While the

participants did not discuss specifics regarding how their graphic artifacts exhibited the principles of interior design, they did provide limited graphic evidence of their developing graphic communication competencies in their digital stories (SA2) as described in Figures 19 through 21.

Figure 19: Andrea's digital story imagery displaying her final project presentation board. This board illustrates her use of balance, scale, and contrast through the layout of the boards overall, and the effective use of line weights and color on the technical, hand-drafted floor plans and elevations.

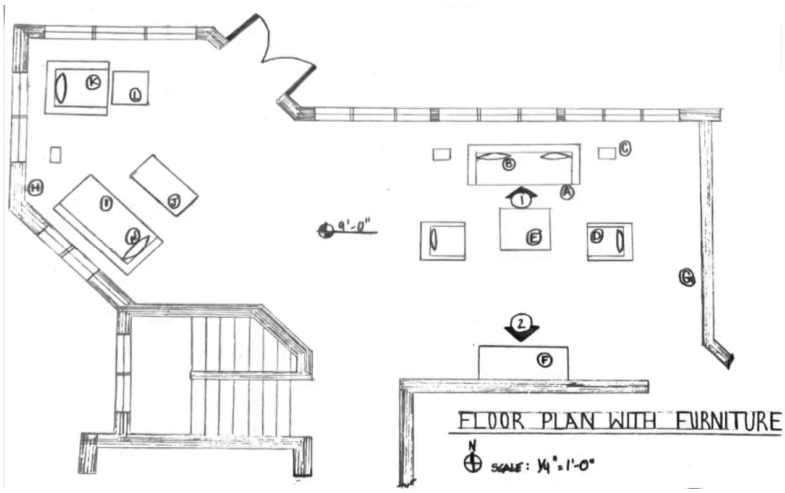


Figure 20: Hand drafted floor plan from Betsy's digital story.

This board illustrated effective graphic communication through the use of scale, contrast, line weights and appropriate level of detail.

Figure 21: Presentation board from Cami's digital story.

This board illustrated effective graphic communication through the balance of the layout, the use of color and texture for contrast, and detail.

Subtheme 2: Variability in Perceptions of Verbal Communication Competency

Within the context of the design studio, verbal communication takes on various forms, both formal and informal. Most often, verbal communication happens informally between the instructor and the student during desk critiques, or in peer reviews with other classmates. The findings from the artifacts illustrated the variety of ways in which the participants utilized verbal communication throughout this semester long course. The participants mentioned various methods of verbal communication which included interviewing the client, describing one's designs with classmates, meeting with the instructor for design critique, as well as a formal presentation and review at the end of the semester. While opinions were mixed as to the participants' perceptions of verbal communication, each one highlighted the frequent use of verbal communication. Furthermore, the findings revealed that each participant described their verbal communication skills as "improved" by the semester's end. Betsy stated that her verbal communication was the biggest focus for her personally. She stated that the following, "I have worked on my verbal communication the most. I have done this through meeting with my client every week and discussing the project with her. I have had to verbally convey varying design ideas. I have used both digital and written communication throughout this project." Overall, the participants' repetitive exposure to various methods of verbal communication was perceived to contribute to their skills development within the domain of verbal communication though the level of development was variable within the dataset.

Subtheme 3: Variability in Perceptions of Written Communication Competency

In a design studio course, written communication is typically utilized much less frequently than the other two forms of communication (Orr & Shreeve, 2018). Due to the project-based nature of studio courses, studio assignments often require numerous forms of

graphic artifacts, and a variety of methods of verbal communication especially when compared to the inclusion of written communication. The findings illustrated that written communication was the least frequently used domain of the three communication competencies. The students' perceptions included that written communication was used sparingly and informally throughout the semester. The student artifacts mentioned the use of email and text messaging as the predominant method of written communication. While participants were required to complete a written design analysis, as well as the writing for the two student artifacts for this study, none of these assignments were mentioned by the participants when tasked with describing their communication skills. The findings revealed that participants found the requirement of drafting a written concept statement as one useful tool which enhanced their perceptions of their written communication skills. The students perceived written communication to be the least-explored domain competency within this course. As such, the participants also demonstrated the most neutral perceptions of this domain competency. While graphic and verbal communication were described with either very positive or negative sentiments, the participants' overall perceptions of written communication presented as benign. Even so, there was variability in the students' perceptions of their written communication competencies.

Theme 3: Attributions to Communication Competencies

Constructivism (Piaget, 1971) posits that learners actively construct knowledge through action, reflection and construction, instead of passively assimilating knowledge. In this framework, the construction of knowledge relies on one's previous learning and experiences, with a learner constructing their own representations and reality by incorporating new learning into their pre-existing knowledge. The constructivist view of learning positions the learner as an active participant in the construction and building of knowledge. This research study was

framed by the tenets of constructivism, and the findings mirrored the principles of constructivism within the interpretive theme of attributing factors to communication competencies, specifically how the students connected previous knowledge and experiences to their present and future learning.

Subtheme 1: Past Experiences

The theme of attributions to the participants' past experiences emerged from the data analysis as a prominent factor contributing to the participants' perceptions of communication skills development. Without exception, the participants connected their communication skills, or lack thereof, with their past experiences. Whether it be from a job in the service industry or previous experiences with creative writing; past experiences, specifically those that occurred outside of the design studio, were perceived to influence the participants' perceptions of communication skills development across all three domain competencies.

While Donna attributed her comfort with verbal presentations to her previous experiences in theater, Besty connected her confidence with verbal communication to her employment in the hospitality industry. In both cases, the participants' previous experiences with verbal communication helped them connect past learning to current and future opportunities. Similarly, Cami reported that her previous art classes helped her to gain confidence within this interior design studio course, as did her previous experiences in creative writing. In both the student-created artifacts, the participants described relevant connections between past experiences and current learning, and attributed their development to these experiences.

Subtheme 2: Personal Interests

Another factor which was attributed to the students' perceptions was their personal interests. Each participant expressed how their personal interests informed their perceptions of

the three domain competencies of communication. Specifically, each of the participants expressed a personal interest in developing their graphic communication skills. As each of the students was an interior design major, this finding was in alignment with their chosen academic major in interior design.

Within the verbal communication domain competency, two participants attributed their perceptions of verbal communication to their personal interest, as well as their personal employment. The two participants that expressed confidence and positive perceptions surrounding verbal communication had a personal interest in theater (Donna), while the other connected her verbal communication competencies to her long history of employment as a restaurant server (Betsy). Moreover, Cami described her personal affinity for letter writing, in which she attributed her interest in creative writing to her successes in written communication within the contexts of personal, professional, and academic settings. Overall, the participants' personal interests were perceived as attributing factors in their communication skills development across the three domain competencies.

Subtheme 3: Future Career

In 2005, Siemens built on the theory of constructivism and introduced a new learning theory referred to as connectivist learning theory. Connectivism is a relatively new learning theory which posits that learners make connections and link previous knowledge to future connections (Siemens, 2005). This theory relies on a learner's ability to make connections between fields, ideas and concepts as one of the primary skills of the learner. Similarly, connected learning theory describes learning that is socially embedded, interest-driven, and oriented toward educational and professional opportunities. Connected learning is possible when a learner can study a subject of interest, which enables the learner to apply this learning to a

variety of settings. This model is based on evidence that the effective and impactful learning involves personal interest as well as social support.

The theories of constructivism and connectivism were observed within the dataset. Specifically, the participants all reported that their development of communication skills within this studio course would be utilized for future successes, both in other courses, as well as in their future careers as designers which aligns with the principles of connectivism and connected learning. For instance, in student artifact 2, Cami stated that, "this communication type (graphic communication) will help me become more professional in my future career, especially since it is the main form of communication used to connect ones ideas and put it into real life." Similarly, Betsy reported that "all three aspects of communication have helped me shape my project into what it is. I plan on taking these skills with me throughout my entire education career and future career." Without exception, each participant reported that their development of communication skills throughout the semester would benefit them both in future courses and in the design industry. This display of connection to future learning and career aspirations was found to be a primary attribution in the students' development of communication skills throughout this study.

