GAFFNEY, AMY LYNN HOUSLEY. Communicating About, In, and Through Design: A Study Exploring Communication Instruction and Design Students’ Critique Performance. (Under the direction of Deanna P. Dannels.)

Communication is a skill set typically required of students as they complete their education and move into the working world. Disciplines typically require certain genres of oral communication from their students, which model the communication that will be expected of students post-graduation. Within landscape architecture, the most prominent genre is the critique. In this form of evaluation, students present their design ideas – developed in response to a given situation – to an audience of peers, faculty, and outside professionals. After presenting their work, students are asked questions and given feedback from the audience. Although this form of communication is ubiquitous in design education, students are not typically taught the communication genres in which they are expected to engage. In order to fill that gap, this study explored the development of students’ communication about their designs as they presented projects over the course of a semester. Then, communication instruction was implemented in two instructional models in order to examine the influence of instruction on students’ performance and affect about their performance.

Results indicated the natural evolution of students’ abilities over the course of a semester as well as students’ diminishing affect toward their own abilities. With the addition of instruction, students’ performative abilities improved, but their self-perceptions remained relatively stable. Furthermore, the nature of the instruction impacted the nature of students’ changes. Students who received periodic, lecture-based instruction improved most on their
content, while students who received more interactive, weekly instruction improved most on the competencies related to their relating to others.

Together, these results indicate that students’ abilities to communicate about their designs are interwoven with their development of the design; both evolve over the course of the semester. The impact of the instruction points to the importance of communication instruction that is grounded within a particular discipline, supporting notions of situated learning. Furthermore, the instructional impact also points to the long-term influence of a discipline’s socialization on students’ affect, regardless of changes in students’ performance. Ultimately, the goal of projects such as this is to positively impact students’ communication abilities, and the results here point to the opportunities afforded by such work.
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Communicating About, In, and Through Design: A Study Exploring Communication Instruction and Design Students’ Critique Performance

by
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A dissertation submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the Degree of Doctor of Philosophy

Communication, Rhetoric, and Digital Media
Raleigh, North Carolina
2010

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DEDICATION

To Dr. Dannels

For your support, guidance, and

Helping me believe
BIOGRAPHY

Amy Lynn Housley Gaffney is a communication scholar who focuses on communication across the curriculum and instructional communication. Her research combines qualitative and quantitative empirical research methods to examine issues of teaching and learning communication across disciplines. During her doctoral work at North Carolina State University, she has been involved with a variety of research and faculty development projects. Prior to attending NC State, she attended Bethany College (B.A., communication, 2004) and Kent State University (M.A., communication studies, 2006). Her teaching experience includes public speaking, interpersonal communication, and communication theory. Outside of academia, Amy enjoys putting her creative talents to use in knitting, crochet, and sewing. She also enjoys spending time with friends and husband.
ACKNOWLEDGEMENTS

The process of conceiving of and completing a dissertation is by no means solitary, and while I cannot imagine trying to list every person who contributed in some way to this project, I will certainly try here. Of course, I must begin with my committee: Deanna Dannels, Chris Anson, Bill Jordan, and Jason Swarts. I wholeheartedly believe that my committee is the best that was ever assembled. As my chair, Dr. Dannels provided not only excellent professional direction but also personal support in a way that helped me through the trials and tribulations of a dissertation. She helped me through the writing process as well as the job search, and also reminded me when I needed to just take a break (but also helped me stay on task when I would rather be writing haikus). Chris provided me with a complementary perspective from the world of writing across the curriculum and his insights and guidance made me a stronger scholar. I must also thank Chris and Deanna for the opportunity to work with the Campus Writing & Speaking Program, and for their flexibility during the hectic application and interview season. As my resident quantitative expert, Bill provided helpful counsel on how to address the quantitative portions of my project and also served as a sounding board for ideas and possibilities. His dedication to his students is perhaps most clear in that he had open-heart surgery three weeks before my defense but still took part. Finally, Jason also provided a helpful alternative view that encouraged me to make this project stronger. I must also thank Troy Case for serving as graduate school representative for my preliminary exam and Brad Mehlenbacher for stepping up at the last minute to serve as the representative for the final exam.
At the program level, I was fortunate enough to enter the CRDM program in the second cohort. Carolyn Miller and Vicki Gallagher provided guidance during my first years here, which helped set me on the right path. Jeremy Packer, Steve Wiley, and Jason Swarts followed in their footsteps to provide exceptional support through my later years here. Jan Raymondi provided helpful support on the paperwork and practical sides of navigating the graduate school. Thanks go to Chris, Chad, Adam, and Christian for laying a foundation of excellence as the first cohort, and especially to Christian for showing that it is possible to survive. The colleagues who started with me – Anna, Freddi, Shaun, Ruffin, Rebecca, and Heidi – deserve thanks for helping me survive the coursework and other nuances of a new program.

Various members of the communication department deserve special note, although all of the faculty have been supportive of my growth here. Kelly Albada and Kami Kosenko provided excellent mentoring in my pursuits of teaching Communication theory. Kelly was also helpful in my job search by serving as a reference and being a sounding board for my many questions and concerns. David Berube was always good at reminding me to get back to work (even if I didn’t usually need the reminder!). Furthermore, the administration of the Communication Department provided support for teaching, and the office staff – especially Donise and Laura – were helpful every time I popped in to pick up mail or ask a question.

The project would not have been possible without the support of the College of Design at NC State. Dean Marvin Malecha was generous enough to support the communication in design initiative, which planted the seeds of this project. Other faculty,
especially Kofi Boone and Carla Delcambre, deserve prolific thanks for their cooperation with this project. I would also like to thank the students who took part in this project for their willingness to participate and their candidness with me during the project. My videographers – Jon, Mary Bridget, Adam, Anna, and Kelly – also deserve thanks for braving the world of design with me and for putting up with long hours of recording.

On a personal level, I have had the good fortune to be surrounded by a supportive community. Kelly Martin has been invaluable for her insights into design and her help in coding as well as her friendship. I could not imagine having survived this without the Kelster. Thanks also go to Kelly’s son, Garrett, who in the early months of his life helped with coding and later provided a sounding board for my writing. His ability to humor his mother’s friend – and to reward me with smiles and laughs – made my life happier. Mary Bridget Kustuch deserves thanks for her encouragement and study dates that helped keep me on track, as well as for her craftiness that helped keep me sane. Meghan West and Brian Friedlander deserve countless thanks for their friendship and support; I’m thankful that you two joined us in Raleigh. I would also like to thank the other members of the Physics Education Research and Development group – both graduate students and faculty – who provided great support during the fun of being a two-dissertation household. Liz Hilkert, though living on the opposite coast, provided support as well, building on a decade-and-a-half of friendship.

I was also blessed with a supportive and loving church family in Covenant Christian Church. Their prayers were definitely felt. I benefited especially from the support of Joanne
Verberg, Carole Tyler, and Randy Holste. Robin and Jeff Miller provided coping mechanisms and the friendship we share with Robin and Jeff and Tracy and Brack Brown was greatly appreciated.

My family also deserves great thanks for their support during this process as well as throughout my life. Mom and Joel and Dad and Michele gave me two loving homes in which to grow up. My mother, especially, was encouraging of my educational pursuits from a young age. My grandparents deserve particular notes of thanks as well. Grandma and Grandpa Landis shower me with love whether I’m in Ohio or North Carolina, and while I know they “ain’t never seen the likes” of this, their support has been amazing. I’m proud to be their favorite granddaughter (even if it’s only when my sisters aren’t around). Grandma and Grandpa Housley encouraged reading from a young age, and Grandma’s encouragement of my sewing and crafting has continued to be a source of joy in my life. I’m sorry they are not here to see the fruits of that work. My other grandparents – Granny and Frank, and Grandma and Grampy Furbee – also provided love and support from the time they entered my life.

I was blessed to grow up with three sisters. As my big sister, Mary Beth was always supportive (even when she was picking on me) and our shared love of reading growing up was influential in my pursuit of academia. I was also fortunate enough to be able to play big sister to Laura and Julie, and now I value their friendship and support. My sisters have also blessed me with brothers-in-law Jason and Aaron, and nephews Jacob and Taylor (not to mention the fur-nephews and fur-nieces) who continually make me thankful for my family.
My extended family gained through marriage has also been extremely supportive. Mom, Dad, Paul, and Annie Gaffney deserve thanks for supporting Jon and I through the insanity of graduate school. I am also thankful to Gregory and Jessica Smith for their friendship and support, and also for allowing us to share in Carolyn’s life. Now that we’re done, I think you said you’d bake us a cake.

And last, but by no means least, my undying thanks go to Jonathan. We said we would not dedicate our dissertations to each other, but he is probably the person who deserves the thanks the most. Perhaps we were crazy to pursue Ph.D.s at the same time, but in the end, that shared experience has made us stronger. Jon has been my sounding board, my shoulder to cry on, my source of stability, and my confidante. I am a better scholar because of our academic relationship and I am a better person because of our personal relationship. Thank you for making the daily choice to love me, and for helping that love to grow.
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I think what was surprising to me is that getting better at my communication makes my design better because when I'm thinking about how to communicate it, I'm actually thinking about the design and improving aspects that don't connect, that don't make sense.

Jared was an undergraduate student in landscape architecture in both semesters I worked in that department as part of this dissertation. Throughout those two semesters, Jared had numerous opportunities to talk about his work—both formally and informally. At the end of the spring semester, Jared made the above statement about how communicating about his ideas helped his design. By taking part in the studio courses and engaging in the lessons I shared with students, Jared was communicating in, about, and through design. He learned that communication can—and did—have an impact on multiple fronts.

Although many students fulfill some type of communication requirement, most students do not take more than one communication course (Cronin, Grice, & Palmerton, 2000), especially when their programs have highly intensive course requirements. This lack of communication instruction is especially problematic in disciplines such as design where communication is a key to success. As one design administrator stated in a research meeting, “if you can’t communicate, you don’t eat.” Such statements underscore the vital role communication plays in design students’ abilities to share their designs and make their mark as designers.

The role of communication in not only daily life but also in educational settings is highlighted in the communication-across-the-curriculum (CXC) movement. This scholarly
movement is dedicated to integrating communication into classes outside of communication departments, ideally within a discipline-specific framework (Dannels, 2001). Although CXC as a movement is supported by a variety of avenues, there are several areas in which research is lacking (Dannels & Housley Gaffney, 2009). The two arenas identified as key for the future of CXC that are of particular interest here are a renewed commitment to empiricism and a focus on theoretical sophistication. Within these two areas of consideration is a renewed interest in gauging the success of instructional methods for CXC implementations and the use of discipline-specific approaches.

With the relatively recent focus on discipline-specific approaches to CXC came an interest in pre-professional programs such as engineering (e.g., Dannels, 2002) and design (e.g., Dannels, 2005; Dannels & Martin, 2008). These disciplines ask their students to regularly put on the metaphorical hat of professionals and communicate in ways that simulate the workplace. However, the extent to which students are supported in these communicative approaches varies wildly, and the instruction that does exist is often lacking in major ways. In design particularly, there has only recently been a focus on determining communication competencies required of students. This dissertation sought to take that understanding of competencies beyond the theoretical into the practical application of the competencies in an instructional implementation. The purpose of the dissertation is to understand the influence of discipline-specific communication instruction on design students’ communication. By examining how students communicate in design classes and through their designs, I sought to help students learn about their communication.

Specifically, this dissertation is a mixed methodology (qualitative and quantitative)
communication-across-the-curriculum project focused on communication in design critiques. In addition to establishing how students’ communication naturally evolves over the course of the semester, I also implemented discipline-specific communication instruction. By examining students’ communication both with and without instruction, I am able to explore the impact of communication instruction on students’ communication in an empirically grounded way.

Results of this study provide an aggregate view of students’ informal and formal communication in design studios. Through systematic observations, recordings, and surveys, I tracked students and how they changed over the course of a semester. This type of research allowed for a closer look at these students’ experiences than would broad survey research, while also taking into account that students work together in a studio. This latter observation requires, then, for the data to reveal group trends rather than individual trends. The sample described here is also small in order to allow for more a more in-depth exploration, but does not allow for generalizations across other design studios, other pre-professional disciplines, or other institutions. However, the trends examined here provide an initial look at what is happening in one context, which can then be compared to work completed elsewhere.

The methodological decisions alluded to above and detailed more fully in the methods chapter also have implications for how the data is interpreted here. The data is able to speak to students’ performances and perceptions in a class in which they received no direct communication instruction, as well those same factors when students received communication instruction in one of two forms: instructor-focused and student-focused. This data provided insights into the effects of the instruction, but was not a controlled experiment,
and therefore results may have been affected by outside influences. Even with these caveats, the research outlined here provides a unique perspective on CXC instruction and design education.

This research contributes to multiple discussions with different implications. First, it contributes to discussions within CXC about the role of disciplinarity in cross-curricular work. In exploring comparisons of instructional models, this research examines the effects of incorporating communication instruction into other disciplines; such research is currently lacking, although there are theoretical discussions of the effect of such informal communication. Finally, the research contributes specifically to design education literature by providing more research focused on design studios and critiques in a way that uncovers students’ progress and the effects of communication instruction on that progress through careful examination of students’ performances and how performance is affected by communication instruction. Such knowledge can aid in developing further communication instruction in a manner that provides students with the knowledge and support they need to be competent communicators in design.

The structure of this dissertation provides a framework for understanding the project undertaken here. The dissertation is comprised of nine chapters, including the introduction and conclusion chapters. First, I lay out the theoretical assumptions that I brought into the project and that guided the development of the research. Next, I review literature pertaining to the major foci of this project. With those foundational topics addressed, I then turn to the methodological approach used to answer the research questions and address the hypotheses proposed. I address the results in three chapters. First, I address the baseline data that
demonstrates how students naturally evolve over the course of a semester. Next, I address the comparisons between a semester with instruction and a semester without. The final results chapter specifically compares the two instructional models. The dissertation is concluded with a discussion of the results and their implications.

As a final preface to the body of this dissertation, one repeated experience I had in the design studios speaks to the curiosity that sparked this investigation and helped fuel the discussion of results. At numerous times through both semesters, I had students comment about how bored I must be getting with hanging out in the design studios with them and attending all of the critiques armed with a video camera. I would smile and say how interesting I found the design process and that I liked spending time in the studio with the students. While admittedly I was not always so positive through countless hours of coding critiques after data collection, I realize that the students’ comments to me spoke to the disciplinary distinctions that played a major role in this project. As an outsider to the discipline, students saw me as someone who may not be interested in their projects and as someone who would not necessarily be interested to learn about design. I brought my communication expertise to the classes, but given how hidden communication was in the classroom from an instructional standpoint, it should come as no surprise that students saw me as being disconnected and not possibly interested. My hope was to change that perspective.
CHAPTER 2: THEORETICAL GROUNDINGS

The purpose of this dissertation is to explore what happens when students are engaged in communication instruction as a means of improving their discipline-specific communication competencies. This purpose evokes three assumptions that underlie this work. First, I take the assumption that learning is a situated process. Secondly, I assume that communication is a means of learning not only content, but also social aspects of a discipline. Finally, I assume that the genres present in teaching and learning are socially constructed. As I discuss each of these assumptions, I will provide examples of their relevance to the landscape architecture students who were the focus of this study. After discussing these assumptions, I will conclude this chapter by drawing on these three assumptions to explain their implications for my research as well as for the outcomes of this research.