Subtheme 4: Social Connections

Congruent with Bloom's taxonomy of affective learning domains (1956), the participants all demonstrated development in both skills and attitudes throughout the semester. The fourth subtheme highlighted that all of the participants' perceived development in communication skills was informed by their social connections and relationship formations. This finding is in alignment with the constructivist, connectivist and connected learning theories which posit that learners rely on social connections in order to create meaning from their experiences (Piaget,

1971; Siemens, 2005; Ileo et al, 2013). Moreover, the attribution to a designer's social connections is corroborated within the tenets of a designer's professional identity (Kunrath et al, 2020). A designer's professional identity includes a designer's social abilities and interpersonal communication as integral aptitudes which inform individual's professional identity development (Kunrath & Cash, 2020).

The social connections illustrated in this study were both professional and personal in nature. While some participants highlighted the formation of peer relationships with classmates in the course, others found the social connection with their client and instructor as factors which influenced the development of their communication skills. Donna reported that *"*ever since becoming friends with some of my peers, I've learned to communicate face to face and over text. Their help has made the class all the better. I now have friends I can rely on because I learned to lean on those who I can trust, and they will support me to get better." Meanwhile, Andrea reported that "strengthening my communication skills throughout the semester gained me confidence in my ability to effectively communicate to my peers and future clients. It has helped me prepare and dive into the real world of interior design." Overall, the participants found that the formation of social connections, both professionally and personally was an attributing factor which influenced their perceptions of communication skills development.

Subtheme 5: Little Mention of Coursework or Studio

The four subthemes mentioned in the above paragraphs all encompass what the students' attributed to their communication skills development. On the contrary, subtheme 5 focused on what the students did not attribute to their communication skills development, which was namely the course studio time, course assignments or the online educational module. While there were a few mentions of particularly helpful assignments or interactions which were included in the

course, there was no mention of the course assignments or the online, communication module as an attributing factor to the students' communication skills development. The lack of attribution of communication skills development to the coursework and assignments supports the constructivist frame in this beginning studio course. As a first semester, first year interior design students, the participants had no previous experiences from which to connect their current learning.

Summary of Interpretive Themes

Definitions of interpretive themes and example quotations		
Theme Title:	**Definition:**	**Example Quotations:**
Theme 1: Personal Attributes **Subthemes:** o Attitudes o Emotions o Beliefs	Personal attributes describe traits related to psychological characteristics such as values, emotions, attitudes and behaviors (Kunrath et al, 2020). Personal attributes are the lens through which a designer sees desires, attitudes, thinking and being.	**Attitude:** *"I do not enjoy presenting in front of my peers." – Andrea* **Emotions:** *When I am in person and want to communicate my feelings to someone, I become too scared and too emotional to do so." – Donna* *I have enjoyed this form of communication because of the visual it gives and the way it helps designer-client relationship understand the direction of a project. - Andrea* **Belief:** *"I believe I have worked on my verbal communication the most. I have done this through meeting with my client every week and discussing the project with her." – Besty*

Theme 2: Variable Perceptions in Communication Competencies **Subthemes:** o Graphic o Verbal o Written	A designer's professional identity includes a set of both attributes and competencies (Kunrath et al, 2020). Design skills refers to the competencies with the Designer's Professional Identity (DPI) framework to identity tangible design skills, such as technical drawings, sketches and design ideation (graphic communication). Included elements of design skills include cognitive abilities and declarative knowledge competencies. Furthermore, Kunrath et al (2020) stated that design skills also includes both personal and interpersonal communication (verbal and written communication), which are well-aligned with the three domain competencies of communication.	**Graphic: "***I have gained confidence in my graphic communication skills through the creation of powerpoints and inspiration boards in which I have presented to my peers." – Andrea* *"I have learned that through my plans, sketches, and final layouts, that it is the only way to truly show your ideas and progress on a project."- Cami* **Verbal: "***I've learned to communicate face to face and over text." – Donna* *"I have worked on my verbal communication the most. I have done this through meeting with my client every week and discussing the project with her. I have had to verbally convey varying design ideas. I have used both digital and written communication throughout this project."- Betsy* *"When I first started working on the project, I was hesitant to verbally ask questions, but as time went on, and as we got further into the project, I learned that there needed to be many questions asked to be able to get the best result possible for my client, so I began to ask more questions and felt more comfortable talking with terms that are frequently used in Interior Design." - Cami*

		Written: "*I know to get straight to the point and not carry on with words. For example, when I was typing my concept statement for the final project, I limited extra words so that the main point really came across well." – Cami* *"As the semester progressed I have strengthened my written communication skills through email and contacting my peers for various things. Strengthening this skill helped me understand the importance of clear communication and ideas." – Andrea* *"As for written communication, I might have over-analyzed something at the beginning of the semester. Now, I know to get straight to the point and not carry on with words. For example, when I was typing my concept statement for the final project, I limited extra words so that the main point really came across well."- Cami*
Theme 3: Attributions to Communication Competencies **Subthemes:** o Past experiences o Personal interests o Future career o Social connections o Little mention of coursework or studio	Constructivism (Piaget, 1971) posits that learners actively construct knowledge through action, reflection and construction, instead of passively assimilating knowledge. In this framework, the construction of knowledge relies on one's previous learning and	**Past experience: "***I grew up stepping outside of my comfort zone when participating in school musicals, so I believe that transferred over to presenting in class." - Donna* **Personal interest:** *"My communication skills are excellent when it comes to written communication. I*

	experiences, with a learner constructing their own representations and reality by incorporating new learning into their pre-existing knowledge.	*used to have a wax stamper to seal envelopes, and I would write for fun." – Cami* *"I have worked as a waitress for about six years and that has improved my graphic and verbal communication a great amount. I am more comfortable speaking in front of small to large groups than I am sending out an email to a small or large group." - Betsy* **Future career:** "*The opportunities given to me in my class really helped me see the importance of communication not only in the classroom but the importance of these skills in the Interior Design world."- Andrea* *"As I grow in my professional career, it is important to choose words wisely, so you sound as professional as you can be." – Cami* *"As for verbal communication overall, I believe it has helped me tremendously, not just during school, but outside as well. I now know that in order for something to be the best it can be, there must be some version of verbal communication to get the best result." – Cami* *"All three aspects of communication have helped*

		me shape my project into what it is. I plan on taking these skills with me throughout my entire education career and future career." - Betsy **Social connections:** *"Ever since becoming friends with some of my peers, I've learned to communicate face to face and over text." – Donna*

Table 14: Definitions of Interpretive Themes and Example Quotations

Summary

The findings, which were presented as three interpretive themes, concluded that participants' communication skills development had high a variability in perceived communication competencies within the dataset. Student perceptions were influenced by one's personal attributes, including one's attitudes, emotions and beliefs about his/ her skills development. This finding is in alignment with Kunrath et al's (2020) definition of a designer's professional identity, which posits that one's professional identity is influenced by both personal attributes, as well as design skills. Moreover, there were several attributing factors to the students' perceptions of communication skills development, which included connections that ranged from past experiences to future career goals, as well as personal interests and social connections with peers. The findings of theme 3 highlighted the pertinence of the study's framework of constructivism (Piaget, 1971), which places the learner at the center of knowledge creation and is based on a learner's past experiences and social connections. It is noteworthy that the students also made little to no mention of the coursework, assignments, online instructional module or teaching as attributing factors to their communication skills

development. The students' attributions to communication competencies development support the study design, as well as the previous research on constructivist learning theory and studio-based pedagogy.

Chapter 5: Discussion and Implications

Discussion of Findings

The study was a qualitative descriptive case study that examined the self-perceptions of students' communication skills development within an introductory interior design studio course. The study also explored the attributing factors which impacted students' perceptions of their experiences in the studio course. A qualitative research method of a single case was used to describe students' perceptions of their communication domain competencies, and the perceived factors which influenced those perceptions were presented throughout the findings as three, interpretive themes. The unit of analysis for this research study was the individual participant, of which there were four chosen by purposive sampling, all of whom were enrolled in an in-person, introductory interior design studio at a public, urban higher education institution. Guided by the rationale for the study from Chapter One and the theoretical framework and the literature review outlined in Chapter Two, Chapter Three outlined the research methodology, the description of the participants and the data collection procedures of the study. The description of the case as well as the descriptions of the learning modules and data sources were outlined in Chapter 4. Chapter 5 explored the findings which highlighted three interpretive themes from the data analysis – Personal Attributes, Variable Perceptions of Communication Competencies, and Attributions to Communication Competencies.