Learning is a Situated Process

Situated learning, as a whole, is founded on the idea that learning is always situated. Typically, learning in school settings is situated within the world of teachers, classmates, textbooks, and classrooms (Sawyer & Greeno, 2009). However, in these school settings, students learn material that is intended for use in other contexts (e.g., a future job). Therefore, it is prudent to examine the role of situation on learning. In supporting my assumption that learning is a situated process, I will draw on situated learning literature to highlight the nature of knowledge, the transmission of knowledge, and the authenticity of activity.
Situated learning offers a perspective on knowledge that not only highlights the importance of moving beyond memorization, but also notes the importance of how knowledge is used. Situated learning scholars argue that knowledge is inextricably a part of the situation in which it is produced (Brown, Collins, & Duguid, 1989). Knowledge is not objective facts, but rather arises conceptually within social contexts, varies among and across people, and is transformed by people (Clancey, 2009). Furthermore, knowledge as it is conveyed in classroom settings also includes a “hidden curriculum” (Sawyer & Greeno, 2009) that includes the cultural norms and expectations underlying a class or discipline. In the case of design education, students learn not only how to design a site and the practical tools of their discipline, but also how designers should think and act.

The nature of knowledge is reflected in two implicit views of learning; the distinction between these two views helps to illustrate the grounding of situated learning (Brown & Duguid, 1996). Learning can be seen as the end result of the transmission of knowledge; in this view, knowledge is unchanged, a measurable entity that is either successfully or unsuccessfully learned. The second perspective on learning – and the perspective that is most fully supported in situated learning – is that learning is a continuous process, where the existing knowledge and newly acquired knowledge merge together to create something new. Therefore, learning is not simply about what is taught by an instructor. For design education, students need to know more than simply how to figure out the necessary grade (slope) for a site. They need to be able to utilize that knowledge on a variety of sites and with a variety of constraints, such as accessibility.
Knowledge can take multiple forms that are not stable. Oakshott (1962) distinguished between technical knowledge (can be precisely formulated) and practical knowledge (existing in use and cannot be formulated into rules). Practical knowledge, because it exists only in use, cannot be taught, but must be acquired through apprenticeship. Furthermore, knowledge can be conceived of as constantly in flux:

All knowledge is, we believe, like language. Its constituent parts index the world and so are inextricably a product of the activity and situations in which they are produced. A concept, for example, will continually evolve with each new occasion of use, because new situations, negotiations, and activities inevitably recast it in a new, more densely textured form (Brown, Collins, & Duguid, 1996, p. 22).

Additionally, meanings are always negotiable because meaning comes from the context. The understanding that knowledge can take on multiple forms – both technical and practical – and that the nature of knowledge is in flux speaks to the nature of learning. Design students can learn facts, such as the requirements to make a park accessible to all people, but such knowledge is always in the context of their larger project. Although access requirements dictate the use of handrails at certain slopes, students may choose to design “around” the problem and create a different path (e.g., slowly meandering with minimal slopes) that does not require handrails. Their knowledge, then, is constantly being used in different ways.

Learning is about the appropriation of tools and practices, not rote knowledge (Wertsch, 1998). Knowledge, rather than being abstract, can be thought of as tools (Brown et al., 1996). Although tools can be acquired without an understanding of how to use them, actual experience is more important than abstract knowledge in the overall demonstration of
learning. Using, rather than simply acquiring, tools allows a user to build a deeper yet implicit understanding of the tools and the contexts in which the tools can be used. The uses of the tool will be affected by the context of the community in which the tool is used. For example, a chisel may be used by both a carpenter and a cabinet maker but is used in different ways. Likewise, mathematicians and designers utilize formulae in different manners. Several times I heard design students mumble about thinking they would never need the formula for slope (rise over run) again after geometry, but such a formula is integral to designing in landscape architecture where the slope of a hill or walkway can make the difference between a successful design and one that needs to be reworked.

Differences in knowledge are clearly delineated between students and practitioners. Students, according to Brown et al. (1996), reason with laws and act on symbols in order to resolve well-defined problems and produce fixed meaning. On the other hand, practitioners reason with causal models and act on conceptual situations in order to resolve ill-defined problems and produce socially constructed meanings. In the case of design education, we can see this distinction in the projects that students approach compared to those undertaken by practitioners. In design studios, students are assigned a site on which to respond to a given design problem. Although this process may be analogous to professional designers bidding on a project, the students are given a variety of constraints and information that otherwise would not be available to professionals. For example, the class as a whole discusses the analysis of the site (e.g., what is currently on the site, nearby buildings and their uses) in order to clearly define the project; students then work individually or in teams to develop a design that meets the problem proposed to them. Their final presentation is of a design that
they will likely never touch after the end of the semester. For practitioners, they must approach ill-defined problems and continually produce new ideas and adjustments in order to meet clients’ needs.

Knowledge, according to situated learning, is about a deeper understanding and an ability to engage in practice. This knowledge directly relates to the situations in which it is pertinent, and – ideally – the situations in which it is acquired. Next, I turn my attention to how such knowledge is acquired by learners as they move from novice to expert status.

*The Transmission of Knowledge*

In addition to speaking to the very nature of knowledge, the situated learning model also explores how knowledge is transmitted. The successful transmission of knowledge, according to situated learning ideals, depends more on context than instructional skill:

Even when individual instruction is extensive, if the social context is missing, confusion and disillusion are likely. By contrast, even though instruction is minimal, quite complex practices can be learned effectively and easily where the social context is evident and supportive (Brown & Duguid, 1996, p. 51).

Furthermore, learning is diminished when knowing and doing are separated. Miller and Gildea (1987) explain that children learn most of their vocabulary through interaction naturally, and that vocabulary learned through dictionary definitions leads to inappropriate uses of the vocabulary in real contexts. For example, a student who learned the dictionary definition of meticulous as “very careful,” wrote a sentence about being meticulous about falling off a cliff. Presumably, the student did not mean to imply that he wanted to fall off the
cliff, but rather to avoid falling. Thus, the example illustrates that learning outside of an appropriate context leads to misunderstandings.

In cultures both inside and outside of academia, learning practices evolve to meet the needs of learners. These situated practices set the stage for learners (Sawyer & Greeno, 2009). Both the setting and the social practices that make up learning practices and environments are unique from situation to situation, and even formal classrooms represent socially constructed practices. Because knowledge is situated, the context in which knowledge is transmitted matters to the successful acquisition and integration of knowledge.

In design classes, it is important to understanding how learning happens in order to consider that classes are offered in studio space rather than lecture halls; these are the classes where the bulk of students’ abilities as designers are developed. The importance of the relationship between the content and the learning that happens within that context highlights the value in examining situated learning.

An important part of learning is learning to communicate in culturally relevant ways, which is problematic when the learning occurs in a context other than the one in which the information will be used. Although much education regarding disciplines happens within college classrooms, in practice:

there are no special forms of discourse aimed at apprentices or crucial to their
centripetal movement toward full participation that correspond to the marked genres
of the question-answer-evaluation format of classroom teaching or the lecturing of
college professors…For newcomers then the purpose is not to learn from talk as a
substitute for legitimate peripheral participation; it is to learn to talk as a key to legitimate peripheral participation (Lave & Wenger, 1991, p. 108-109).

Although communication in the classroom often simply reinforces classroom communication norms, Lave and Wenger argue that communication is more than question-answer sequences; well-designed communication opportunities can help students learn to talk as a means of participating in their disciplinary community. The acquisition of knowledge, then, happens through interactions, which ideally will be grounded within the ideals of a disciplinary community. Design students learn how to communicate through the interactions they have with each other and with their professors. In interviews, students regularly told me that they learned how to communicate as a designer through observing classmates and through discussion with faculty – not necessarily through explicit instruction.

Unlike traditional models of teaching and learning, situated learning offers an alternative relationship for teachers and students. In a situated learning environment, the role of the teacher is supportive, not directive (McLellan, 1996). Instructors guide students rather than telling students what they need to know. Furthermore, learning takes place through various levels of activity: private (e.g., journaling), local (e.g., small group), and public (presentations; Hall & Rubin, 1998). These altered models of teaching and learning are also reflected in the approach to evaluation. Evaluation in situated learning is about the learning process and progress (McLellan) rather than having a focus on memorization of fact.

The situated learning perspective allows for a fuller understanding of how knowledge is transmitted and acquired. For example, in a third-grade math class, students correctly completed worksheets, but their process was not that of the instructor (Lave, 1997). In cases
such as this, the situated approach revealed what was really occurring in the class, despite the apparent success seen in worksheets. The disconnect between how the teacher told students to complete problems and how students actually derived answers was only realized through a situated approach. This example illustrates the ability to more fully understand how knowledge is transferred by utilizing a situated approach than by simply looking at outcomes. For design education, then, it is important to look at how students go through their design process and not simply the final site plan they talk about in a critique.

In addition to a specific perspective on the nature of knowledge that represents situated learning, this approach also acknowledges the importance of how knowledge is shared and obtained. Through social means and a focus on context, students acquire the knowledge that is integral to their future careers. At the same time, the situated learning approach also emphasizes two key ideas: authenticity and apprenticeship.

*The Authenticity of Apprenticeship*

The emphasis situated learning places on “doing” rather than passively learning, is also reflected in the value placed on authentic experiences. Situated learning also utilizes the idea of apprenticeship to explore how students are brought into a new discipline or job. Together, these ideas of authenticity and apprenticeship offer the rest of the picture of situated learning.

The social aspect of learning helps reinforce the relationship between knowing and doing, and requires students (as learners) to involve themselves completely in becoming a full participant in their chosen community (Lave & Wenger, 1991). Brown and Duguid (1996) go on to use the example of learning to drive a car as a socially contextual activity.
They note that even people who otherwise have difficulties with machinery and appliances are trusted to pilot machines that offer a “hazardous and changing environment and an enormous array of increasingly sophisticated technology” (Brown & Duguid, p. 51) because cars are so integrated into society that the learning is virtually transparent. People learning to drive have, for the most part, already spent time in vehicles so they enter the task of learning to drive with an implicit understanding of the task.

School activity is generally not perceived to be authentic (Brown et al., 1996). In describing what makes activity authentic, Brown et al note that activities are framed by the culture in which they occur. These activities’ meanings are:

- socially constructed through negotiations among present and past members. Activities thus cohere in a way that is, in theory, if not always in practice, accessible to members who move within the social framework. These coherent, meaningful, and purposeful activities are authentic (Brown et al., p. 25)

This notion of authenticity requires careful attention to the social contexts in which learning occurs. Because clues about a culture derive from activity within that culture, it is vital to consider the context in which activity is happening and the connection between that context and what is intended. Design studio classes are purposefully scheduled in an environment that breaks typical classroom contexts by providing work space and individual desks for working. While the environment moves toward fitting into the authenticity of being a designer, students (and faculty) readily acknowledge that the environment does not fully recreate the design office experience.
Students, when learning in the classroom, learn in a way that is framed within the culture of schools, but is attributed to outside cultures (Brown et al., 1996). For example, students in design studios learn within classrooms on a university campus with all of the cultural implications of being a student and having an instructor. However, students are consistently taught about what it means to be a designer and direct connections are made to them between their work in the studio class and the job they may have after graduation.

Unfortunately, in efforts to connect classroom activity to authentic activity, not all aspects of the authentic activity are transferred. Furthermore, students may rely on classroom context features that are not present or important in authentic activities. Therefore, students may gather an unrealistic conceptualization of authentic activity by the very efforts intended to develop authentic activity.

Cognitive apprenticeship moves students progressively toward expert standing. This approach is characterized by beginning with tasks based within students’ familiar activities (Brown et al., 1996). This starting point acknowledges students’ implicit knowledge and the benefits of using that knowledge for scaffolding. Cognitive apprenticeship also points to the need to assess heuristics in respect to specific tasks. Students are also encouraged to develop their own solutions, which helps them acquire tools relevant to the culture. In design classes, this process of cognitive apprenticeship can be seen in the progression of students’ classes. Students’ early course work involves courses such as “design fundamentals” that build on students’ experiences as students to transition them into design classes. Early projects in a student’s design career are more constrained than later projects, which allow for more open exploration and new solutions.
The use of the word “apprenticeship” in relation to learning highlights the role of activity in learning and acknowledges the situated nature of learning (Brown et al., 1996). The term also evokes images of a type of coaching or modeling where instructors either model their strategies for students or make tacit knowledge explicit. After students have been introduced to strategies, instructors support students’ initial attempts at the task before empowering students to work individually. In design studios, instructors work closely with students to guide them through the design process. As students progress through various courses, they are given more and more freedom to explore their own identity as a designer, with their instructors standing on the sidelines to coach as needed. For example, students in a spring studio class talked to me about the amount of freedom they were given to shape their design of a hospital site, noting that the professor gave them more freedom than had earlier professors in lower-level classes.

Together, the ideas of the nature of knowledge, the transmission of knowledge, and the authenticity of apprenticeship form the foundations of situated learning. The lessons of situated learning form a core assumption of this dissertation. The idea of situated learning also leads to the second assumption of this research, which is also focused on the nature of learning and how it occurs.

Communication is a Fundamental Source of Disciplinary Learning

The second assumption underlying this dissertation is that communication is a mode of learning content knowledge as well as a means of socialization into a discipline. In supporting this assumption, I draw on research surrounding the idea that learning is social to the point of arguing that speaking is integral to learning. Furthermore, I argue that
communication also serves as a means of learning about the discipline which one is experiencing. This socialization process provides an integral part of learning about a discipline. Before fully explicating this assumption, I would like to provide definitions for three key terms: communication, discipline, and learning.

By communication, I mean the exchange of messages between students or among students and instructors. Although written communication certainly plays a role in learning (as seen throughout writing-across-the-curriculum literature), my focus here is on primarily oral communication. This communication may be either formal or informal in nature and is not directly restricted based on the number of people involved. The focus here is on communication that occurs in classroom during class time rather than communication occurring among instructors and students outside of class time.

By disciplines, I mean communities of knowledge that are differentiated not only by topics of importance and focus, but also by the communication in which people engage. In terms of distinguishing between related disciplines, I follow the perspective of Becher and Trowler (2001) who argued that “What demarcates one disciplinary perspective from another in a theme or topic which they share may vary between a distinction in style or emphasis, a division of labour or a difference in conceptual framework” (p. 60). Each discipline can be likened to a unique culture. Differences in argumentation, evaluation, and general discourse highlight epistemological differences. Social interactions bind together disciplinary cultures.

By learning, I mean both content knowledge as well as social knowledge. In this perspective, I once again draw on situated learning literature to highlight that simply the acquisition of information is not enough to constitute learning. To that end, I talk about
learning here as taking two forms: content and social. The first form fits with what is typically thought of with learning: the acquisition of knowledge, but in this case with an emphasis on understanding. I also acknowledge a second form of learning: learning social norms and values of a discipline.

Communicating for Content Learning

The first part of this assumption reflects my belief that communicating can help improve content knowledge. Communication represents a fundamental mode of learning (Modaff & Hopper, 1984). By communicating, either formally or informally, students develop their critical thinking skills and are given the opportunity to relate speech and thought. Speaking is an integral part of education: "Speech is the most human, the most involving, the most active, the most supportive-of-learning of any student activity" (Modaff & Hopper, p. 41). This importance traces back to the development of speaking abilities, which, Vygotsky (1978) argues, provides a foundation for thinking. In design classes, students actively engage with each other to talk about their projects and to get feedback from each other.