The study addressed two research questions. The first research question explored how the freshman interior design students, enrolled in an introductory interior design studio, described

their perceptions of communication skills development. The second research question explored the factors which attributed to the communication skills development of the freshman students enrolled in an interior design studio course. Chapter 6 presents a discussion of the findings and implications, the relationship to the prior research, the limitations of the study and the recommendations for the future practice and research. The section that follows will provide further evidence of how each of the two research questions has been answered.

Research Question 1

RQ1: How do freshman interior design students perceive their communication skills in the context of a studio course in which those skills are explicitly included in the course design?

The first research question examined how the students' perceptions of their communication skills developed throughout the semester. Across all participants, students' perceptions of their communication skills competencies were developed in each of the three domain competencies. The students' perceptions evolved through their self-perceived development in graphic, verbal and written communication competencies and each reported development in their beliefs and attitudes, specifically regarding their confidence in communication skills. Furthermore, each of the participants stated in SA2 that while they were pleased with their progress in their communication skills' development, each also acknowledged needing further development in communication skills, in order to be a competent designer in the future. The recognition of one's learning, and the connection to future learning or professional endeavors is in alignment with the connectivism learning theory which highlights that learners are most effective when they create linkages between past, present, and future knowledge (Siemens, 2005).

Next, in alignment with the framework of a designer's professional identity (Kunrath & Cash, 2020), the students' perceptions were impacted by their personal attributes, specifically their attitudes and beliefs in relation to the three domain competencies. Lastly, the students' perceptions developed through the connections they made, both personally and academically. Through the formation of peer relationships, the connections to past learning and experiences, as well as the awareness of future career trajectories, the development of the students' communication skills supported the constructivist learning theory (Piaget, 1971), where the learner is at the center of knowledge creation and constructs meaning based on prior knowledge and experiences. Overall, each participant reported some level of development in the perception of their communication skills in each of the three domain competencies, though there was variability among the students' perceptions of communication competencies.

Research Question 2

RQ2: To what do the students attribute the development of their communication skills?

The second research question examined what factors attributed to the students' perceptions of communication skills development within this interior design studio course. Theme three illuminated the attributing factors which influenced the students' communication skills development, which included the following: past experiences, personal interests, future career goals and social connections were all observed as attributing factors in the development of students' perceptions of communication skills.

The students' personal attributes, which is a construct within Kunrath and Cash's (2020) framework for a designer's professional identity, refers to a designer's soft skills which includes attributes such as attitudes, emotions, and beliefs. In alignment with this framework, the analysis of the data identified that the students' personal attributes, specifically their beliefs and attitudes,

were primary factors in their communication skills development. An individual's attitudes and beliefs have the potential to shape, either positively or negatively, a learner's development and knowledge creation (Schommer, 1990). Without exception, each participant described and detailed their improved confidence within the three domain competencies of communication. This self-confidence was first categorized as an attitude in the data analysis process, which subsequently informed the students' beliefs about themselves. As a result, this perception of increased self-confidence was highlighted as an attributing factor of the students' development of communication skills, within the subthemes of both attitudes and beliefs.

The second construct of a designer's professional identity (Kunrath & Cash, 2020) corresponds with a designer's hard skills or design competencies, which are referred to as design skills. These competencies focus on the effective use of graphic communication as a portion of the formation of a designer's professional identity. Similarly, the students' perceived competencies of communication within the three domains were another primary factor in the students' perceptions of communication skills development. Their design work and the perceived progress in communication skills throughout the semester, were a primary factor to their development of communication skills competencies.

Lastly, the students' attributed their social connections as a factor in their perceptions of their communication skills development. These connections included their past experiences, personal interests, future career goals and social connections. This factor is in alignment with Piaget's (1971) constructivist learning theory which positions the learner as an active participant in the creation and assimilation of knowledge building. The learner is responsible for constructing meaning and knowledge, which is inherently based on the learner's previous knowledge and experiences. More recently, connectivist learning theory (Siemens, 2005) builds

on constructivism by positing that learners are capable of creating nodes of knowledge, which are then used to create linkages to past experiences and future goals. Within this theory, these linkages are imperative for the learner to create in order for effective knowledge creation. The researcher's analysis of the findings demonstrated that the students' personal interests, past experiences, future career goals, and the formation of personal relationships were all attributing factors to their development of communication skills. This finding is supported by the referenced learning theories described above. Stated another way, these attributions to communication skills development were also in alignment with the development of a designer's professional identity as outlined by Kunrath et al's (2020) self and social perception construct.

Implications for Beginning Design Studios

It is well documented that interior design requires students and professionals to have effective communication skills within the domain competencies of graphic, verbal and written aptitudes (CIDA, 2020). While interior design students can certainly benefit from the development of their communication skills in the design studio, the mastery of the three domain competencies of communication will continue to serve these future professionals in the design industry after graduation as well (Hynes & Kwon, 2018).

This study provided descriptive and qualitative data from the student-created artifacts which focused on the students' self-perceptions of communication skills development throughout the semester. Through this semester-long study, the researcher was able to better understand the freshman students' perceptions of communication skills development within the domain competencies of verbal, written and graphic communication. One major implication from this study is that studio instructors should recognize that many students' perceptions of their communication skills are attributed to influences outside of the studio course. As a result,

instructors are encouraged to explicitly direct the students' reflection on their skills toward the themes that have been identified in this study so that students can consciously incorporate their sense of confidence into their educational experiences. Moreover, the results of this study were utilized to better understand freshman students' self-perceptions of their communication skills development within the three domain competencies which can likely be applicable to a variety of beginning design studio courses. While not able to be completely generalized to other beginning design studios, the findings of this research study have the potential to be adapted and applied to other beginning design studios across various design disciplines by adapting these findings to one's specific context or design discipline.

Limitations of the Study

The researcher began drafting this study proposal in the beginning of 2020. At that time, she was employed full-time at the University and the pandemic had not yet affected the nation. By the beginning of the study in the fall of 2023, the reality at the University had changed drastically. Not only had the researcher resigned her position at the University, but the University announced a significant re-organization for the entire University.

The Interior Design program is situated in a School within the University that has been dramatically impacted by the re-organization. This reality has had an impact on both the faculty and students within the interior design program. Specifically, there have been significant staffing changes within the program, and the interior design program is now taught mostly by part-time instructors. As a result of this change, the course utilized for this study was taught by a part-time instructor, not by a full-time faculty member, as originally intended. While the part-time instructor was willing to implement this study into her course, some of the agreed-upon parameters were not carried out as originally intended. Mainly, the instructor chose to make the

digital story (student artifact #2) as an assignment for extra credit, instead of making it a required assignment, as was originally agreed upon by both the researcher and the instructor. The researcher believed that this unilateral change likely resulted in a change in the overall quality of the students' digital stories.

Another limitation of this study was the impact the upcoming re-organization has had on the students within the Interior Design program. This massive re-structuring effort has affected almost every aspect of the University. As such, it is worth considering the potential impact that this impending change has had on the recruitment and retention of well-qualified students into the interior design program. Given the current situation with the University re-structuring, the level of uncertainty for the freshman students could have potentially limited their engagement and commitment to their studies within this program. This was a highly contextualized study for which the context has changed; it is not fully applicable to the original context, but not fully generalizable either.

Recommendations for Future Research

Studies have shown that learning about communication is more effective when integrated into the respective subject matter instead of having standalone coursework devoted to communications (Dannels, 2001). While efforts have been made in many standard courses to integrate communication skills into the course content and assessment, the design studio often does not assess or integrate written and verbal communication into the design studio curriculum (Morton & O'Brien, 2005; Hynes & Kwon, 2018). The three interpretive themes from this research study indicated a wide variety of attributions which influenced the students' perceptions of communication skills within the context of the design studio. Moving forward, future areas of

study could encompass a longitudinal study with multiple collection points to understand how these themes play out across a full design-discipline based curriculum.

Conclusion

Graphic communication is the predominant means of communication within the design studio context. While the studio environment is a vibrant and unique learning environment, expectations for communication competencies within studio courses are often implicit in nature, and not formally described or discussed with the students (Dannels, 2001). With a heavy emphasis on graphic communication and instructor critique, beginning studio students are often overwhelmed by implicit expectations of communication skills competencies within the domains of graphic, verbal and written communication within this environment (Morton & O'Brien, 2005). While studio expectations often include competencies in graphic, verbal, and written communication, much of the coursework and assessments are centered around a student's graphic communication abilities (Ching & Binggeli, 2018). By better understanding students' self-perceptions across the three domain competencies in communication within the introductory studio environment, the researcher posits that future studio instructors and researchers can design well-informed studio coursework and design research with an increased awareness of the domain competencies required for effective communication skills development. As a result of this increased understanding of students' communication skills, beginning studio students can gain more confidence and competence in graphic, verbal and written communication skills development within the "sticky curriculum" (Orr & Shreeve, 2019) of the design studio.

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Appendix A

Student Artifact #1 (SA1)

Below are the written narratives crafted by each of the participants during the first week of the semester. The narrative has been transcribed exactly as submitted, so all punctuation and spelling remained as originally submitted.

Participant 1: Andrea

"Communication is a huge part of being an interior design major. however, when it comes to my confidence in my ability to effectively communicate, I am not very confident. I tend to have a hard time getting my point across. I can do the research and prepare the main points, but when it's time to present, I backtrack. I think communication is the most intimidating part of the major.

The most intimidating communication form for me is verbal. I do not enjoy presenting Infront of my peers. I am a good listener, but when thrown into face-to face settings that requires some kind of verbal communication, I tend to panic. My face turns red, and I forget all that I have prepared. I fully intend to use the opportunities in class to strengthen my confidence in verbal communication.

When it comes to graphic communicate, I gain a little more confidence. I have not had a lot of experience with this form of communication, but with the little that I have had I have enjoyed it. I find it easier than verbal communication because it uses a creative setting to get a point across and is usually not in a face-to-face setting. I am excited to dive deeper into graphic communication.

I gain the most confidence when it comes to written communication. I tend to have an easier time writing the points of conversation rather than verbally communicating and graphic communication. I feel writing is easy because I have more time think about what I am going to say and there are usually no face-to-face interactions."

Participant 2: Betsy

"I believe that my graphic, verbal, and written communication are all at a decent level. If i had to rank them I would say verbal communication, graphic communication and then written communication. I have worked as a waitress for about six years and that has improved my graphic and verbal communication a great amount. I am more comfortable speaking in front of small to large groups than I am sending out an email to a small or large group. I could improve my graphic communications skills because I have not had to present that many things.

Even though I am not as comfortable with graphic communication, I do not think I am bad at it. Written communication is only a struggle because I worry about how I may come across and without social ques being right in front of me. I find I have a difficult time because I worry about how I may come across. I feel that all areas of my communication could use improvement."

Participant 3: Cami

"My communication skills are excellent when it comes to written communication. I used to have a wax stamper to seal envelopes, and I would write for fun. I can express how I am feeling in words without causing any type of disturbance to the receiver. I have sent letters to businesses, whether it was asking about a job position or a follow up to an interview. I have also gone into businesses looking for a resolution to a problem or a question about a job opportunity which brings me to the next point of verbal communication. Although I have social anxiety and struggle having small talk, if it comes down to communicating my needs or talking about a possible issue someone else has, I will not hesitate to push those anxieties past me and do what needs to be done. On the other hand, graphic communication is similar to written communication because it is the art of talking through symbols, emojis, or designs. Personally, I find it hard to communicate graphically since there might be no clear answer to what a symbol might be. I think of when a therapist is showing a client pictures of a butterfly for example and the client says it is a bat, there is confusion between the two persons but if they talked it out or wrote it out it might be easier for them to communicate how they are feeling."

Participant 4: Donna

"My communication skills are unlike others. I am a shy soul unless I am confident in what I am doing or talking about. Along the lines of verbal communication, I like to present in class and be on stage. I grew up stepping outside of my comfort zone when participating in school musicals, so I believe that transferred over to presenting in class. I am also not afraid to talk to new people and branch out. Written communication is more of an easier communication skill for me. When I am in person and want to communicate my feelings to someone, I become too scared and too emotional to do so. Written communication helps me get my feelings across without becoming overwhelmed with my emotions. As far as graphics, I can place my feelings and emotions into a design. Growing up, every time I would walk into a room, I would envision in my mind how I could make the space more beneficial for the owner. With design, I feel as if I can bring about people's desires and really portray what they are feeling. I am excited to work on deepening my communication skills in order to benefit my clients and to put the best work into my designs."

Appendix B

Student Artifact #2 (SA2)

Included in this appendix is the typed transcription of each participant's digital story script and imagery from the students' videos which were utilized in Student Artifact 2.

Participant 1: Andrea

"Communication is an integral asset in the Interior Design World. Communication comes in all forms ranging from graphic and verbal communication to written communication.

Throughout the semester I have used the opportunities in my class to strengthen my skills in hopes to better my communication for my future career.

At the beginning of the semester I was not confident in my ability to communicate and will admit that communication is the most intimidating part of the major. I find the most intimidating form of communication is verbal communication. I do not enjoy presenting in front of my peers. I found being thrown into face-face situations the hardest and fully intended to use the opportunities in and outside of class to build my confidence in regards to verbal communication. As the semester progressed I gained confidence in my verbal communication through presenting the Design Analysis Project and the face to face conversations with my peers. These opportunities presented to me in this studio helped me learn and gain insight on a skill that I will be using to be successful in my future career.

When it comes to graphic communication I had little to no experience with this form at the beginning of the semester. I find it easier than verbal communication in terms of a creative aspect. Throughout the semester I have gained confidence in my graphic communication skills through the creation of powerpoints and inspiration boards in which I have presented to my

peers. I have enjoyed this form of communication because of the visual it gives and the way it helps designer-client relationship understand the direction of a project.

I have been the most confident with my written communication skills. Personally I find it easier to do written communication then any other form of communication because of the flexibility and time it allows when relay information and main points. As the semester progressed I have strengthened my written communication skills through email and contacting my peers for various things. Strengthening this skill helped me understand the importance of clear communication and ideas.

Strengthening my communication skills throughout the semester gained me confidence in my ability to effectively communicate to my peers and future clients. It has helped me prepare and dive into the real world of interior design. The opportunities given to me in my INTR 103 class really helped me see the importance of communication not only in the classroom but the importance of these skills in the Interior Design world."

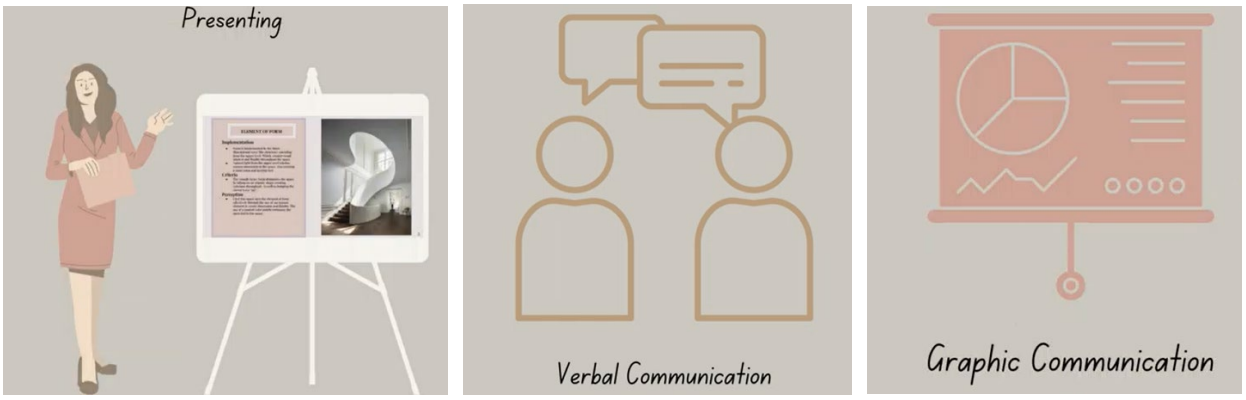

Figure 22: Screenshots from Andrea's Digital Story when providing an introduction to her communication skills