Speech is an important part of learning because of the extent to which it ties to activity (Modaff & Hopper, 1984). Speech is multi-sensory. It requires a physical action and coordination of mind and body that inherently requires activity. Speech can not only guide people’s own behavior (such as when people give themselves pep talks), it can also change other people's behavior. The active aspect of speech connects oral communication to teaching and learning.

Modaff and Hopper (1984) argue that speech is instructional because it triggers
higher conceptualization, facilitates task performance, and promotes literacy. According to Modaff and Hopper, who build on Vygotsky, speaking helps children develop higher levels of conceptualization. The use of speaking to help oneself in problem solving occurs spontaneously (or naturally) in children; this use of self-talk (whether in the mind or spoken out loud) also occurs with adults. Furthermore speech helps promote literacy. Oral and written skills interact to mutually improve learning. In design classes, students talk to each other and to themselves about what they are designing and the connections that need to be made.

Research spanning multiple disciplines illustrates the importance of talk to the learning process. Vocalized stimuli are recalled more often than non-vocalized (Carmeua & Weir, 1967; Davis, 1968; Weir & Helgoe, 1968). Furthermore, students more effectively restructure knowledge when interacting with others than when working individually (Schmidt, De Volder, DeGrave, Joust, & Patel, 1989). Students who learn material in order to be able to explain it to someone else learn that material more effectively than students who simply try to learn the material (Bargh & Schul, 1980). Numerous review articles demonstrate ongoing support for the idea that students who are more engaged in a class and/or work collaboratively learn more than students who are not engaged or work individually (e.g., Astin, 1993; Hake, 1998; Johnson, Johnson, & Smith, 1998; Springer, Stanne, & Donovan, 1999). Active learning increases learning outcomes, particularly higher order learning (Bonwell & Eison, 1991).

Language and talking are important because of the social interdependence of learning (Bruffee, 1993) as well as the interpersonal nature of learning (Vygotsky, 1978) and power of
The power of language lies in its potential for concretization. It facilitates discoveries by crystallizing experience – transforming discoveries into believable areas for exploration by positing them as realities in their own right. (Nystrand, 1977, p. 101). Britton (1982) argued that our understanding develops as we communicate it. Such an idea is supported within situated learning literature as well, which emphasizes that when students articulate their thinking or problem-solving process, they develop a better understanding of their own thinking (McLellan, 1996). Furthermore, the close connection between language and thought emphasizes that as students communicate, they also improve the quality of their thinking (Boyer, 1990).

Research on learning demonstrates that communicating about content learning helps improve understanding and memory of such knowledge. Communication, then, is an integral part of learning. Not only can communication help with content learning, but it can also help students learn about the more social aspects of their discipline.

Communicating for Social Learning

The second part of this assumption regards the learning of social information. That which a culture symbolizes and how a culture symbolizes that information is key. Cultures and speaking are linked in three main ways (Philipsen, 1992). First, speaking is structured. By this, Philipsen means that speaking is patterned but not predetermined; such patterning includes who communicates, to whom, through which channels, and for what purposes, etc. Secondly, speaking is distinctive:
Speaking is always speaking somewhere, with some group of people, in some language, and it is always shaped by and a part of some social life. To understand speaking in any particular instance is, in part, to understand a distinctive way of life. Making sense of a particular communal conversation, then, requires local knowledge, knowledge not only of speech sounds but of a local system of symbols and their meanings, of community mores, and of indigenous patterns of message-making and interpretation (Philipsen, pp. 11-12).

Thirdly, speaking is social. All speaking occurs in and contributes to the social. Both the use and non-use of local speech customs is informative. In design classes, then, students are exposed to not only the vocabulary of speaking like a designer, but also the nuances of appropriate use (or non-use) of such conversation.

The connection between communication and culture is set forth in Philipsen’s (1992) four principles on the topic. First, each distinct culture will have distinct communication. Secondly, speech codes are perceived to show culturally distinct characteristics, such as the unique aspects of communicating information in sociology. Thirdly, the significance of speech depends on the speech codes used. Finally, culture and speaking are inextricably woven together. Philipsen argues that speaking is always important, but the precise importance placed upon messages is distinctive. Patterns of interaction are unique to each culture and learning to be more effective within these patterns allows for fuller participation within that culture (Lave & Wenger, 1991). Learning environments are complex social systems and thus cannot be reduced to simply viewing the individual (Sawyer & Greeno, 2009). To that end, the situated approach allows for viewing the complexity of the learning
situation. In design classes, there are unique patterns of communication that help explore what it means to be a designer.

Disciplines can be distinguished by their communication patterns. Becher and Trowler (2001) argue that a primary means of distinguishing between disciplines is through an analysis of discourse. An academic culture and disciplinary epistemology are “mutually infused: disciplinary knowledge forms are to a large extent constituted and instantiated socially. Meanwhile their constitution has a reciprocal effect on the cultures from which they spring” (p. 23). The give-and-take relationship of communication and disciplines reflects the importance of considering the discipline from which communication originates.

As previously articulated, disciplines carry within themselves a variety of norms and values to be learned by a newcomer to that discipline. Language helps this learning process by helping the newcomers to construct and maintain new meanings (Nystrand, 1977, p. 99). Along the way, newcomers are exposed to cultural patterns, seen as “historically created systems of meaning in terms of which we give form, order, point, and direction to our lives” (Geertz, 1973, p. 52). Through a process of socialization, newcomers encounter the “values and attitudes, the interests, skills and knowledge – in short the culture – current in groups to which they are, or seek to become a member” (Merton, Reader, & Kendall, 1957, p. 287). Socialization is particularly pertinent because learning theories and methods (or other disciplinary content knowledge) is not enough:

Any person entering a new group with the ambition of becoming a fully fledged, competent member has to learn to comply with its fundamental cultural rules. This applies also to academic departments. To function smoothly within the group of
teachers, fellow-students and secretaries, the student needs a considerable amount of
know-how. Most of it will be acquired slowly through the interaction with others and
without anyone ever making a deliberate effort to teach others and without anyone
ever making a deliberate effort to teach the newcomer the rules of the game
(Gerholm, 1990, p. 263).
This notion of communication as a means of helping students learn about their discipline is
further reflected in the understanding that dialogue – not transmission – is a means of helping
students adopt disciplinary perspectives (Scudder & Mickunus, 1985, p. 137). When
considering the role of interaction in learning, it is important to also remember that learning
is most enhanced when patterns of interaction are consistent with cultural communication
patterns (Jordan, Au, & Joesting, 1983; Olson, 1980). Therefore, design students, through the
process of engaging in conversation about design, are learning more about how to talk like a
designer than they would learn by simply being told what to say or do.

If we believe that communities of practice are developed via social interaction
(Brown & Duguid, 1996), it is important that newcomers learn not from talk but to talk
within that community (Lave & Wenger, 1991, p. 109). Oral genres are places for students to
learn to speak the cultural language of the discipline in which they are enmeshed (Philipsen,
1992), and such learning happens naturally:

Given the chance to observe and practice in situ the behavior of members of a culture,
people pick up relevant jargon, imitate behavior, and gradually start to act in
accordance with its norms. These cultural practices are often recondite and extremely
complex. Nonetheless, given the opportunity to observe and practice them, people
adopt them with great success…the ease and success with which people do this (as opposed to the intricacy of describing what it entails) belie the immense importance of the process and obscures the fact that what they pick up is a product of the ambient culture rather than of explicit teaching (Brown et al., 1996, p. 24). Although communication norms are not always explicit, they are closely tied to cultures. Speaking and culture have a reflexive relationship: speaking as culturally distinct and is also culturally rich (Phillipsen, 1992). Oral communication binds together social groups and this connection is made in a way specific to that group. Culture is reflected within speaking in a variety of ways including vocabularies, rituals, and jargon.

Becher & Trowler (2001) argue that it is through language that we can see fundamental distinctions between disciplines. They say that through analysis of disciplinary discourse, it is possible “to discern differences in the modes in which arguments are generated, developed, expressed and reported” (p. 46). These distinctions are made even more apparent through evaluative terms (e.g., referring to a design as elegant or persuasive) that reflect the knowledge valued within that discipline. Therefore, critics’ responses to design students reflect what is valued in the discipline; students are not being told what is right or wrong, but the reactions to the site or the feelings evoked by the design.

Furthermore, disciplinary communities are brought together through communication and socializing:

Social interaction, communication of all sorts and the partly socially constructed nature of disciplines that is associated with them are the forces that bind together the
sociological and the epistemological, giving shape and substance to the links between knowledge forms and knowledge communities (Becher & Trowler, 2001, p. 105).

The importance of these social interactions is also reflected in the ways in which newcomers are accepted into a community. According to Becher and Trowler, one must have more than technical proficiency to be considered a member in an academic culture; adherence to norms and a dedication to the social aspects of the group is also required. These norms are learned primarily through socialization.

Students, when entering a new discipline, face two necessary types of learning. First, they need to learn the content of the discipline. Secondly, they need to learn what it means to be a part of that discipline, which focuses more on the social nature of being within a discipline. Both of these types of learning can be greatly enhanced by communication, and in the case of social aspects, communication is the primary means of learning. This assumption emphasizes my belief in the ability of communication to aid in both types of learning. The assumption also sets the stage for my third assumption, which emphasizes different types of communication.

Communication Genres are Socially Negotiated

With the previous assumptions focused on the role of communication and learning, I now turn to the idea that communication in teaching and learning occurs in different genres, which are socially negotiated. First, I will define genres and provide insight into the particular conceptualization of genre that I utilize here. Then, I will turn my attention to how genres are learned. These two areas of focus are integral to the overall approach utilized in this dissertation.
**Defining Genre**

Genres, as a topic of interest for those ranging from literary theorists to rhetoricians, are an integral part of both written and spoken communication. The power of genres is explained by Devitt (2004):

> Genre pervades human lives. As people go about their business, interacting with others and trying to get along in the world, they use genres to ease their way, to meet expectations, to save time... Genres have the power to help or hurt human interaction, to ease communication or to deceive, to enable someone to speak or to discourage someone from saying something different (p. 1).

Other than simply acknowledging the importance of genres to our communication, it is important to more fully understand what is meant by genre. To that end, I will explore various conceptions of genre while highlighting the particular position that underlies my work here. These conceptions build toward my understanding of genre as socially negotiated (Miller, 1984).

Devitt (2004) explained different views of genre and the shortcomings of each view. First, genre is seen as simply naming and specifying formal features, which focuses on writing (or speaking) as a product, not a process. Genre also is considered a classification system, a view traced back to Aristotle. Although classifications are a part of genre, this view unnecessarily limits the view of genres. Similarly, views of genre as simply form are narrow. Genre is seen as a response to recurring situations (e.g., Miller, 1984), but again, this perspective (according to Devitt) can be problematic. Instead, Devitt argued that saying genre responds to situations oversimplifies the inherently reciprocal relationship between situation
and genre. Devitt also argued that culture is not simply the context of genre, but influences the construction of genres. Furthermore, Devitt argued for the need to acknowledge the influence of other genres.

Based on such a background, I am using a perspective of genre that acknowledges that genres are more than styles, in that they are central to the ways in which the world is understood; such effects are not stable (Frow, 2006). Genres have specific structural elements (Frow), which include formal features as well as a thematic structure. Furthermore, genres have situations of address and structures of implication. There are rhetorical functions to genres as well as a context or physical setting. Genres are also found in the patterns ways of disciplinary knowledge (Bazerman, 1988; Latour and Woolgar, 1979). The knowledge of a community is both determined by and influences on the genres valued within the community (Bazerman, 1988; Winsor, 1990); this knowledge is not only content but also views of the world (Berkenkotter & Huckin, 1995). Just as cultures have different purposes for and values about communication (Philipsen, 1992, p. 124), disciplines have different argument fields (Toulmin, 1958) and unique disciplinary discourse norms, which are “a textual feature or some other convention deemed appropriate (that is, legitimate, useful) by the consensus of a particular discipline” (Hagge, 1997, p. 131). To place these ideas into the specific context of this discipline, communication in a landscape architecture class would be represented by different knowledge and genres than in classes such as English or engineering.

The specific perspective of genre that I utilize foregrounds the importance of social action. According to Miller (1984), genres should be defined by the actions they are used to accomplish. Genres are inherently social because they require multiple actions by multiple
people (Devitt, 2004). These recurring actions occur within specific social structures and are interpreted through the lens of that social structure (Devitt). The use of genres both constitutes and reproduces social structures (Berkenkotter & Huckin, 1995; Devitt).

Genres are not static, but are dynamically created through interactions within a community (Berkenkotter & Huckin, 1995). Genres do not exist separate from the people who use them; they are created through interaction (Devitt, 2004). The reciprocal, dynamic relationship between genres and the community in which they exist is further highlighted in the ability of genres to influence the actions of people within that community (Devitt). For design education, genres develop through interactions among instructors and students and these genres directly affect what people (such as students) do, as evidenced by students’ continual striving to meet generic expectations in critiques.

Genres serve specific purposes and functions for community in which they exist. Genres are separated from mere collections of communicative events by possessing a shared purpose (Swales, 1990). Groups utilize genres in order to achieve the purposes of that group (Devitt, 2004); social functions of genres are revealed through discourse (Devitt). For design education, then, genres such as the critique exist to serve purposes such as providing feedback to students as well as providing an opportunity for students to practice presenting and defending their work. The exact format of critiques responds to these needs by integrating both presentation and feedback.

Genres reflect norms and ideals of the community in which they develop (Berkenkotter & Huckin, 1995; Devitt, 2004). This reflection is also evident in the naming of genres, which, according to Swales (1990), demonstrates issues of importance to that
community. For example, in design education, students take part in a variety of oral genres (e.g., desk crits, reviews) that ultimately ask students to engage in similar skills, but the distinctions made by that community highlight the differing value they place on those genres. Furthermore, the reasons for varied genres reflect what constitutes acceptable discourse within that community (Swales, 1990). Devitt extends these ideas to argue that genres are also constructive of the values of a community.

Genres are socially developed and reinforced. By offering an ability to understand the underlying values of a culture or discipline, genres serve an integral purpose in identifying appropriate communication. However, genres are not inherent within people and must be learned.

**How Genres are Learned**

The importance of genre to people’s ability to present and understand information highlights the need to examine the manner in which genres are learned. Genre learning offers an interesting dynamic to this research because much of this type of learning is implicit rather than explicit. Therefore, I discuss here the ways in which we learn genres.

Genre knowledge is not explicitly taught, but is transmitted through socialization (Berkenkotter & Huckin, 1995, p. 7). Genres are learned in the much same way as native languages: not through grammar lessons but through experiencing interaction with others (Bahktin, 1986). The learning of genres is important to students’ learning to become part of a disciplinary community. As explained by Dias and Pare (2000):

Of crucial importance in the transition from school to workplace, from newcomer to community member, is the individual’s engagement in genres: the sociorhetorical
actions that operate as part of a community's activity system. Those genres have a central role in determining the nature and production of knowledge in the community, and thus the individual's participation in that knowledge-making. By engaging in the communal enactment of those genres, newcomers are drawn into the beliefs, attitudes, and values of the community, into its thought styles (pp. 4-5).