Figure 23: Andrea's Digital Story Imagery displaying her final project presentation board (these graphics correspond with her speaking about verbal and graphic communication)

Participant 2: Betsy

"Throughout this course I have had to work on all areas of communication. I believe I have worked on my verbal communication the most. I have done this through meeting with my client every week and discussing the project with her. I have had to verbally convey varying design ideas. I have used both digital and written communication throughout this project. Digitally I have put together a PowerPoint and have navigated through websites to find furniture and accessories that fit my design. I have digitally communicated with my client through presenting options to her, emailing her options and asking clarifying questions. My digital communication has positively improved throughout this semester. I have used written communication the least throughout this project with my client. I have written down ideas and

options and have presented her with those ideas. I have detailed notes detailing different discussions with my clients. These notes are then illustrated through my drawings of the floor plans and elevations. Although I have not used written communication as much as the other forms of communication, I still have been actively working on my presentation of written communication which I feel has improved. Personally, I believe that all three areas of communication have improved because of this project. From verbally discussing ideas and writing the ideas down. From writing down ideas, I started to sketch from our verbal and written discussions. I plan to use information gathered from our verbal and written discussions to form my digital communication. Through digital communication I will portray the feel and design of my clients' living space. The digital communication aspect of the project really helps the viewer grasp the feel and design of the living space. Personally, I am a visual learner so having the outlet of digital communication has allowed me to improve how I present and the overall look of my project. All three aspects of communication have helped me shape my project into what it is. I plan on taking these skills with me throughout my entire education career and future career."

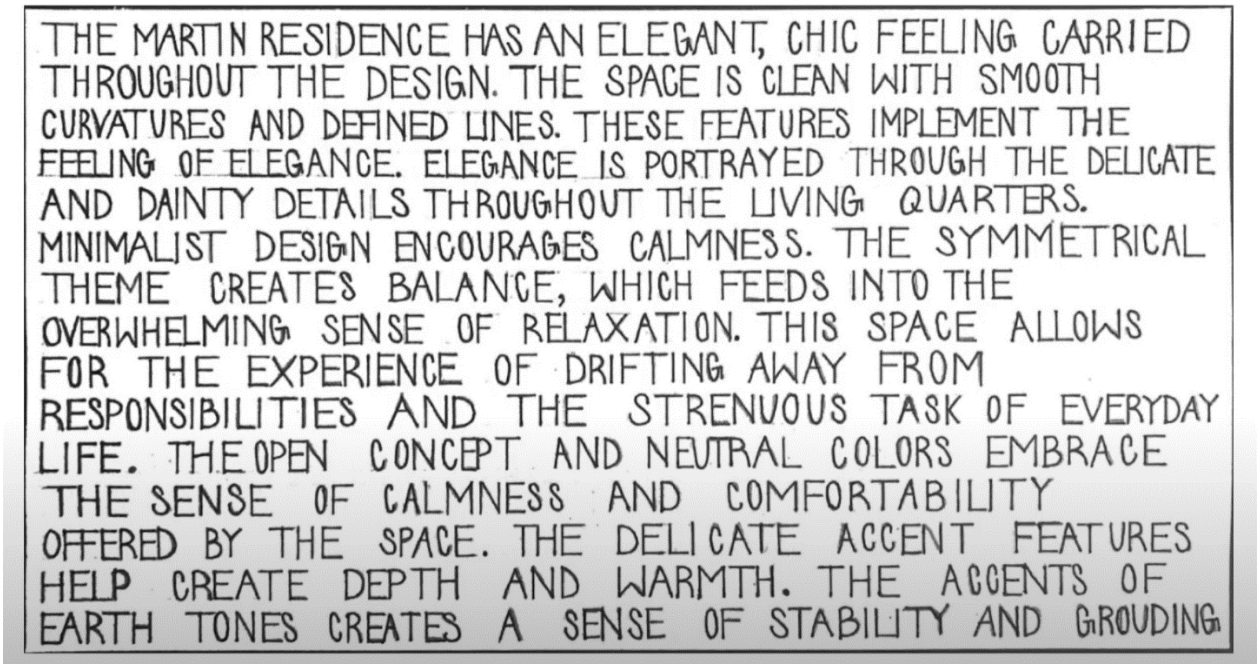

Figure 24: Hand lettering artifact from Betsy's Digital Story

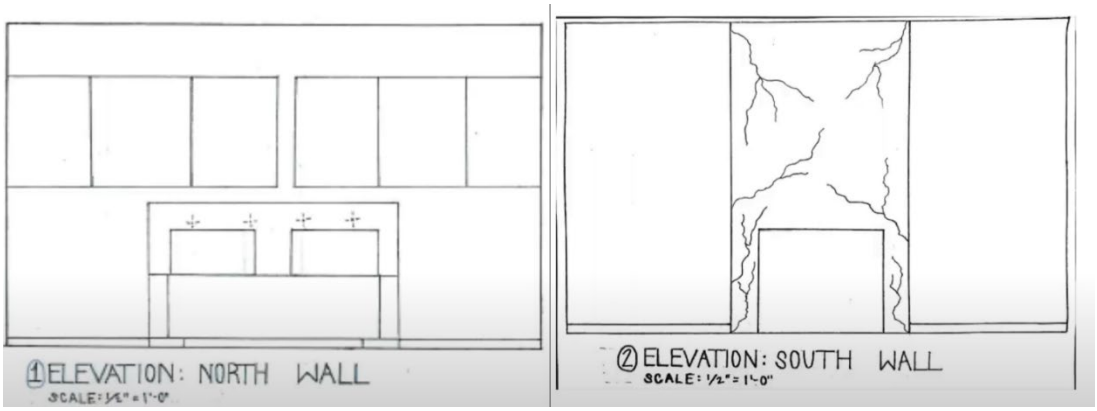

Figure 25: Hand Drafted Elevations from Betsy's Digital Story

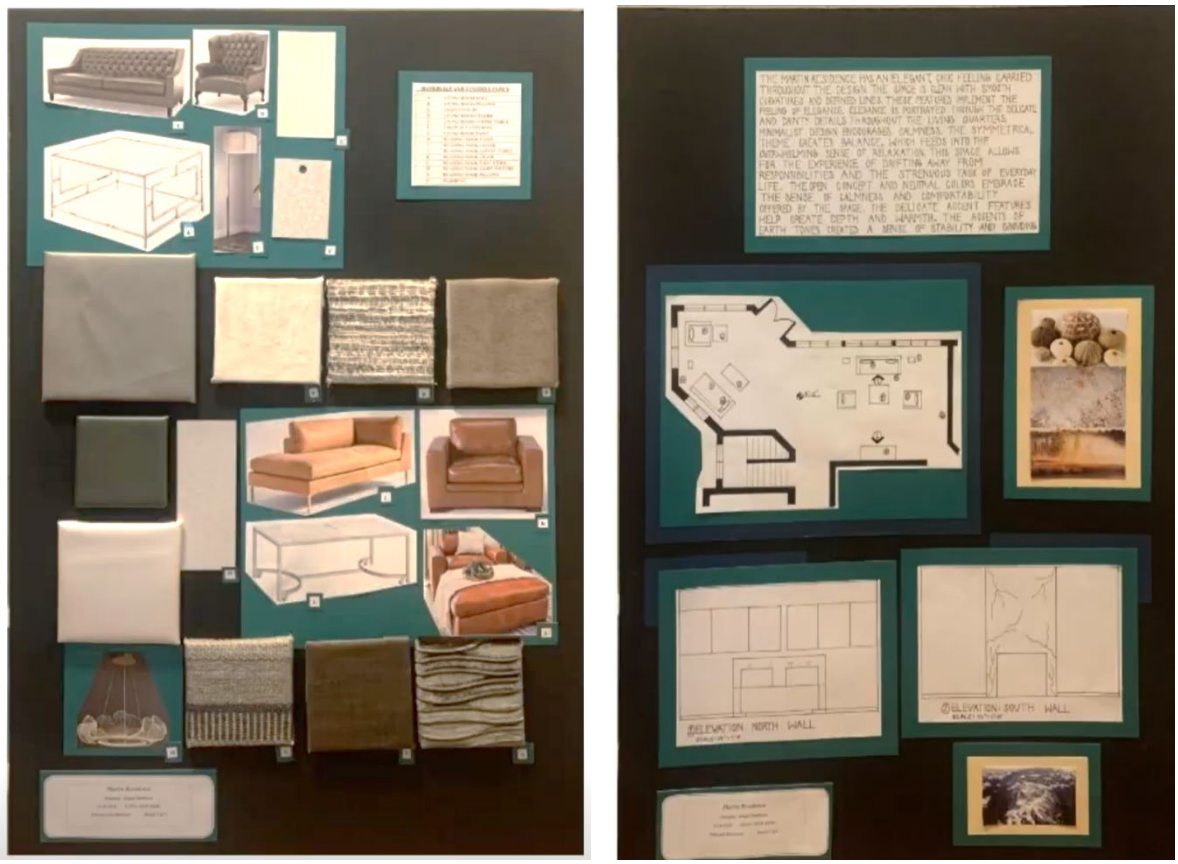

Figure 26: Screenshot from Betsy's digital story when speaking about graphic communication

Participant 3: Cami

"My perception of communication has drastically improved when comparing it to the beginning of the semester. Verbal, written, and graphic communication are very important aspects of interior design and of life itself. From explaining a project in front of my peers to conversing with a client during projects, I have learned many things that will help me continue to grow as an Interior Designer. My verbal communication skills have never been strong, so I was worried when I chose Interior Design as a major, since it does require explaining and talking through projects with clients, and coworkers. I was unsure of how to explain these things to my future clients. While working on my final project with my peer, I learned what questions to ask to get the best results for them to make their space the best I could. When I first started

working on the project, I was hesitant to verbally ask questions, but as time went on, and as we got further into the project, I learned that there needed to be many questions asked to be able to get the best result possible for my client, so I began to ask more questions and felt more comfortable talking with terms that are frequently used in Interior Design.

As for verbal communication overall, I believe it has helped me tremendously, not just during school, but outside as well. I now know that in order for something to be the best it can be, there must be some version of verbal communication to get the best result. One good example is the tone and words I choose to use. As I grow in my professional career, it is important to choose words wisely, so you sound as professional as you can be. At the beginning of the semester, I might have been known to be soft-spoken, although I have a ways to go, I would be known now more as a direct, clear speaker. Although I have been in college for over a year, this semester, especially in my art classes, and Intro to Interior Design, have helped me succeed the most with verbal communication.

Graphic communication is not only important in this profession, but many others as well, like teaching. At the beginning of the semester, I was unsure of how I would express my thoughts through graphic communication; however, after working on artistic projects this semester, I see now that graphic communication is the most important factor of Interior Design.

I have learned that through my plans, sketches, and final layouts, that it is the only way to truly show your ideas and progress on a project. Without this, my ideas would not be able to have the same standards that they do, and would not be able to come to life. While working with my client, I definitely was showing them sketches, more than we verbally communicated. Of course we would verbally communicate after each sketch was shown; however, that would not

have happened if I did not show my sketches or other forms of graphic communication in the first place. This communication type will help me become more professional in my future career, especially since it is the main form of communication used to connect ones ideas and put it into real life.

As for written communication, I might have over-analyzed something at the beginning of the semester. Now, I know to get straight to the point and not carry on with words. For example, when I was typing my concept statement for the final project, I limited extra words so that the main point really came across well. Along with that, the directions on Lab assignments helped tremendously, I noticed that the simplest way to ask for something in written communication, was to turn it into the simplest version possible, without excluding any details. This helped me while I was writing an email for school, typing an outline, or applying to a job. If it were not for my progress in written communication, I would have troubles writing essays, or doing any of the previously stated circumstances.

As I have said before, I have struggled with all three types of communication, but after this semester, I have improved my ways in Verbal, Graphic, and written communication. I still have a long way to go in my professional career, but after being in this class as well as other art classes, I can now communicate to the best of my ability."

Figure 27: Example Imagery from Cami's Digital Story during the introduction of her video

Figure 28: Screenshot from Cami's Digital story presented when speaking about graphic communication

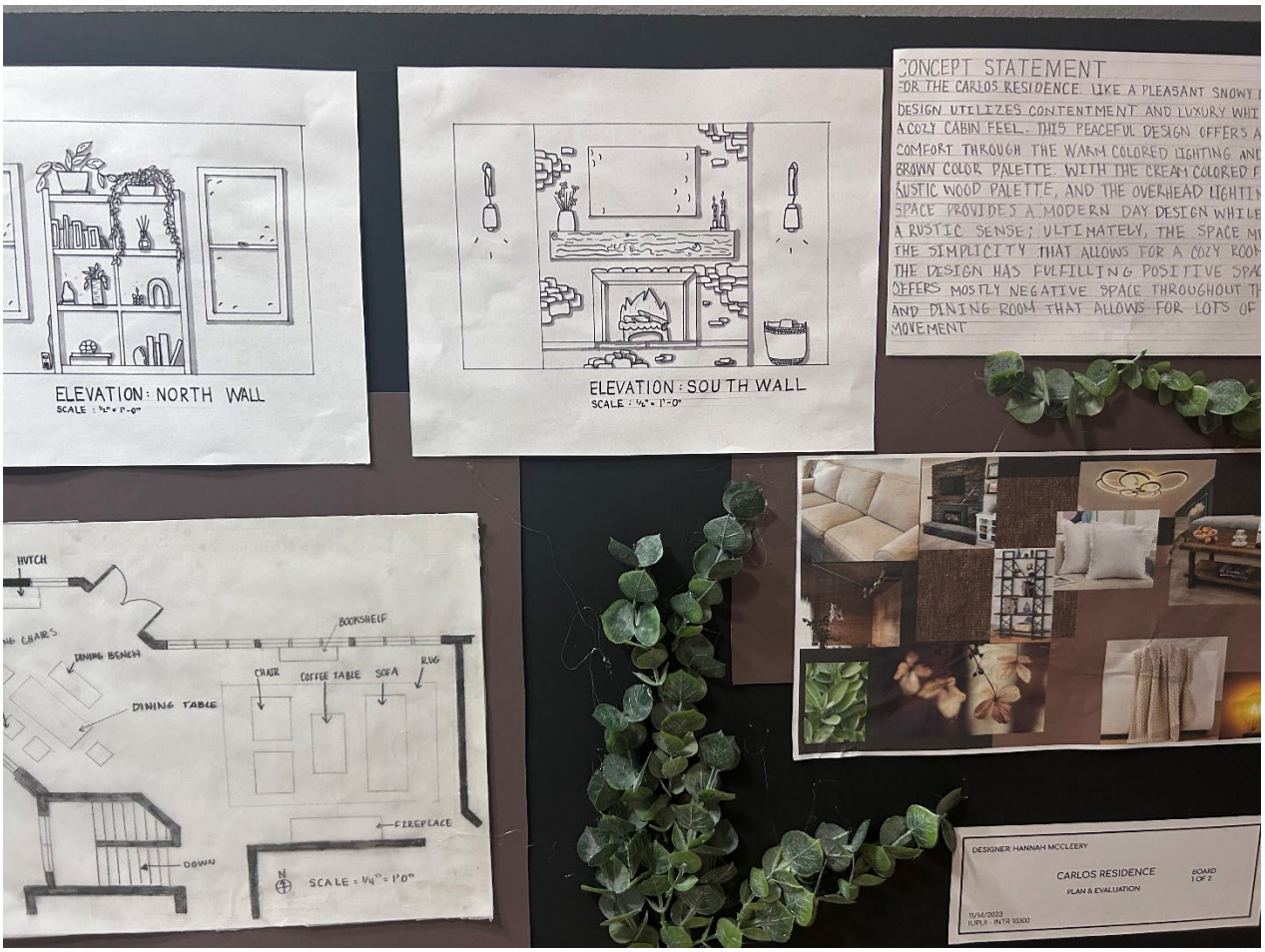

Figure 29: Presentation Board from Cami's Digital Story

Figure 30: Presentation Board from Cami's Digital Story

Participant 4: Donna

"Hello, I am a freshman at the University studying interior design, a degree where I have learned how to communicate in a variety of ways. I am excited to talk about my journey in improving my communication skills throughout this past semester. Whether I'm communicating by speaking, writing, or drawing, I have learned to get my ideas across clearly.