Genres offer an opportunity for newcomers to more fully understand the discipline into which they are entering. Berkenkotter and Huckin (1995) go so far as to identify genre knowledge as “a form of situated cognition embedded in disciplinary activities” (p. 3). Such knowledge includes form and content, as well as the ability to communicate in ways appropriate to specific situations. This perspective highlights that students in design would learn the genres of design (such as critiques) through interactions. In fact, multiple students told me in interviews that they learned how to communicate in critiques through trial and error.

True genre knowledge is not limited to formal conventions, but includes appropriate choices in topics and details (Berkenkotter & Huckin, 1995). As outlined in the definition of genre above, genres are complex and therefore understanding genres is a complex task. That complexity, however, offers rewards when genres are learned:

[W]hat we learn when we learn a genre is not just a pattern of forms or even a method of achieving our own ends. We learn, more importantly, what ends we may have...We learn to understand better the situations in which we find ourselves and the potentials for failure and success in acting together (Miller, 1984, p. 165).

Learning genres opens new opportunities to students, but also is highly individualized. For
example, in a study of graduate engineering students' intercultural communication, Beer (2000) argued that the students' process of acquiring new genres depends on their own decisions about what and with whom they will associate. By learning design genres, then, design students learn about the opportunities available to them through communication.

Furthermore, when students learn new genres, they are helping to develop their professional identities (Spafford, Schryer, Mian, & Lingard, 2006). The genres are in and of themselves a means of learning:

- Genres are not just forms. Genres are forms of life, ways of being…They are environments for learning. They are locations within which meaning is constructed.
- Genres shape the thoughts we form and the communications by which we interact.
- Genres are the familiar places we go to create intelligible communicative action with each other and the guideposts we use to explore the familiar (Bazerman, 1997, p. 19)

The ability of humans to not only learn new genres, but also to learn through genres highlights the importance of genres to the teaching and learning process, particularly when considering the variety of genres present in academia.

The research cited here has been predominately based within written genres, a balance reflected in what research exists. However, more recent work has begun to explore oral genres, under the perspective that oral genres are fundamentally different than written genres (Ong, 2002). Work on oral genres in teaching and learning includes work on genres within engineering and design (e.g., architecture; Dannels, 2000, 2002). The importance of considering oral genres – especially for classroom genres – is highlighted by Dannels’ (2009) notion of relational genre knowledge. This theoretical step highlights the importance of
relationships – above genre, context, and related influences – on students’ understanding of oral communication. In classes, students deal with both a situated audience (their professors) and an idealized audience (the workplace setting invoked by the assignment). Students’ task, then, is to negotiate the tensions between these different contexts, which is most productively managed by managing the relationships involved. For design students, these tensions are between their professors who want the students to demonstrate an understanding of particular concepts or techniques and students’ idealized audience of a client who is open to new design approaches.

As students learn genres through exposure to them, students are also learning about what is expected of them in their chosen discipline. Genres represent complex understandings of communication, which must be learned in order for a student to fully engage in a chosen discipline. Based on the understanding of genre outlined here, along with the earlier articulated assumptions regarding situated learning and the role of communication, I can now turn to the implications of the assumptions for this research.

Implications of the Assumptions

The assumptions laid out in this chapter reflect both my starting point and primary areas of concern for my research. These assumptions, therefore, have both tangible and intangible effects on the research that follows. In this section, I outline how I used these theoretical assumptions in applied ways in my research. Then, I discuss how I will move from this application back into theoretical thinking. Finally, I use these assumptions to set the stage for the review of previous literature that informed the research.
From Theory to Application

The assumptions outlined here reflect my views on the nature of communication and learning, along with the relationship between these two processes. Together these assumptions form the foundation for the research undertaken and explored in this dissertation. Not only do these assumptions reflect my thinking in approaching the project, they also had a tangible effect on the research design and implementation here in several specific ways.

First, my assumptions about the situated nature of learning led me to understand the importance of not only what students learn in design classes, but also how students learn in design classes. I approached this research with an open mind about what activities were used in design classes to help students’ learning and those activities’ relationship to authenticity. To that end, I explored what students were actually doing in class and with instructors, as well as the full range of approaches students took to presentations. I sought to understand more holistically what was happening in design classes and the process of students’ work rather than solely focusing on the product of their work.

Secondly, my understanding of the importance of communication led me to focus on the communication that occurred in these classes. My primary concern was with students’ presentations, but along the way, I also attended to their informal communication. When presenting instruction on communication, I emphasized to students the communication skills they already possessed and how they could utilize this knowledge. For my purposes, content knowledge was important as well as social knowledge. I stressed with students both learning what to communicate, and how to interact in the critique.
Thirdly, I utilized this view of communication to look at communication genres as they developed out of and were reinforced by the communication in design classes. I approached the project with an understanding that design students likely communicated in ways different from how students communicated in other classes because of the nature of their discipline. Rather than being concerned about making comparisons, then, I was focused on developing a fuller understanding of design communication. I recognized that genres were dynamic and therefore helping students develop a better understanding of communication was more important than teaching students a specific checklist of tasks.

Finally, these assumptions played an integral role in the methodological approach of this dissertation. Given the dynamic nature of communication and learning, I sought to integrate ethnographic methods into my efforts to understanding how students communicated in design critiques and in class time. Analysis was based on inductively derived coding, allowing the students’ and instructors’ experiences to speak to me, rather than me speaking to their experiences. Furthermore, my understanding of the complexity of these communication opportunities led me to uncover as much information as possible, such as observations, interviews, and quantitative measures of student attitudes. Together, this wealth of information should help me paint a picture of this communication context. More details regarding the methodologies employed in this research are in the methods chapter.

These assumptions affected the manner in which I approached my research design and implementation. From a focus on the situated nature of learning to the importance of communication to the variety of communication genres that make up a discipline’s discourse, I utilized these assumptions to guide my research. These assumptions impacted both my
thinking and my ability to carry out this research. Together with the research undertaken here, I also use these assumptions as a foundation for the theory I seek to build throughout this dissertation.

*From Application Back to Theory*

The assumptions outlined here form the foundation of the research that is more fully developed throughout this dissertation. However, the research also plays a role in informing the assumptions and the ultimate implications of these assumptions and the study results. Following a careful analysis of the results as well as the literature that preceded this work, I hope to be able to more fully articulate an understanding of communication instruction that is grounded in disciplinary genres and the effects of such instruction on students.

I ultimately respond to two main conditions within instructional communication and communication-across-the-curriculum literature. First, I wanted to respond to the need for a further understanding of oral genres, particularly as they related to teaching and learning. Secondly, I wanted to respond to the need for empirical research supporting not only communication-across-the-curriculum research generally, but also discipline-specific work.

By grounding my exploration of these issues in the existing literature, I hope to add to the scholarly understanding of the role of communication – both formal and informal – on teaching and learning. Through a disciplinary approach grounded in an understanding of genre, I believe that this approach will be a fruitful resource for researchers and teachers. My goal, then, is to contribute to theoretical understandings of teaching and learning while also considering the practical implications of such understandings.
In approaching the application of my assumptions in a manner that would be productive for my end-goals, I utilized several bodies of research. First, I looked to communication-across-the-curriculum research, which provided background on the role of communication in the classroom from both formal and informal perspectives. Because of my focus on the specific discipline of design, I also examined existing literature on design education. Given my desire to more fully understand the constraints and opportunities of communication within this discipline, I also examined existing literature on two student characteristics of particular interest: self-efficacy and communication apprehension. Together, these areas of literature form a foundation for the series of research questions and hypotheses examined in this dissertation.
CHAPTER 3: LITERATURE REVIEW

In addition to having a foundation in the theoretical assumptions outlined in the previous chapter, the research here is grounded in existing literature in two main areas that inform the design, implementation, and analysis of this work: communication across the curriculum and student characteristics. The literature in communication across the curriculum reveals an approach to integrating communication into classrooms that is supported by research findings and practical applications. Literature on student characteristics in the classroom provides support for the influence of certain student characteristics on performance in and attitudes toward formal communication in the classroom. Together, these two areas of research set the stage for the research completed here and lead to the research questions and hypotheses that will be investigated to understand students’ performances in design critiques.

Communication Across the Curriculum

CXC is often defined as “any instructional program in which students employ speaking and listening effectively in specially designated oral communication-intensive courses in non-communication disciplines” (Cronin at al., 2000, p. 66). Communication-intensive (C-I) courses are courses offered in disciplines outside of communication and require a significant communication component (e.g., presentations, oral exams, debates); however, not all CXC programs require C-I courses. Other programs include elements such as faculty development. CXC programs have existed in the United States for more than 30 years (Cronin et al., 2000) and although all programs hold basic elements constant, scholarship in CXC shows multiple points of focus throughout the tenure of CXC research.
In this section, I will review CXC research by examining the following topics within CXC: rationales, models, and approaches of CXC, trends and topics, and the Communication in the Disciplines (CID; Dannels, 2001) approach. Within the discussion of CID, I will address the specific communication needs of students in design classes (e.g., landscape architecture) because this is the discipline on which my dissertation is focused.

**Rationales**

The foundation of CXC draws on two primary rationales: CXC programs increase communication competence and CXC programs increase learning of course content (Tomlinson, 1999). These two rationales are articulated throughout CXC literature, and are reflected in the descriptions of programs and projects that utilize CXC.

A primary goal of many CXC programs – and their rationale for existence – is that such programs can increase students’ communication competence. Although many curricula require an introductory, general education communication course, “Except for students majoring in communication, most undergraduates take at most one course emphasizing” communication skills (Cronin et al., 2000). Students in courses with added communication requirements are given the opportunity to continue to improve their communication skills, which is intended to decrease the degradation of communication skills that may have been developed in introductory communication courses. Furthermore, CXC, more so than an introductory course, can allow for communication instruction in discipline-specific ways. This rationale is primarily focused on students’ communication abilities in formal settings (e.g., presentations).
A second rationale for CXC programs hinges on the ability of such programs to increase learning of course content. Communication represents a fundamental mode of learning (Modaff & Hopper, 1984), yet is lacking in courses that are dominated by lecture. Communication, both formal and informal, can increase students’ critical thinking skills (Lerstrom, 1990), promotes active learning (Cronin & Spencer, 1990; Palmerton, 1989) and allows students to relate speech and thought (Cronin & Spencer; Palmerton, 1991). Furthermore, instructors who implement increased communication in the classroom may be able to better assess students’ progress and adapt accordingly (Corson, 1988). In contrast to the first rationale, this second rationale for CXC is primarily focused on the role of informal communication in the classroom (e.g., class discussions).

Learning to Communicate and Communicating to Learn

Related to the two primary rationales, CXC research can typically be categorized as falling into one of two camps: “learning to communicate” or “communicating to learn.” Programs and research based on “learning to communicate” are focused on improving students’ communication competence, while a focus on “communicating to learn” acknowledges and encourages the role of language in shaping thought (Palmerton, 1991). Because much of the other CXC work described throughout this literature review relies most heavily on the learning to communicate perspective, I will focus here on expanding the idea of communicating to learn.

Adherents to the “learning to communicate” approach are primarily concerned with the first rationale for CXC: improving students’ communication skills. The majority of CXC work has focused on students’ communication competence, which has led to an emphasis on
“product” (e.g., a presentation or in-class debate) rather than process (Palmerton, 2005). The majority of CXC research thus far has been focused in this manner. For example, researchers have examined the formal communication needs of engineering students (e.g., Darling, 2005; Darling & Dannels, 2003). Similarly, the majority of CXC instructional tools are geared toward formalized communication events that are graded (e.g., Dannels, 2009).

The portion of CXC related to “communicating to learn” focuses on how communicating in classes can help improve students’ learning. Rather than focusing on students’ communication skills, this approach is concerned with how to help students learn course content and disciplinary values through communication. The approach is based on the premise that “Language and thought are inextricably connected and as undergraduates develop their linguistic skills, they hone the quality of their thinking and become intellectually and socially empowered” (Boyer, 1987, p. 73). This approach is often encouraged, although not as commonly applied, despite the prominence of such a focus in the rationales and various explanations of CXC.

Modaff and Hopper (1984) provide some of the most robust rationale for communicating to learn. They argue that not only is speech multisensory, it also connects individuals and their environments and guides behavior. Furthermore, speech triggers higher conceptualizations, facilitates task performance, and promotes literacy. Modaff and Hopper note that integrating communication activities into classrooms can be as simple as asking more questions of students and allowing students more time to answer questions; they also offer more involved suggestions such as peer teaching or oral testing. Put simply, their suggestion of how to improve education is “more student talk. Speech in the classroom adds
personal touches and uses human sense to teach. Speech is the most human, the most involving, the most active, the most supportive-of-learning of any student activity” (p. 41). These ideas were more fully explored in the second assumption of the theory chapter of this dissertation.

CXC programs also allow students multiple opportunities to communicate, which allows for these communicating-to-learn opportunities:

SAC [Speaking Across the Curriculum] courses help students learn by giving them the opportunity to orally articulate ideas, by helping them discover how their communication functions in context, and by giving them a chance to further their thinking through continued articulation. SAC courses are structured to provide more than one chance, being developed around the idea that thinking and talking are integrally related (Palmerton, 1991, pp. 5-6).

Arguments such as this one from Palmerton are commonly used in supporting CXC programs as a whole, but also lend themselves easily to supporting communicating to learn as an area to research and implement.

Communicating to learn can help students not only with overall learning, but also with discipline-specific learning. For example, Palmerton asserted that when communication-intensive courses focused on process as well as product, students “learn explicitly the communication conventions requisite in their fields” (Palmerton, 1991, p.4). She goes on to argue that a focus on product is not enough, and that communicating to learn is vital:

Learning is a rhetorical activity. A focus purely on skill development in SAC programs or in our own classrooms dismisses the importance of expressive talk in the
process of learning—including learning how to use communication skills. If we believe competent speech is based upon knowledge of the kinds of communication appropriate to the context and the ability to put behaviors into practice, then we must value the talk which aides in the discovery of that knowledge (Palmerton, 1991, p. 8). Communication, then, should be more than simply presentations, but should provide students a venue for exploring the learning they are being asked to undertake.

Although arguments such as those of Palmerton have been articulated, research in communicating-to-learn generally and communicating-to-learn within CID are both lacking. However, the literature of WAC, writing in the disciplines (WID), and writing to learn provide an excellent model for how to integrate communicating to learn. Bazerman, et al. (2005) traced the roots of writing-to-learn (and an emphasis on process over product) to James Britton and Janet Emig, who encouraged the use of exploratory writing as a pedagogical tool. Applebee (1984) summarized the major benefits of writing-to-learn: writing allows for reiterative processes rather than a linear sequence, writers utilize different processes while writing, and the processes depend on the specifics of a task. By allowing for informal writing opportunities, students were able to process information in a myriad of ways, which encourages learning. Discipline-specific applications of writing-to-learn include personal journals in biology (Cannon, 1990), in engineering (Selfe & Arbabi, 1983), and in nursing (Cowles, Strickland, & Rodgers, 2001). Writing-to-learn has become widely accepted and applied within WAC programs, but the focus on oral communication abilities and their similar impact is lacking.
Although communicating to learn has suffered from a dearth of research, we can draw on a related area of research – classroom participation – to highlight the benefits of this perspective. Research on class participation demonstrates that student learn more when they are actively involved in a class (e.g., Junn, 1994; Petress, 2006). However, engaging students in participation is a complicated prospect due to multiple conceptions of participation (e.g., Karp & Yoels, 1976; Petress) and multiple influences on participation. For example, student characteristics such as willingness to communicate (Chan & McCroskey, 1987) and gender (e.g., Howard & Henney, 1998) influence participation patterns; participation is also influenced by instructor characteristics (e.g., eye contact; Caproni, Levine, O’Neal, McDonald, & Garwood, 1977) and classroom features such as desk arrangement (e.g., Levine, O’Neal, Garwood, & McDonald, 1980) and class size (Auster & MacRone, 1994).