This past semester, I took classes in speech, interior design, and color and design. These classes each played a role in my communication skills. Going into my speech class, I had prior experience speaking publicly due to participating in musicals ever since middle school. Even with my experience, speech class was a newsflash for me. I had to write my own script, get my thoughts out clear enough to understand, give a meaning to the speech, memorize it completely in a few days, and deliver it well. So, speech class was a little different than what I had been used to with prior musicals: where in my musicals, I didn't have to write my own script, I was

told how I should perform my lines, and I had about 2 months to memorize the script. Ever since attending a brand-new school, I've struggled with confidence, but speech has helped me gain my confidence back. I've felt empowered to deliver a speech everyone can learn from and to be put in someone else's shoes. Speech class also helped me with creating a visual to present to empower my speech. Because of speech class, I feel confident in everyday conversation, while I give a presentation, or when delivering a speech. During speech class, I improved my written, verbal, and graphic communication skills.

Moving along to my interior design class: the class I look forward to every single week. I have always had the drive to become an interior designer, but now that it was here, I became more scared than anything. Scared I wouldn't be able to keep up with the grades or the ability of my classmates. Ever since becoming friends with some of my peers, I've learned to communicate face to face and over text. Their help has made the class all the better. I now have friends I can rely on because I learned to lean on those who I can trust, and they will support me to get better. In this class, our final project involves a client of our own, but it's one of our classmates. I learned how to partake in interview questions, pick materials and designs that fit their desires, and execute a final design that suits them. This project helped me gain experience in graphic, written, and verbal communication skills. I had to form a concept statement for the written skills, design a floor plan and execute the final presentation boards for the graphic skills, and communicate with my client and present my project to the class as my verbal communication.

For my final class, I learned how to draw and paint. Coming from a girl who has never taken an art class besides the ones in grade school, it was a bit challenging for me. I had to gain confidence in my ability to create paintings that express me. I didn't have any clue where to start and was frustrated with my work. With time and with feedback, I learned to admire my work. I

put in the effort and time, and I have grown tremendously since day one. This class strengthened my graphic skills.

This year has helped me develop my communication skills throughout the classes I have taken. I have come a long way in my written, verbal, and graphic communication and I will take what I have learned into my following semesters at the University. I can now express myself more clearly and have gained my confidence back. Thank you for listening to the journey I've taken over the last semester."

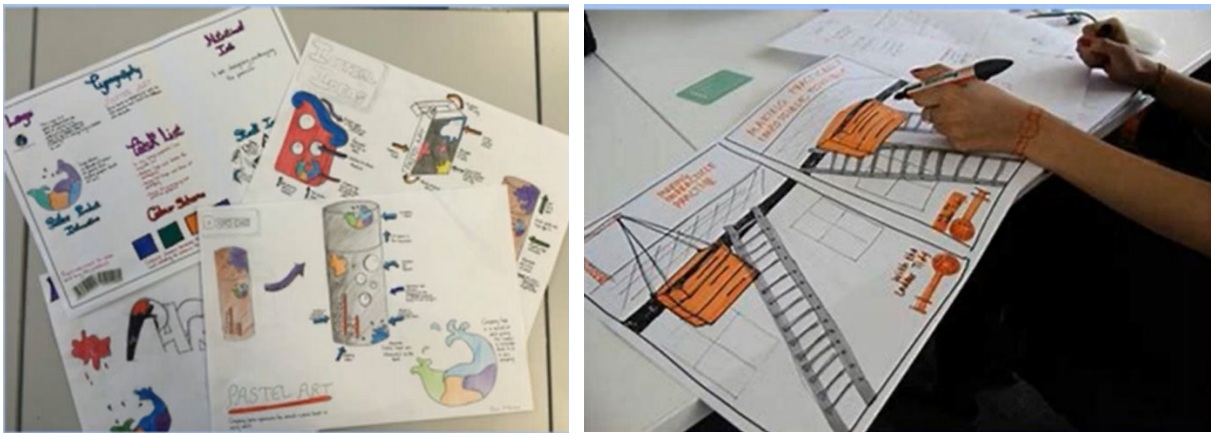

Figure 31: Screenshots from Donna's Digital Story when discussing graphic communication

Figure 32: Screenshot from Donna's Digital Story when discussing graphic communication

Figure 33: Presentation Board 1 from Donna's Digital Story

Figure 34: Presentation Board 2 from Donna's Digital Story

Appendix C

Codebook Themes and Coding Summary

THEME 1: PERSONAL ATTRIBUTES

1.1 *ATTITUDES*

1.1.1Need for skill development

1.1.2 Perceived room for improvement

1.1.3 Dislike face-to-face communication

1.14 Worried about others' perceptions

1.2 *BELIEFS*

1.2.1 Confidence in communication

1.2.2 Overcoming communication challenges

1.2.3 Building confidence in communication

1.2.4 Adaptation and growth through communication

1.2.5 Self-awareness and self-assessment

1.2.6 Confidence in presentations

1.2.7 Confidence and empowerment

1.2.8 Comfort zone expansion

1.2.9 Personal growth and transformation

1.2.10 Self-expression and confidence

1.3 *EMOTIONS*

1.3.1 Intimidated in verbal presentation

1.3.2 Comfortable with verbal communication

1.2.3 Anxiety around communication

1.2.4 Concerns about other people's perception

1.2.5 Struggling with social anxiety

1.2.6 Overwhelmed with emotions

1.2.7 Empathy and understanding felt in communication

1.2.8 Design as emotional expression

1.2.9 Empathetic design approach

THEME 2: VARIABILITY IN COMMUNICATION COMPETENCIES

2.1 VERBAL

2.1.1 Improvement in verbal communication

2.1.2 Challenges and growth in verbal communication

2.1.3 Learned professional tone and language

2.1.4 Gained verbal communication strategies

2.2 WRITTEN

2.2.1 Written communication as a preferred form

2.2.2 Importance of details in written communication

2.2.3 Struggle with written communication

2.2.4 Appreciate time for reflection in written communication

2.2.5 Limited use of written communication in the course

2.3 GRAPHIC

2.3.1 Creative expression in graphic communication

2.3.2 Need for improvement in graphic communication

2.3.3 Graphic communication enhanced design-client relationship

2.3.4 Graphic communication as a primary communication method in studio

2.3.5 Graphic communication as the key to showing ideas

2.3.6 Graphic communication challenges

2.3.7 Graphic communication preferred for visual learners

2.3.8 Graphic communication as a crucial aspect of design projects

2.3.9 Graphic communication as a project-shaping tool

2.3.10 Graphic communication as a means of expressing design concepts

2.3.11 Learning to draw and paint as graphic communication

2.4 MULTIMODAL COMMUNICATION

2.4.1 Importance of verbal, written, and graphic communication

2.4.2 Communication skills development in all three domains

2.4.3 Improvement in communication skills

2.4.4 Integration of communication skills

THEME 3: ATTRIBUTIONS TO COMMUNICATION COMPETENCIES

3.1 CONNECTIONS WITH FUTURE EDUCATION AND CAREER

3.1.1 Communication skills as a key to success in career

3.1.2 Communication as a key factor in project success

3.1.3 Communication as a learning process

3.1.4 Work experience and communication improvement

3.1.5 Communication for preparation for real world

3.1.6 Importance of practical experience

3.1.7 Communication skills as transferable skill

3.1.8 Communication as a lifelong learning process

3.2 PREVIOUS EXPERIENCES

3.2.1 Improvement through work experience in hospitality

3.2.2 Art classes as catalyst for graphic communication improvement

3.2.3 Speech class experience as catalyst for communication improvement

3.2.4 Participation in theater grew confidence in verbal communication

3.3 SOCIAL CONNECTIONS

3.3.1 Talking to new people helped build communication skills

3.3.2 Peer relationship formation in interior design class

3.3.3 Learned to communicate with peers in studio

3.3.4 Importance of supportive environment for learning

3.3.5 Peer support fostered confidence

Beth Huffman
bethnicolehuffman@gmail.com

EDUCATION

Indiana University, Bloomington, IN **July 2024**
Doctorate of Education in Instructional Systems Technology

Illinois Institute of Technology, Chicago, IL
Master of Science in Architecture **July 2010**
Specialization in Sustainable New Cities
Thesis: "The Constructability of Sustainable New Cities"

Ball State University, Muncie, IN
Bachelor in Architecture **May 2002**
Minor: Spanish

AWARDS

Favorite Professor Award by IUPUI Athletics	**December 2018**
IUPUI Trustees' Teaching Award Recipient	**August 2017**
IUPUI ePortfolio Implementation Grant	**May 2017**
IUPUI Curriculum Enhancement Grant	**May 2017**
National Council of Interior Design Association Teaching Excellence Merit Award	**December 2016**
Association of Private Sector Colleges and Universities Educator of the Year Nominee	**January 2013**
Women's History Month Leadership Nominee (Newcomer category)	**March 2013**
Service Learning Mentor	**January 2014 – present**
IUPUI Solutions Center Grant	**November 2013**
Indiana Campus Compact Service of Engagement Grant	**May 2014-May 2015**
Overseas Program Study Development Grant	**January 2014**
Yurtseven International Grant	**March 2014**
Emerging Engagement Scholarship Cohort	**October 2014**
CIDA Teaching Excellence Honorable Mention	**February 2016**
IUPUI ePortfolio Grant	**June 2016**
IUPUI Center for Service and Learning Dissemination Grant	**August 2016**
Presidential Scholar, Ball State University	**August 1997 – 2002**
Indiana Concrete Masonry Association Project Finalist, Ball State University	**May 1998**

TEACHING EXPERIENCE

Indiana University, Bloomington, IN **2023 – current**
Lecturer in Comprehensive Design

Purdue University, Indianapolis, Indiana **2013 –2021**
Full Time Interior Design Professor
Revit Software Instruction
Building Systems for Interior Designers
Quantitative Survey
Three-Dimensional Interior Design Studio
Commercial Construction

[Developed syllabus and overall course structure, administered all grades, advised numerous interior design students.]

Joliet Junior College, Joliet, IL
Adjunct Instructor **2010 – 2013**
Architectural Technical Drafting I
Architectural Technical Drafting II
Portfolio and Presentation
Introduction to Architecture
Architectural Design Studio I
Architectural Design Studio II
[Developed syllabus and overall course structure, and administered all grades.]

Westwood College, Chicago, IL
Adjunct Instructor **2010 – 2013**
Interior Lighting
Interior Design Professional Ethics
Portfolio and Presentation
Materials and Methods
Sustainable Construction
Construction Documents
Construction Graphics
[Developed syllabus and overall course structure, and administered all grades.]

Westwood College, online programs
Online Curriculum Development Subject Matter Expert **2011 – 2012**
Introduction to Construction Management
Construction Graphics
[Developed complete online courses for the Construction Management department to be used nationwide throughout the Westwood College system.]

Westwood College, Woodridge, IL
Adjunct Instructor **2009 – 2013**
Introduction to Construction Management
Building Codes
Construction Graphics
Construction Documents
Materials and Methods
Interior Design Professional Ethics and Practice
Residential Interiors
Sustainable Construction
[Developed syllabus and overall course structure, and administered all grades.]

Westwood College, Denver, CO
Adjunct Instructor
Construction Documents **2008–2009**
Construction Graphics

Introduction to Construction Management
Research Methodologies
Management Functions
[Developed syllabus and overall course structure, and administered all grades.]

ARCHITECTURAL EXPERIENCE

Pools of Fun
Lead Designer **2020-2023**
Responsible for a complete revamping of the design department for outdoor living and pool designs for a large pool company. Recruited and trained design staff.

Ethos Workshop Architects
Project Architect **2022 – 2023**
Responsible for designing and coordinating large, retail and commercial architectural projects through the United States with numerous national developers.

Muse Design, Indianapolis, IN
Principal Architect **2020 – 2017**
Founder and sole proprietor of Muse Design. We design and consult with clients in both the commercial and residential sectors of the architectural market.

Accrediting Council for Independent Colleges and Schools
Subject Matter Expert **2012 – 2016**
Responsible for evaluating colleges around North America for compliance with standards set forth by ACICS. Selected to be a subject matter expert for architecture, drafting and design, and construction management.

Crown Point Architectural Control Committee, Parker, CO
ACC Administrator **2007 – 2010**
Responsible for all architectural design review for a 275 acre mixed use commercial Development. Assimilated all design documents and coordinated the design review with the entire Architectural Control Committee.

The Preserve Design Review Committee, Greenwood Village, CO
DRC Administrator **2007 – 2009**
Responsible for coordinating all architectural design review for a luxurious, residential community on the south side of Denver. Assimilated all design documents and coordinated the design review of each project.

Ware Malcomb, Greenwood Village, CO
Project Manager **2005 – 2007**
Managed design teams for large commercial and industrial projects in the Rocky Mountain region. Facilitated and coordinated project team meetings from design through construction. Acted as a liaison with municipalities to obtain necessary permits and approvals.

Ohlson Lavoie Collaborative, Denver, CO

Project Coordinator **2004 – 2005**
Worked with design team to produce and manage all phases of the design process for large fitness and wellness facilities throughout the United States. Coordinated with design team to prepare for and facilitate design team meetings.

Buchanan Yonushewski Group, Denver, CO
Job Captain **2002 – 2004**
Worked with national clients to design and document retail tenant improvements as well as multi-family housing projects. Communicated directly with clients on site surveying and recommendations for tenant improvements.

Humphries Poli Architects, Denver, CO
Architectural Intern **2001**
Worked as a student intern in all phases of the design process to document and model large commercial and multi-family housing projects.

PUBLICATIONS AND PAPERS

"The Constructability of Sustainable New Cities" ***July 2010***
Thesis work for Illinois Institute of Technology

"Designing Digitally, Building Actually" ***November 2013***
International Journal Publication for the First Home of Proudness, Thailand

"3D Form: Space and Light" ***January 2014***
Co-authored paper for ASEE Journal publication

"African Safe House Prototype: Student Led Design and Construction Solutions for Social Change" ***October 2014***
Full Presentation at the Engaged Scholarship Consortium

"The Hope Seekers" ***April 2015***
Full Presentation at the Indiana Service Engagement Summit

"From Design Inception Through Project Completion" ***June 2016***
Co-authored paper for the American Society of Engineering Educators Journal

"*Ethical becoming amongst interior design undergraduates in a community-engaged learning course"* ***September 2016***
Co-authored a poster presentation for the International Association for Service Learning

"Constructing Secure Housing in Swaziland" ***October 2016***
Full presentation at the International Service Learning Summit

"Tracking Student Progress Through the Design Process" ***March 2017***
Full presentation at the EC Moore Symposium

"ePortfolios in the Interior Design Curriculum ***October 2017***
Full presentation at the Assessment Institute

"Foster Civic Identity in Architectural Technology ***June 2018***
Student through the Evaluation of Critical Reflection in Service Learning Coursework"
Authored paper for the American Society of Engineering Education

The Meaning of Lines: Assessing the Ethical and ***October 2018***
Technical Outcomes of a Community Engaged Architectural Technology Course"
Full presentation at the Assessment Institute with Grant Fore, SEIRI Institute

"Using Virtual Reality in Architectural Design to Break Down Language Barriers" ***March 2019***
Full presentation at the EC Moore Symposium

LANGUAGES

English – native language
Spanish – speak, read, and write with basic competency

MEMBERSHIPS

Licensed Architect in Colorado
National Council of Architectural Registration Boards Member
LEED Green Associate
United States Green Building Council Member

SKILLS

Software Skills
Expert proficiency in:
Autodesk Revit and Autocad, Microsoft Office, Adobe Creative Suite, SketchUp

Personal Skills:
Excellent written and verbal communication
Professional and ethical decision making
Leadership and mentorship acumen
Excellent Time management
Collaborative spirit and a team player