With a primary focus on learning to communicate in CXC programs, the idea of communicating to learn is largely ignored. The precedent set by WAC scholars provides evidence that a similar focus in oral communication as a means of learning would be fruitful, particularly when considered with active learning and class participation literature.

Regardless of the rationales and foci behind CXC programs, such programs can be implemented in a variety of ways.

Models of CXC

Two models dominate the implementation of CXC: training and consulting/training (CONTRA; Cronin & Grice, 1993). These two models developed out of the need to educate faculty in other disciplines about how to most effectively design, implement, and assess
communication assignments and activities. Each model has advantages and disadvantages, which should inform the selection of a model for CXC work.

Historically, the training model has been predominant (Cronin & Grice, 1993). This model provides non-communication faculty with education through workshops, seminars, or retreats (Cronin & Grice, 1993). Such an education is focused on teaching theory and skills needed for teaching C-I courses. After receiving such an education, the non-communication faculty members then teach C-I courses without the direct involvement of communication faculty; students in such courses do not interact with communication faculty as part of the course.

The CONTRA model combines the training model with consultation by communication faculty (Cronin & Grice, 1993). While non-communication faculty do receive education about how to integrate communication, faculty from communication help develop assignments and activities, are available to students for consultation, and aid in the assessment and evaluation of communication assignments.

While both models are clearly advantageous over models where no communication training is provided for non-communication faculty, each model has advantages and disadvantages (Cronin & Grice, 1993). The training model allows for a widespread integration of CXC with less of a burden on communication faculty (in terms of time) or departments (in terms of money). However, the relatively small amount of education that non-communication faculty receive in training may not adequately prepare them to fully integrate communication into their courses, which may lead to superficial or even unintentionally erroneous treatment of communication instruction. The model may also
encourage a perception that communication as a field lacks substance and rigor, and universities may use the C-I courses developed under this model for accreditation purposes rather than courses based in communication, which further diminishes the role of communication departments.

The CONTRA model has clear advantages over the training model, but is also not without its drawbacks (Cronin & Grice, 1993). The CONTRA model allows for the continued involvement of communication faculty, which helps ensure the quality of communication activities and instruction received in C-I courses. Furthermore, the model may encourage students to seek out further communication courses. The collaboration that is key to the CONTRA model may also encourage interdisciplinary research. However, the model also presents several disadvantages, including the time and monetary commitment required to implement such a model. Because the model requires the dedication of more communication faculty members than would the training model, such an implementation may suffer from a mismatch between working with CXC and faculty members’ professional goals.

Typical CXC work involves the integration of communication assignments and assessment into courses across the curriculum, but the approach used to make such integrations can be selected based on the characteristics and needs of the institution. While the training model has the advantages of requiring less time and money, the CONTRA model provides a more comprehensive approach that is less likely to denigrate the reputation of communication departments. Ultimately, the approach taken should be focused on using
communication for the two primary reasons underlying communication work: to improve communication competence and to improve content learning.

_Trends in CXC Research_

Despite variations in rationales, foci, and models, the CXC movement’s history reflects a coherent, yet diverse, set of concerns. Both CXC and WAC have their roots in the "language across the curriculum" movement, which began in London in 1966 with English teachers who wanted to examine the role of talking in their lessons (Parker, 1985). Their efforts soon expanded to include teachers from other disciplines, as well as a focus geared toward understanding the ways in which language (either spoken or written) was used in education. The root of the contemporary CXC movement is commonly identified as the program at Central College in Pella, Iowa in the mid-1970s (Tomlinson, 1999).

Since its inception, CXC research has branched into a variety of arenas. The movement can be broken into three distinct movements: establishment and justification (early work through 1995), investigation and critical reflection (1996-2000), and reinvention and collaboration (2001-present; Dannels & Housley Gaffney, 2009). Early research was marked by articulating the need for CXC programs and early explanations of _how_ to develop such a program, while the middle movement was primarily concerned with codifying CXC research. The current movement within CXC has been toward the need to look at the communication of specific needs, as seen in the communication-in-the-disciplines (Dannels, 2001) framework, discussed later, as well as collaboration with others, such as with speaking centers.
Although earlier scholars divided CXC research into four categories (implementations, speaking labs, the creation of resources for individual instructors, and campus-wide implementations; Hay, 1987), a full examination of the past 25 years of CXC research indicated that CXC research has touched on six distinct arenas. Within each era, CXC research has focused on meta-reflections about CXC, program descriptions, instructional resources, theory building, discipline-specific empirical works, and assessment (Dannels & Housley Gaffney, 2009). The focus of each movement shifted slightly, but overall the main areas where researchers have chosen to focus illuminates the primary concerns of both CXC researchers and practitioners.

Throughout the history of CXC research, numerous articles have provided meta-reflections on CXC research and practice. Although several of these articles stem specifically from communication scholars dedicated to CXC work (e.g., Cronin & Glenn, 1991; Cronin et al., 2000), other articles have focused on the extent to which communication skills are being taught in other courses and disciplines, such as Reave’s (2004) survey of technical communication education in engineering programs. These “state of” articles provide a basic summary of CXC research and provide an entry point for understanding the purposes and trends in CXC research.

Another common focus in CXC research is to provide a description of a program or course implementation. Examples of programs discussed include Hamline University (Palmerton, 1990), Radford University (Cronin & Grice, 1991), and North Carolina State University (Dannels, Kedrowicz, & Roth, 2007). Implementations include teaching mathematical skills in elementary and secondary education (Cronin & Spencer, 1990) and
geometry (Myers, 1991). Other implementations include integrating communication into a marketing research curriculum (Cronin & Tong, 1991) and into education for in-service teachers (McCroskey & Richmond, 1992).

Instructional resources provide the “what” and the “how” of CXC programs. Such publications provide the details of how to initiate a program (e.g., Weiss, 1988), obtain and maintain funding (Cronin, Grice, & Wiedeman, 1997), and assess a program (Cronin & Grice, 1991). Such publications are primarily focused on the practical, rather than the theoretical, aspects of engaging in CXC work.

A small selection of CXC work is focused on building the theoretical foundations of the research. These articles provide the justification for CXC work in addition to advancing the field through theoretical discussion. For example, Cronin and Cronin (1992) provided the theoretical basis for using interactive videos in CXC instruction. Modaff and Hopper (1984) provided an explication of why speech should be taught, while Dannels (2001) advanced CXC research into discipline-specificity. Dannels’s communication-in-the-disciplines (CID) framework was later followed by theoretical discussions of the framework (Bazerman, 2005; Fleury, 2005; Palmerton, 2005). More details about this theoretical framework will follow later in this section.

Discipline-specific empirical works add data-driven research to CXC work and further support initiatives to engage with the communication needs of specific disciplines. Such work spans from design education (e.g., Morton & O’Brien, 2005) to teacher education (e.g., Smith, 2005). Pre-professional programs, such as engineering (e.g., Darling & Dannels,
2003) are also commonly examined in these empirical ways. This category of work adds empirical support for the creation, implementation, and assessment of CXC programs.

Finally, CXC research often focuses on assessment and meeting standards. Such articles focus on how to assess competent communication (e.g., Weiss, 1989) and how to use CXC as a means of assessment for larger programmatic goals (e.g., Weiss, 1993). Numerous incarnations of national or local standards have also been articulated and debated (e.g., Rubin & Hampton, 1998).

CXC research has ranged from the theoretical (e.g., Dannels, 2001) to the practical (e.g., Cardoza, 1994). Commonly, CXC work involves a discussion of a specific CXC program or guidelines about how to initiate, maintain, or assess such a program. Early CXC research was typically of a practical nature, and more recent scholarship has focused more on the theoretical foundations of CXC and the pursuit of discipline-specific empirical work. The trends seen in CXC research are indicative of the primary areas of concern for CXC scholars.

*Communication in the Disciplines*

A fairly recent shift in CXC has lead to a focus on the discipline-specific nature of CXC. Communication in the disciplines (CID; Dannels, 2001) provides the theoretical framework for this approach. CID is predicated on students gaining initial, basic knowledge in a basic communication course, which can then be further enhanced with specific communication instruction. The CID framework is based on four premises: oral genres allow for disciplinary learning, oral argument is situated, communication competence is locally negotiated, and learning to communicate is contextual. The framework has been applied in multiple disciplines, but has not gone without theoretical debate.
Dannels’s (2001) first premise – that oral genres allow for disciplinary learning – has its roots in the idea of genres as being socially negotiated within contexts (Miller, 1984). Dannels draws on research in disciplinary knowledge that points to genres as being both determined by and determining knowledge within a community (e.g., Bazerman, 1988; Latour, 1986). The argument is backed by research examining the specific oral communication needs within specific contexts, such as engineering students’ decision making (Winsor, 1999). The ways in which students are expected to communicate are tied closely to the foundations of that discipline. For example, students in design majors, such as architecture, are regularly called upon to present their work, after which they receive and respond to oral critique (Anthony, 1991). Such a model of educational illustrates a genre that is specific to a given discipline that may not be appropriate in other disciplines (e.g., mathematics).

Not only do disciplines utilize unique genres of communication, oral argument is situated within those specific genres (Dannels, 2001). The precise form of how an argument is presented (e.g., orally versus written reports) is reflective of disciplinarity. Furthermore, the evidence used depends on the situation:

Engineers may use historical design practices as effective forms of argument, while sociologists may appeal to current commentary on social practice….In one discipline, it may be persuasive to advocate a problem-solution argument, while in another it may be more persuasive to use a sequential form (Dannels, 2001, p. 149).

Dannels also includes delivery characteristics, such as delivery style, visual and other presentation aids, and credibility as aspects of oral argument that may be discipline specific.
The premise that communication competence is locally negotiated illustrates the need to develop standards and assessments based on the specific oral genres and arguments that represent a discipline (Dannels, 2001). With the differences in disciplinary communication highlighted by the first two premises, the need to assess communication competence based on the standards relevant to a given discipline follows. For example, if engineering students are expected to draw more on numerical support than emotional support, their communication should be judged on their ability to use numerical support and not on their emotional appeals.

Finally, Dannels (2001) draws on situated learning literature, which argues that learning and understanding are tied to the context in which they occur (e.g., Lave & Wenger, 1991). The close connection between a discipline’s oral genres and the values of that discipline allows students to learn about their discipline as they engage in the oral communication. More details regarding the role of situated learning in this research are provided in the first assumption outlined in the theory chapter.

Following her discussion of the CID model, Dannels (2001) provided initial recommendations for how a CID program should function. First, a CID model requires the identification of a discipline’s specific desired communication outcomes. This step would help answer the question of “What makes a competent communicator?” within the discipline. Secondly, the model should identify the genres of communication used within that discipline, and to work within those genres to support the communication needs. Finally, the application of CID requires discipline-specific standards and assessment. If the crux of CID is to be discipline-specific in identifying and encouraging communication practices, it follows that
such a model also requires the assessment of communication abilities based on those communication practices specific to the discipline.

In Dannels’s (2001) initial articulation of the CID model, she points to several advantages of such a model. First, the model provides relevant instruction for students, and increases the chances that students will learn particular skills that should benefit them in their chosen careers after graduation. Secondly, the model encourages partnerships between communication and other disciplines. Thirdly, the model encourages deeper examinations of communication in courses such as public speaking. Fourthly, the model encourages the integration of communication into other disciplines in a way that may ensure the continuation of such programs. Fifthly, Dannels points to the advantage of the theoretical foci that can be provided by such a research track. Finally, the model advances the communication discipline by opening new research venues.

**Theoretical Debates**

CID has not been without its detractors. Specifically, Fleury (2005) argued that rather than focusing on communication *in* the disciplines, CXC research should be focused on communication *against* the disciplines (CAD). He argued that liberal education, rather than the “compartmentalized specialization” of CID should be of concern for CXC because a liberal education encourages students to “question received wisdom, practice and array of communication styles, and play with established communication conventions” (p. 73). He argued that focusing on the core styles of expression, exposition, and persuasion will help meet the liberal education goal of making good citizens. His argument was not that CID is necessarily flawed, but that it is not sufficient. He further argued that working against the
disciplines by crossing disciplinary boundaries can, in fact, further illuminate disciplinary norms.

Responses to Fleury’s (2005) criticisms of CID reflect the need to consider not only the product of CXC work, but also the process. Fleury’s proposal of working against the disciplines is focused on the product of CXC (Palmerton, 2005), a focus which ignores the importance of considering the contextual cues that influence communication; a similar criticism is levied against much CXC work. Furthermore, Fleury’s focus on “core” styles provides only a narrow view of communication that does little to help remedy the problems with CID that he originally articulated (Palmerton, 2005). The CID approach, rather than diminishing students’ awareness of other approaches to communication, actually can promote a greater awareness of disciplinary similarities and differences (Bazerman, 2005; Palmerton, 2005).

A major concern with Fleury’s (2005) proposal of CAD is that ignores communicating to learn (Palmerton, 2005). Fleury’s focus on styles ignores that communication competences is “not just about the ability to enact a set of skills, but also as knowledge about how communication functions within context” (Palmerton, 2005, p. 81). Palmerton points out that although CID may fall into the tendency to be product oriented, the framework also advocates being an ethnographer, which allows for the recognition of when communication does not fit within prescribed genres. The method also allows for a more robust exploration of complexities that would be overlooked by Fleury’s broad categories.

The CID approach articulated by Dannels (2001) provides a justification of and approach to examining the communication needs of specific disciplines so students can learn
to address those specific communication needs. Although some may argue that such an approach is too narrow (e.g., Fleury, 2005), the approach allows for an examination of communication that is specific enough to be tangible to students while allowing for comparison to other disciplines’ norms. The framework also advocates an ethnographic approach, which allows for uncovering the nuances of communication within a given context.

Uses of the Framework

Since its introduction, the CID framework (Dannels, 2001) has been utilized primarily in pre-professional programs, such as engineering (e.g., Dannels, Anson, Bullard, & Peretti, 2003; Darling & Dannels, 2003) and design (e.g., Dannels, 2005; Dannels & Martin, 2008). However, even research that does not explicitly purport to be CID draws on the need to examine communication within, rather than across, disciplines. Here I will explain research on discipline-specific communication in four arenas which form much of the body of such work: engineering, business, medicine, and design.

Communication in engineering literature has illustrated the varied communication skills needed by engineers. For example, students face multiple challenges when working in a group, including integrating information from multiple disciplines, management of audiences, integrating communication and content, and dealing with team issues (Dannels et al., 2003) Other research has indicated that competent communication in engineering could be boiled down to translation (Dannels, 2002). Specifically, effective presentations in engineering were simple, sold an idea, were numerically rich, were results oriented, and were visually sophisticated. Despite the specific challenges of students, engineering students saw
communication assignments they were asked to complete as keeping them from their “real”
work (Dannels et al., 2003).

Business programs have also paid attention to communication needs. Key
communication skills cited as essential for a basic course in business communication
included listening and fundamentals of communication (James, 1992). Additionally,
communication theory, intercultural communication, and nonverbal communication have
been put forth as essential content for business students (Plutsky, 1996). Other research
indicates that students can learn communication skills relevant to business communication
through a variety of methods, including community service (Tucker, McCarthy, Hoxmeier, &
Lenk, 1998).

In the medical fields, communication skills identified as essential involve
communication among doctors, nurses, and patients. For example, one particular area of
concern is nonverbal communication skills with patients (Duggan & Parrott, 2001). Other
aspects of interactions between doctors and patients, such as doctor-patient interviews
(Aldrich, 1999) and power in the relationships (Ainsworth-Vaughn, 1998) have been
identified as key areas in which communication education is needed. In a different approach
to medicine, key communication skills in veterinary medicine have been investigated
(Thompson & Hendrix, 2000).

More recent disciplinary work has been done in design. Researchers from within
design have highlighted the importance of communication skills for design students
(Anthony, 1991), and other researchers have highlighted the structure of the primary
communication event within design: the critique (Swales, Barks, Ostermann, & Simpson,
Communication in design literature has also indicated a variety of communication genres that students are asked to undertake (Dannels, 2005) while also articulating the professionalization that occurs in such communication events (Dannels & Martin, 2008; Oak, 1998). It is this area of CXC/CID work where I place the current research; therefore, more details about design education will follow in the next section.

The disciplines in which CID has been applied illustrate the wide appeal and appropriateness of such an approach. Although not all disciplines have fully developed bodies of CID research, the literature that exists does point to variations in communication needs and foci between disciplines. Because the focus of the current research is in design, I now turn to that body of literature to more fully explicate the communication abilities needed by design students.

**Design Education**

One current discipline of interest for CID research is design. Students in design majors (such as architecture or landscape architecture) take part in a discipline brimming with communication opportunities, yet lacking in communication instruction. Researchers have begun the process of uncovering the nuances of communication in design education, and this research seeks to add to that knowledge. Therefore, I will next review what is known about design education and the communication needs of students within this discipline.

According to Anthony (1991), juries (also referred to as “critiques” or “reviews”) became a popular form of evaluation during the 1940s and 1950s, with the tradition continuing today. She argued that from the perspective of practicing designers, “juries should provide an opportunity to learn how to sell your design work, to present your ideas succinctly
and accurately and to convince potential clients to hire your firm” (p. 30). In a related focus on communication in critiques, Barrett (2000) saw critiques as “dialogues between instructors and students that engage the different perspectives of the instructor, the student whose art is being critiqued, and the student artist’s peers” (p. 30).

Other theorists (e.g., Schön, 1983, 1987) have conceived of the design process as communicative, while also noting that multiple types of communication skills are needed: “Communication is not just about effective description: equally important is listening to clients and negotiating and facilitating the process of building design” (Nicol & Pilling, 2000, p. 5). Professional organizations, such as the American Institute of Architecture Students have argued the importance of communication skills for design students (Koch, Schwennsen, Dutton & Smith, 2002). From within design disciplines (specifically, architecture in this case), scholars note the need for communication to be integrated into design education:

Design studio learning embraces numerous forms of representation – visual, verbal, tactile, written – and is therefore rich in communication potential….Yet in schools of architecture there is usually little *systematic* development or assessment of communication and interpersonal skills. Even though in practice architects need to be able to communicate concepts to different audiences (for example specialist engineers, clients, the public), it is not common for students to gain experience in tailoring their presentations to these different groups, or for this ability to be assessed. More importantly, the skills required for two-way communication, as against mere
presentation, are even less likely to be purposefully developed and assessed (Nicol & Pilling, 2000, p. 8).

Underlying concerns about communication by design students is a concern about students not being given instruction or support for this communication. Such interest in communication in design is reflective of the understanding that design ideas can be represented both visually and linguistically (Dong, 2006).

The specific format of the critique is dependent on the form of the review, and communication requirements can take on multiple forms. Dannels (2005) identified four oral design genres: desk crits (one-on-one informal interaction between student and instructor); pin up (work is displayed for feedback from both instructor and fellow students); juries, crits, and reviews (moderately or completely formal events where students present their work and receive feedback); and open houses (formal event where guests are invited to circulate among students’ work). Fredrickson (1990) highlighted that most of the communication that occurs in critiques is between students and jurors. Furthermore, students face difficulties translating their ideas into verbal communication, particularly when they perceive the environment to be hostile and feel the need to be defensive. Fredrickson also speculated that the stress of the critique contributed to students focusing only on mundane details, losing track of planned points of discussion, and losing confidence. Other problems in critiques include personal criticism, invasions of personal space, and being laughed at, a tendency for instructors to exert their expertise over students, and students feeling discouraged (Barrett, 2000). Such examples of problems faced by students are particularly concerning given the emphasis placed on students' abilities to orally communicate in design (Dannels, 2005).
Most design literature that addresses communication skills uses what Morton and O’Brien (2005) termed a “public speaking” approach, when instruction is given at all (Nicol & Pilling, 2000). The advice given to design students on how to communicate is mostly general and vague, with little disciplinary specificity. Morton and O’Brien noted that the advice given is generally motivational, and with the exception of advice about preparing for the visual aspect of presentations, is not design specific. For example, Anthony (1991) advised students to dress appropriately for the occasion, prepare in advance, and emphasize key points – all advice that could be garnered from any public speaking course and that says nothing about communicating like a designer.

Although still minimal, scholars are beginning to map out communication competencies in design. Swales et al. (2001) noted two components of design critiques: the student’s presentation and feedback given to students. Students’ presentations could be broken down into three levels: the description of the site (context), an architecturally contextualized rationale of the site (concept), and depiction of design details, which is where most of the talking time was spent. They found that students whose presentations were deemed most successful were able to convince the audience of the value of the design, and also provided the ability for audience members to visualize the design as though it really existed. The first level of presentations was generally characterized by present tense usage and simple sentence structure, while later stages use more conceptual language and more of the first person singular. Morton and O’Brien (2005) found that their first-year students’ presentations varied somewhat from the presentations made by Swales et al.’s graduate
students, but also recommended providing first-year students with the genre framework proposed by Swales et al. as an educational tool.

Researchers have also generated frameworks of communication skills for design students. In describing a program designed to improve architectural students’ abilities to interact with other people, Fisher (2000) highlighted that students would gain abilities in:

- Management of both sending and receiving messages
- Active listening
- Developing and asking effective questions
- Selecting key pertinent information to communicate
- Considering the audience, particularly in language choices
- Managing both drawn and spoken material
- Giving and receiving constructive feedback

Discipline-specific skills advocated for design students include the ability to explain process, not just product; prioritizing information, illustrating appropriate use of jargon; observe and listen; separate work from the self (Dannels, 2005). Five competencies vital for design students were derived from feedback given during design critiques: systematic demonstration of design evolution, comprehensive explanation of visuals, transparent advocacy of design intent, credible staging of presentation, and appropriate interaction management (Dannels, Housley Gaffney, & Norris Martin, 2008). This particular set of competencies will be utilized in the current research.

The design literature has pointed out that studios and critiques provide an opportunity for the “hidden curriculum” of design to be transmitted to students, such as the values and
norms related to the discipline (Dutton, 1987). Furthermore, others believe that critiques should be used as a learning tool and as “benchmarks for growth” (Koch et al., 2002, p. 17) rather than harsh criticism. Critiques can serve as both an opportunity for learning and an assessment point (Wilkin, 2000). Although some reviewers utilize set criteria for evaluation, Wilkin points out that others may try to provide commentary on diverse issues in the interest of students’ learning. Students, in response, have expressed confusion about what to expect in a critique and also expressed concern that the feedback they received was disjointed or confusing.

As noted by Swales et al. (2001), feedback is an integral part of the design critique. Although research on feedback in other disciplines (e.g., composition, public speaking) exists, little is known about the feedback given in design critiques. In an effort to fill this void, Dannels and Martin (2008) developed a typology of feedback given in design studios: judgment, process oriented, brainstorming, interpretation, direct recommendation, investigation, free association, comparison and identity invoking. This typology highlights the various goals achieved during design critiques. Students not only receive feedback about their actual designs (e.g., judgment), but also learn what it means to be a designer through identity invoking and comparison to other designers or design concepts. The focus of feedback shifted throughout the levels of design education. Process-oriented, investigation, and brainstorming feedback occurred most commonly in upper-division studios and not at all in a freshman studio. Judgment, recommendation, and free association were more common in lower-level studios than in upper-level studios. Dannels and Martin argued that the feedback they saw reflected differing educational goals and the role of the expert in novice and expert
studio. For upper-level students, critics became more collaborative and creative in working with students, compared to the more directive role taken by instructors in lower-level studios.

In addition to critiques, students also take part in studio conversations and individual, informal critiques (Barrett, 2000). Edström (2008) found that students desired a supervisor (instructor) who related to and respected students, along with supervisors who did not impose their own working ways on the student. Furthermore, students indicated two main times when they wanted to talk to an instructor: when work is finished and during the working process. Students also indicated three main reasons for having a conversation: expanding the student’s ways of doing work; receiving feedback on their work to learn others’ interpretations; and placing the work in a larger context, such as the theoretical underpinnings or immediate tradition of the work. Edström (2008) placed these last two reasons for interactions explicitly in the context of communication: how am I communicating (assessed by other people’s interpretations) and where am I communicating (what other contexts might students access)? These interactions are considered an integral part of design education:

The students grow through interaction with others, through studio conversations, as shown here, but also through communication with fellow students… Interaction complements the periods of solitary work in the studio, which in turn give the students valuable time to explore and work things through. These periods are therefore learning situations as well, especially when it comes to particular aspects of the work process, but in relation to the overall development of artistic work it is argued that interaction is absolutely vital (Edström, 2008, p. 41).
These informal interactions, then, are an important part of students’ learning in addition to providing an opportunity for students to grow as designers.

The existing literature on design education, and specifically on communication within this discipline, points to a class structure that fully envelopes students in a particular culture, one full of communicative expectations that often far more implicit than explicit, such as the meanings underlying feedback given during critiques. The numerous high-stress situations in which students are expected to speak, combined with the articulated difficulties students face in these situations, points to a need for further research within this area – a call that can be answered by CXC.

**Summary and Conclusions**

CXC literature demonstrates the primary rationales for CXC work: improving students’ communication skills and increasing their learning based on communication. Throughout the history of CXC literature, scholars have examined specific CXC implementations, provided guidelines for CXC programs, examined discipline-specific data, discussed theoretical foundations, and provided assessment guidelines and data. The CXC movement took a theoretical step with the introduction of the CID framework (Dannels, 2001), which advocated the need to be discipline-specific in CXC work. Furthermore, the framework hinges on systematic data collection and analysis in order to produce effective instruction for students. The usefulness of the CID framework has been demonstrated in the communication-intensive field of design, although much work needs to be done to more fully understand not only the communication skills needed by students, but also to consider student characteristics that play a role in the classroom. While CXC literature has provided
evidence of the effect of CXC on students’ presentational abilities, the literature is lacking on other effects, such as how students’ self-perceptions are affected by communication instruction. Two major student variables – communication apprehension and students’ self-efficacy for communication – are related to their abilities to perform in formalized communication events. However, the actual effects of communication instruction on these perceptions remain unexplored. Therefore, I next turn to a review of these two student variables and the effect that communication instruction may have in relation to these variables.

Student Variables

An important consideration in instructional communication research is student characteristics, because instructional communication is transactional (Mottet & Beebe, 2006). Students’ communication in the classroom can be greatly influenced by student variables such as communication apprehension, which play a large role in instructional communication research (McCroskey & Richmond, 2006). Because of the role that student characteristics play in communication in the classroom, it is vital to highlight some of these characteristics. Although numerous student characteristics may play a role in students’ communication during design classes and their performances, I have chosen to highlight two such characteristics. First, I will focus on students’ self-efficacy, as this characteristic has been shown to be highly influential on students’ performance, and is affected by what happens in a class. Secondly, communication apprehension – a foundational concept in instructional communication – plays a role in both informal and formal communication events, and is thus considered here.
Self-Efficacy

Bandura defined perceived self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (1997; p. 3). Bandura placed beliefs of self-efficacy as central to human agency, noting that if people do not believe they can produce results, they will not attempt to do so. Self-efficacy is based on a people’s perceptions of their abilities to perform tasks to varying levels, not an assessment of the skills they perceive themselves to possess. Efficacy is not a fixed ability, but rather is a generative capability that connects cognitive, social, emotional, and behavioral subskills.

Self-efficacy should be examined within a specific domain of functioning, and consists of three components: magnitude, strength, and generality (Bandura, 1997). Magnitude refers to the level of difficulty of a task. For example, lifting a 10-pound weight has a lower magnitude (lower difficulty level) than does lifting a 100-pound weight. Strength is based on a person’s conviction about their ability to perform a task. Generality refers to people’s ability to judge their efficacy within different domains. People may judge themselves to be efficacious in multiple domains, or only in specific instances.

Although attempts to develop generalized self-efficacy measures have been made (e.g., Scherer et al. 1982), Bandura (1997) is clear that self-efficacy should be measured based on a specific domain of functioning (e.g., ability to complete mathematical problems). More specific measures of self-efficacy have more predictive power than do generalized measures of self-efficacy. For example, people’s general belief that they can control their own health is not predictive of long-term commitment to smoking cessation. Bandura is also clear that “domain particularity does not necessarily mean behavioral specificity” (p. 49).
Three levels of generality in self-efficacy measures exist: a particular performance under specific conditions, a class of performances within an activity domain under common conditions, and general or global assessments. Although general or global assessments have weak predictive value, Bandura emphasized that the level of generality at which self-efficacy should be assessed depends on what the measure is intended to predict. If a specific context is to be assessed, items should be specific to that context. Bandura used the example of predicting performance in a championship game. If the desired outcome is to predict a level of performance in that specific instance, it would be prudent to assess self-efficacy against the particular opponent to be faced in the championship game, rather than assessing general self-efficacy within the sport.

*Development of Self-efficacy Beliefs*

Self-efficacy beliefs can come from four major sources: enactive mastery experiences, vicarious experiences, verbal persuasion and social influence, and physiological and affective states (Bandura, 1997). These four sources each provide information that people can attend to and use as indicators of efficacy. Such information is not encoded the same way from person to person. Rather, people possess cognitive heuristics for how efficacy information will be integrated.

Enactive master experiences provide authentic evidence of a person’s ability to succeed and therefore are the most influential source of efficacy information (Bandura, 1997). Success increases self-efficacy while failure reduces perceived self-efficacy. Resilient self-efficacy comes about through facing and overcoming failures. Success and increased self-efficacy are not synonymous, because appraisal of self-efficacy is inferred from the
combination of ability and non-ability factors that may have influenced outcomes. Therefore, positive experiences may correlate to self-efficacy, but will not guarantee future successes.

Another way that people develop perceptions of self-efficacy is through vicarious experience. Efficacy beliefs are increased when a person believes him or herself to perform better than group norms or peers (Weinberg, Gould, & Jackson, 1979). Greater assumed similarities between the person making a self-efficacy assessment and peer leads to more influence (Bandura, 1997). Modeled success by people seen as similar (not lower or higher in ability) conveys the most information about efficacy.

Verbal persuasion increases self-efficacy through convincing a person that he or she is capable of performing tasks (Bandura, 1997). This type of persuasion is most effective if it is within reasonable and realistic boundaries. Evaluative feedback that specifically focuses on personal capabilities is effective in increasing efficacy.

Self-efficacy perceptions are also influenced by physiological and affective states. Physiological indicators are particularly important in physical tasks (e.g., being winded when running may decrease self-efficacy to race). Stress levels also provide information about self-efficacy, because arousal may be viewed negatively, which would further decrease self-efficacy. Such internal indicators give feedback to help aid future self-efficacy assessments.

**Self-efficacy in Education**

Self-efficacy research has explored a variety of contexts, but, most importantly for the present investigation, self-efficacy has been connected to a variety of outcomes in educational settings. Schunk (1987) modeled self-efficacy in cognitions, which included students’ prior experience in education as an influence on initial perceptions of self-efficacy.
Social, instructional, and other cues were predicted to influence students' later assessments of their self-efficacy. Other research connects student modeling (particularly when models are perceived to be similar to students) to increased self-efficacy (e.g., Relich, Debus, & Walker, 1986). Students’ beliefs about how well they can cognitively process information, as well as mental effort, affect students’ self-efficacy in learning as well. Self-efficacy in educational realms also shows a strong correlation between self-efficacy and achievement outcomes (Schunk, 1989).

The connection between self-efficacy and positive outcomes for students is well documented. For example, students with high self-efficacy use more self-monitoring of learning outcomes than students with low self-efficacy (Diener & Dweck, 1978; Kuhl, 1985; Pearl, Bryan, & Herzog, 1983). Self-efficacy is related to task choice (Bandura & Schunk, 1981; Zimmerman, 1985), effective study habits, and academic achievement (Thomas, Iventosch, & Rohwer, 1987). Self-efficacy is also related to skill acquisition (Schunk, 1984). Perceptions of self-efficacy and performance have a reciprocal relationship (Zimmerman & Ringle, 1981), and students who are more self-efficacious undertake more challenging tasks (Bandura & Schunk, 1981).

Self-efficacy can be predictive when the task is familiar and specific (Pajares & Miller, 1994), and is more predictive than related ideas such as self-concept. Similarly, self-efficacy is predictive of improvements in academic performance, whereas locus of control was not significantly predictive (Smith, 1989). Self-efficacious students participate more readily and are less easily deterred by difficulties than are students with less self-efficacy (Bandura, 1997). Self-efficacy is also highly correlated with intrinsic interest in learning tasks.
Self-efficacy is also related to choice of major
(Hackett & Betz, 1989), to the extent that students who feel they have high self-efficacy in an
arena are more likely to major in that arena. Self-efficacy beliefs can also reduce students’
stress and anxiety (Bandura, 1997; Pajares & Kranzler, 1995). Furthermore, self-efficacy can
serve as a more robust predictor of performance than can anxiety (Siegel, Galassi, & Ware,
1985).

Students’ self-efficacy plays a role in decisions about how and when to communicate in
class. Findings such as these point to self-efficacy as an important characteristic to consider
when looking at both informal and formal communication in educational settings. Not only
will students’ self-efficacy affect their behavior, their behaviors and experiences will likely
affect their self-efficacy in turn. Furthermore, self-efficacy is also related to anxiety (or
apprehension), a connection that makes the pairing of self-efficacy with communication
apprehension a logical choice.

**Communication Apprehension**

Communication Apprehension (CA) is fear or anxiety associated with real or
anticipated communication with others (McCroskey, 1997). CA can take on numerous forms:
trait-like, context-based, audience-based, or situational (Richmond & McCroskey, 1985).
Trait-like CA (so called because it is highly resistant to change) was the focus of much early
CA research and presumes that a person’s level of CA will typically be similar across time,
unless altered through an intervention. Context-based CA is tied to specific contexts; people
with this type of CA may experience little or no anxiety in other contexts. For example, many
people experience high CA when asked to speak in public, but may experience no anxiety in
speaking in other situations. Context-based CA is also relatively enduring, but is tied to
generalized situations (e.g., job interviews) rather than all situations. Audience-based CA is
experienced when communicating with specific individuals or groups (e.g., communicating
with a supervisor) and is the result of the specific situation. Situational CA is highly specific
to a context, receiver, and time, and is least likely to affect other interactions. Although these
types of CA are typically distinct, there are high correlations across situations for anxiety
levels (Levine & McCroskey, 1990).

CA can be influenced by both genetic predispositions and experiences.
Predispositions toward sociability, as well as how those predispositions are treated by parents
will influence traitlike CA (Richmond & McCroskey, 1985). Situational CA is influenced by
novelty, formality, subordinate status, conspicuousness, unfamiliarity, dissimilarity, and
degree of attention (Buss, 1980). These situational characteristics are likely to cause some
type of anxiety in people. For example, people in a novel situation will not know how to act,
which leads to anxiety; similarly, a particularly unfamiliar situation or situation in which a
person feels dissimilar from others may lead to CA. Formal situations may increase CA
because such situations are often guided by precise behavioral expectations. Communicating
with a person who holds a higher status over you (e.g., a supervisor) is likely to lead to
anxiety, as will feeling conspicuous or receiving too much attention.

People high in CA feel the effects of the apprehension in various aspects of their
lives, including their role as students. Students high in CA tend to favor larger, lecture-based
courses which decrease the likelihood of being asked to speak (Richmond & McCroskey,
1985) Once in the classroom, highly apprehensive students are more likely to sit along the
sides and back of the room, where they are less likely to be noticed (and where participation rates tend to be lower; Levine et al., 1980). Compared to students low in CA, students who are high in CA tend to have lower grade point averages and test scores (Richmond & McCroskey), as well as lower scores on assignments such as term papers (Boohar & Seiler, 1982). CA also has an inverse relationship with students’ effectiveness at attending to, comprehending, and remembering course content (Booth-Butterfield, 1988). Students who are high in CA are more likely to drop out of school (Ericson & Gardner, 1992; McCroskey, Booth-Butterfield, & Payne, 1989). People who are high in anxiety tend to view themselves as less competent, which engages a cycle whereby a low self-perception of competence will increase anxiety (Bandura, 1988).

Interactions in the classroom are also affected by students’ levels of CA. Students high in CA are less likely to be in favor class discussion and oral assignments (Scott & Wheeless, 1977), and tend to perform more poorly on class participation activities than their less apprehensive counterparts (Richmond & McCroskey, 1985). Students high in CA receive less attention from instructors, and may be perceived as lazy or disinterested (McCroskey, 1977; McCroskey & Andersen, 1976; Powers & Smythe, 1980). Students who are high in CA also tend to have more negative attitudes toward school and less motivation to learn (Frymier, 1993; Hurt & Preiss, 1978; Richmond, 1984, 1997). Perceived competence scores are negatively correlated with CA (Richmond & McCroskey, 1985).

CA can be reduced through a variety of means. Treatment approaches include systematic desensitization, cognitive restructuring, visualization, and skills training (Richmond & McCroskey, 1985). Communication instruction improves students’
communication skills (Rubin, Graham, & Mignerey, 1990) and skills training can reduce CA (Kelly, Duran, & Stewart, 1990). Skills training can take the form of either a full communication course to a short session targeted toward a particular goal (Richmond & McCroskey, 1985). Other research has shown that student enrolled in communication courses will see a reduction of CA over the course of the semester (Rubin, Rubin, & Jordan, 1997). Furthermore, students who practice presentations in front of an audience see a greater reduction in CA than students who practice alone; larger practice audiences (more than three) also contributes to a greater reduction in CA (Smith & Frymier, 2006). CA reductions based on skills training can only be expected to generalize to the extent that skills training was generalized (Richmond & McCroskey, 1985). However, reductions in CA may not be drastic, owing to the strong genetic base of such traits (e.g., McCroskey, Heisel, & Richmond, 2001).

In addition to being applicable in a variety of settings, communication apprehension is a particularly pertinent characteristic to consider when looking at students in the classroom. Communication apprehension affects students’ communication choices as well as their performance in the classroom. Research also indicates that students who take part in communication instruction may see a decrease in communication apprehension, which is likely to improve their communication abilities.

**Conclusions about Student Characteristics**

Communication is a transactional process, and this understanding holds true for instructional communication as well. With that in mind, it is important to consider student characteristics – such as self-efficacy and communication apprehension – when looking at the effects of communication instruction on students’ communication abilities. Both self-
efficacy and communication apprehension bodies of literature indicate that improvements can be expected by engaging students in communication instruction. However, what remains unclear is the effect of specific models of communication instruction, particularly when the communication instruction is based on disciplinary-specific communication competencies. Based on the understanding of these student characteristics gathered from previous research and findings related to participation and CXC, a foundation is laid for research focused on communication in design studios.

Research Questions and Hypotheses

The literature reviewed above sets the groundwork for the research completed for this dissertation. CXC research illustrates that communication can play an integral role in students’ learning and that communication in instruction is particularly effective when it is grounded in disciplinary norms. By considering the role of student variables such as communication apprehension and self-efficacy, we gain a broader understanding of communication and the influences on students’ abilities and experiences.

However, the literature also lacks in key areas. We have only minimal research from communication perspectives on the role of informal communication and the importance of disciplinary ways of communicating. Furthermore, CXC research does not always address changes over the course of a semester in either performance or student variables. When considering instruction, CXC literature lacks specific models of instruction and the outcomes of such models. Student variables and CXC remain disconnected.

The research questions and hypotheses to be answered in this dissertation address the above concerns about existing literature in a variety of ways while also drawing on the
strengths of the existing literature. I positioned my research in relation to the body of literature supporting communication across the curriculum and drew on student variables that previous research indicated were connected to communication. The research here addressed multiple concerns with previous literature. First, I examined changes in students’ performances and self-perceptions over the course of a semester in order to examine changes, which was lacking in previous research. I also considered different instructional models. Furthermore, I grounded my examination in empirically derived communication competencies that reflected the norms of the discipline in which I was working. These choices (which are more fully explained in the methods chapter) allowed me to more fully understand the communication of design students while embracing the theoretical grounding outlined in the previous chapter.

The research questions and hypotheses that form this dissertation build in a logical manner, utilizing baseline data before examining the effects of communication instruction. First, it is important to gather baseline data on how students’ communication changes over the course of a typical semester. Therefore, my first research question is:

RQ1: How do students’ performances in design critiques change over the course of a semester?

The crux of communication instruction is the understanding that it should have a positive impact on students' communication abilities. Therefore, I pose a series of research questions and hypotheses to examine the changes seen in students' performance when they receive communication instruction. These questions and hypotheses introduce the contrast between students who are part of an instructor-focused instructional design (where students
receive instruction geared toward their formal performance) and a student-focused instructional design (where students receive instruction and reinforcement to engage in discipline-specific communication skills in their informal communication). More details about these instructional models are available in the methods chapter of this dissertation.

These forms of communication instruction are predicted to not only affect students' performances in their design critiques, but also students' perceptions of their self-efficacy and communication apprehension for design critiques. First, however, I will establish a baseline of performance changes based on data from the fall semester:

RQ2: How do students’ performances in design critiques change over the course of a semester in which they receive communication instruction?

RQ3: How do students’ performances in design critiques change in an instructor-focused instructional design compared to a student-focused instructional design?

Students’ experiences in the design studio should have an impact on their self-perceptions. Specifically, I am interested in changes in students’ self-efficacy and communication apprehension. First, self-efficacy literature suggests that experience should increase self-efficacy, which will be tested with the first hypothesis:

H1: Students’ perceived self-efficacy for design communication will increase over a semester.

Self-efficacy will also be examined as a point of comparison between students who receive no communication instruction, students who receive instruction in an instructor-focused model, and students who receive instruction in a student-focused model. Because self-efficacy literature indicates that experiences in which people are more fully engaged
with a behavior will have a more substantial effect than experiences in which people are
more peripherally engaged in a behavior, a hypothesis is proposed to reflect the extent to
which each group of students should increase in self-efficacy:

H2: Students’ perceived self-efficacy for design communication will increase
significantly more in an instructor-focused instructional design than in a semester in
which students receive no communication instruction and will increase the most in a
student-focused instructional design.

Communication apprehension can also be affected by experiences, but should
decrease rather than increase over the course of a semester:

H3: Students’ communication apprehension will decrease over a semester.

The effect of the instructional models will be tested as it relates to communication
apprehension will the following hypothesis:

H4: Students’ reports of communication apprehension will decrease significantly
more in an instructor-focused instructional design than in a semester in which
students receive no communication instruction and will decrease the most in a
student-focused instructional design.

Finally, I will test the relationship between perceive self-efficacy and self-reported
communication apprehension, which should be negatively correlated.

H5: Students’ perceived self-efficacy and reported communication apprehension will
be negatively correlated.
CHAPTER 4: METHODS

This research utilized both qualitative and quantitative empirical methods in order to more fully understand both the naturally evolving communication abilities of students in design studios and the impact of increased communication instruction on students’ abilities and self-perceptions of abilities in design critiques. This research, grounded in the earlier articulated assumptions and reviewed literature, was based on naturalistic methodology (Lincoln & Guba, 1985), which allows for an uncovering of interactions as they naturally occur. Given the unique nature of design classes, basing the research within the classes – rather than taking students out of the context – was key to a deeper understanding of communication in design. In this chapter, I explain the rationale for my methodological choices, the quasi-experimental design employed, the research site, the research design, and the approach to analysis that was utilized to answer the previously articulated research questions and hypotheses.

Methodological Rationale

My choice to combine qualitative and quantitative methods reflected my desire to more fully understand the phenomenon under investigation and my dedication to allowing the situated aspects of learning and communicating to come through in my research. Furthermore, my decision to utilize a case study rather than a large-scale study reflects my commitment to uncovering the nuances of these students’ experiences rather than being concerned about wide generalizability. The two main decisions – combining qualitative and quantitative methods and utilizing a case study – will be more fully explored here before I explain my data collection and analysis processes.
Given the nature of what I sought to understand (design students’ communication), the combining of qualitative and quantitative data provided the richest approach to this work. My consideration of both fits with Creswell’s (1995) notion of combining methods in a simultaneous process. Rather than using one type of data to support the other, I utilized both types of data for their own strengths (e.g., the ability of qualitative data to allow for thick description). At the heart of this methodological decision were the types of questions I sought to answer. Qualitative data allowed me to look at how students’ performances changed over the course of the semester. Quantitative data allowed me to look at students’ self-assessments over the course of the semester. Together, these two types of data allowed me to approach my topic of interest from different angles in order to answer different questions. My combining of approaches also allowed me to look at different levels of data in different ways (Tashakkori & Teddlie, 1998), which fits with the idea of using both in overlapping but discrete ways (Greene, Caracelli, & Graham, 1989).

In addition to choosing to combine data types, I also chose to focus on the specific case of students taking classes with two particular instructors in a landscape architecture department. Choosing a case study allowed me to look at the community (or in this case, classes) under investigation (Bernard, 1995). Utilizing cases allowed me to utilize the classes as units of analysis for which I could collect a variety of data (Patton, 2002). I was also able to collect data that would allow me to look at nested cases – specific classes within the larger cases of a semester without or without instruction. A case study design provided the ability to look closely at the communication occurring, which would not have been feasible with large-scale data collection.
These methodological choices reflected my goals for this research and informed each step of the data collection and analysis process. By utilizing qualitative and quantitative data, I gained richness about my case study that would not otherwise have come from selecting only one type of data. This approach also allowed methodological triangulation (Patton, 2002) and the ability to make sampling, data collection, and analysis choices in a manner consistent with my theoretical assumptions and previous literature.

Quasi-Experimental Design

A major factor in the research design was the development of a quasi-experimental design. In order to examine different models for implementing communication instruction, I worked with two upper-level studio courses in the Spring 2009 semester. The students in each studio received communication instruction, with one studio exposed to an instructor-focused model while the other experiences a student-focused model (see Appendix for sample lessons). The naming of these models represents where students’ focus was directed during the lessons. During the instructor-focused lessons, students’ attention was drawn to the instructor (in this case, me). During the student-focused model lessons, students were focused on each other.

The five competencies that formed the content of the lessons were empirically-derived discipline-specific competencies (Dannels et al., 2008). The first, referred to here as concept, centered around students’ abilities to explain and support the concept they developed as part of the project, in addition to discussing how they arrived at that point. The second, credibility, reflected students’ abilities to present themselves in a credible, professional manner during the critique. The argument competency was about students’
ability to articulate the rationale behind their design decisions. The fourth competency, visuals, required students to strategically choose, display, and use visuals in a way that enhanced their presentation. Finally, the audience competency focused on students’ ability to interact with audience members in an open, respectful manner.

In the instructor-focused model – implemented in Hannah’s spring studio — I presented lessons at three time points during the semester, with each lasting approximately 45 minutes. Although an ideal situation would have been to have five lessons, class constraints required limiting the total number of lessons to three. Total instruction time in this model was approximately 145 minutes over the 15 weeks. Each lesson focused on previously established competencies (Dannels et al., 2008). Lessons were lecture-based but interactive, with opportunities for students to contribute ideas and experiences to the discussion. This model matches previous implementations of CXC where the focus is on learning to communicate (e.g., learning specific skills that will come into play during formal communication; see for example Dannels, 2002).

The student-focused model was utilized in Levi’s spring studio. In this studio, I interacted with students on a weekly basis with short activities meant to engage them in communication during class times in a way that reinforced the communication competencies thought to be vital to their formal presentations. At the start of one class period each week, I worked with students to introduce an element of competent communication in design and guided them through an activity related to that competency. Each week, we focused on a different competency, and were able to cycle through each of the five competencies twice. During the last two weeks of lessons, I ran activities with the students that tied together
previous communication skills we had worked on. Total instruction time in this model was
approximately 180 minutes.

In both classes, instruction occurred during class time and students took part in the
instruction as part of their normal class activities for the day. Both instructors also supported
the instruction by emphasizing to students the importance of what they were learning about
communication, and – as appropriate – providing input to discussions of communication
abilities. Furthermore, in both classes, students were encouraged to make connections
between the lesson and their current project. The main differences between the models lay in
what students were asked to do during the lessons and the frequency with which the lessons
occurred. The contrasts between these models formed the foundation of answering two of my
research questions and also influenced data collection.

In order to ensure the differences I was drawing between the two instructional models
were valid distinctions to make, I asked several communication experts to sort sample
portions of lessons into the two models. Early efforts helped me to refine the distinctions
between the two models and two experts were able to sort the lessons into the same models
where I placed the lessons.

Data Collection

The dissertation research outlined here utilized multiple sources of data in order to
answer the research questions and hypotheses. These sources of data and the types of data
collected help to explain how the main questions of the research will be answered. In this
section, I will describe the site in which this research is based, my sampling of classes, and
the sources of the various types of data I collected.
Research Site

This research was based on a case study of a Landscape Architecture (LA) department, one of five departments housed within a College of Design at a southeastern land grant university. The College of Design at this institution enrolls approximately 675 students, with the majority of those students being undergraduates. Although LA is the smallest department in the College in terms of undergraduate enrollment, it has the second-highest master's degree enrollment. Most 400- and 500-level courses in the department enroll both undergraduate and master's students. Such courses are available only to upper-level undergraduate students who already have taken multiple design classes and studio courses.

Undergraduate students in all departments within the college take a design fundamentals course when beginning their programs. This course is intended to introduce students to studio courses and provides guidance for the numerous studio courses that will form the foundation of their education. The bachelor's degree is a five-year program, and students are required to take 54 credit hours of design studios (including Design Fundamentals and one studio course offered by another design department). Design studios are typically six credit hours each. Master's students are required to take at least one studio course if they enter with a bachelor's degree in landscape architecture; master's students without a background in LA take 18 credit hours of studios. Master’s students take an introductory studio course during their first semester, which is followed by a studio in the spring semester. The master’s degree is a three-year program.

The classroom space occupied by the LA department is part of an area of campus that houses all five departments in the College of Design. Virtually all LA studios (with the
notable exception of those scheduled for the downtown studio) take place within the second floor of the building attached to the main college offices. This space has a largely open floor plan. Upon entering, a visitor is greeted by a hodgepodge of work desks formed into clusters. Along the wall to the left is a chalkboard, which sometimes is covered in examples of student work. Also to the left, a hall passes a small area of computers and a room with open space for critiques or other classroom discussions. At the other end of the short hallway is another open with more clusters of desks that designate different students’ spaces. A hallway parallel to the previously mentioned hallway has faculty offices.

Within either side of the studio space, students each have a desk that is theirs for the semester and is butted up against the desks of other students in the same studio. Multiple classes may share the larger space with students working back-to-back with students from a different design studio. Classes meeting in this space hold critiques in the small room within the studio space, or (more commonly) in larger rooms and open hallways in an adjacent building that houses other departments within the college.

The notable exception to the above studio space is the college-owned downtown design studio. This space, occupying the second floor of a building near the center of town, is used for, at most, one studio per semester. In this space, students each maintain an individual desk. A hallway that leads to offices (occupied by college staff) has space for sketches to be pinned up. A conference room serves as a meeting space and a space for critiques. For the classes with a larger enrollment, critiques may take place in both the conference room and around desks in the main studio area.
Class Sampling

For this project, I was an observer in two upper-level LA studio courses in the fall semester, and a participant observer in two upper-level LA studio courses in the spring semester. These classes were purposefully sampled to be comprised of upper-level students, as these upper-level courses are where students are most fully engaged in the professionalization that is a vital component of their programs. Two professors granted me access to their studios for both semesters and agreed to the addition of an instructional component for the spring semester. I selected these professors because of their history of successful teaching, their teaching assignments that fit with my desire for upper-level courses, and their interest in improved pedagogy.

The first instructor I worked with, Levi, is an assistant professor who taught studios with both upper-level undergraduate and graduate students both semesters. In the fall, Levi co-taught with two adjunct instructors (Joanna and Martha); he was the sole instructor in the spring. The second instructor, Hannah, is a teaching assistant professor; she taught third-year graduate students in the fall and first-year graduate students in the spring. In the fall, Hannah taught her studio solo, but was a co-instructor in the spring. During the first half of the instructor, she co-taught with an associate professor from the department (Gabriel); during the second half of the semester, her co-instructor was an adjunct instructor (Joanna). See Table 4.1 for a summary of the classes’ characteristics.

Class Projects

Each studio offered by the College of Design has some focal point, around which students’ projects are built. Levi’s class spent the fall semester redesigning a parking lot on
campus to become a gateway into the campus, as the site is located near one edge of campus. Students developed a concept and detailed plans for how they would redesign that space and connect it into existing campus structures and spaces. Because of the nature of the project, campus-planning staff visited the class to provide information and feedback.

In the spring, Levi’s class spent the first half of the semester focused on redesigning the feel of a local hospital’s site. This project challenged students to work at a slightly larger scale than in other studios. For the second half of the semester, Levi’s students could continue to develop the hospital site or they had the option of expanding to the business corridor surrounding the hospital, which the city had expressed interest in developing. Throughout the semester, representatives from the hospital provided feedback to students and attended critiques.

Table 4.1

*Class characteristics*

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levi</td>
<td>Hannah</td>
</tr>
<tr>
<td>Enrollment</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>Level</td>
<td>BLA/MLA</td>
<td>MLA</td>
</tr>
<tr>
<td>Site</td>
<td>Campus</td>
<td>Contamination</td>
</tr>
<tr>
<td>Co-Instructors</td>
<td>Joanna &amp; Martha</td>
<td>n/a</td>
</tr>
<tr>
<td>Early Critique</td>
<td>Concepts</td>
<td>Analysis</td>
</tr>
<tr>
<td>Final Critique</td>
<td>Red-pen</td>
<td>Design</td>
</tr>
</tbody>
</table>

¹In the spring semester, two students in Hannah’s class did not complete the studio.
Hannah’s studios were both focused on sites in the city’s downtown area. In the fall class, students were challenged to redesign an area of the warehouse district. Their focus was on rehabilitating the site from its history of contaminants. Students also were asked to design that site so that it could be a public transportation hub for the city, including serving as a passenger train terminal. Students had contact with city leaders, including transportation staff.

In the spring, Hannah’s students were asked to design an outdoor space in a currently unoccupied square block next to the convention center. This space had certain restrictions regarding access to the site and the need for a gathering or concert area. Throughout this project, students had contact with city development staff and other people with a particular connection to the site. In the spring semester, the class met at the downtown studio space owned by the college, thus giving students easy access and exposure to the downtown constraints and opportunities.

In the fall semester, both studios met within the larger studio space occupied by the department. Hannah’s class was near the front of the studio space, while Levi’s class occupied approximately half of the back portion of the space. In the spring, Levi’s class met where Hannah’s class had met in the fall. Hannah’s class was at the downtown studio. For the classes that met on campus, each studio was next to at least one other studio, but students were separated to the extent that their desks were clustered by class.

Presentation Opportunities

In both semesters, students presented at multiple times in the semester. For the purposes of my research, I chose to focus on students’ performances early in the semester.
during students’ first presentations with outside critics, and students’ performances in the final critique of the semester, also with outside critics.

In Levi’s fall studio, students’ first presentation was focused on their concepts for the campus site. Their final critique was a “red-pen crit” where students set up their desks with a packet of construction documents related to their design. Pairs of students then took turns talking to critics about their work and answering questions; there were no formal presentations and student pairs were discussing with critics simultaneously. In Levi’s spring studio, students presented their concepts for the hospital site at approximately the mid-point of the semester. Their final critique was gallery style, meaning that students had design documents and an 11 x 17 booklet of their design. Critics circulated through the room to engage students in conversation; again, there were no formal presentations in front of the larger group.

In Hannah’s fall studio, students’ first presentation in front of an audience was geared toward exploring concepts. Their final review was structured so each student had approximately 10 minutes to present, followed by 10-15 minutes of questions and comments. In the spring semester, Hannah’s studio presented in the same format as in her fall class’s final critique. Her students had a critique with outside critics at approximately the mid-point of the semester to discuss their concepts; their final projects were presented during the final exam period of the semester.

Sources of Data

A benefit to utilizing a case study over broader approaches to data collection is that it allows for the gathering of a variety of data sources that will create a richer picture of the
communication needs of design students. Throughout the two semesters of work in the design courses, I maintained several sources of data: video recorded critiques, fieldnotes, interviews, and quantitative measurements. Each source of data contributed to a fuller picture of design communication.

The main source of data came from video recordings of students’ presentations. At each time that students gave presentations, I video recorded each student’s presentation and the subsequent feedback and question/answer session. Whenever possible, I recorded every student in the class who had given permission to be recorded in order to gain the broadest pool of presentations from which to sample. These recordings were taken during both classes in each semester. Each recording was subsequently divided into individual projects for ease in sampling. Feedback and questions from critics was kept with each student’s presentation in order to allow for a richer understanding of how a presentation was received.

In order to supplement the recordings, I was consistently present for class time in all studios. During this time, I kept field notes focused on students’ tasks, conversations, and activities during that time. I periodically moved throughout the space in order to gain a broader view of what different students were doing. I also took notes during students’ presentations about their behaviors, behaviors of classmates and critiques, and reactions to feedback and presentations. These fieldnotes were intended to provide additional support for what I saw in students’ presentations. In the spring semester, I also took notes based on my lessons with the students (e.g., what students did during that time, their reactions) and also maintained a file of the lessons for later reference.
I also conducted interviews (Spradley, 1979) at the end of each semester with all instructors as well as with a subset of the students. Students took part in interviews on a volunteer basis, and I strove for variety in students as interviewees. During these interviews, I asked students questions about their preparation for presentations, their presentation strengths and weaknesses, and their assessments of their own abilities. Instructors were asked parallel questions about the abilities of their students. These interviews were intended to gain a deeper understanding of the insiders’ perspectives on communication in design.

In order to examine the hypotheses, students in both semesters were asked to complete measures at the beginning (pre-test) and end of the semester (post-test); these measures were the Communication in Design Critique Self-efficacy measure (Housley Gaffney, under review) and both generalized and situation-specific CA measures, as well as basic information about the students (major, year in school, previous design studios). The self-efficacy measure was based on empirically identified communication competencies for design students (Dannels et al., 2008) and asked students to rate the extent to which they believed they could perform 15 behaviors associated with these competencies on a 0-100 scale. These same competencies were those on which students were rated for the qualitative portion of this dissertation. Each student’s responses were averaged to arrive at a mean score of self-efficacy. The Personal Report of Communication Apprehension measure (McCroskey, 1982) was utilized to track students’ general communication apprehension over the course of the semester. The Situational Communication Apprehension Measure (Richmond, 1978) asked students to report their apprehension during the last time they participated in a critique. Both measures were given to students on a 7-point scale (strongly
disagree to strongly agree) with several items reverse coded to increase validity. Each student’s responses on each measure were averaged.

Students’ responses were coded in such a way that an individual’s pre- and post-test answers could be compared. Once pre- and post-test surveys were matched, I had 10 sets of data from the fall semester, 12 sets of data from Hannah’s class in the spring, and 11 sets of data from Levi’s class in the spring. A copy of the survey items is available in the Appendix.

Analytical Procedures

The analysis of students’ presentations, utilized to answer the research questions, was done in a primarily qualitative fashion in a way that allowed comparison between time points and classes. The quantitative measures were analyzed in standard ways that allowed me to address the hypotheses proposed earlier. In this section, I will more fully explain my analysis process as a setup for the results chapters that follow.

Research Questions

The data utilized to answer the research questions were all sampled and analyzed in the same fashion, with careful notation of class/semester, in order to make comparison. I sampled 50% of the projects presented in each studio at each time point (rounded up as necessary); in cases where two (or more) students worked on a project together, that presentation was counted as one project. The sampling was done with a focus on maximum variation on two fronts. First, I sought to achieve maximum variation in the critics present in the critiques. Particularly in the larger studios, students were split into two rooms and had different critics. Knowing the probable impact on personality factors, I wanted to gain insight into the overall experience in these studios. I also wanted maximum variation in the student
population. I purposefully sampled both male and female students, and, when studios
enrolled both undergraduate and graduate students, I sampled both levels of students. I did
this sampling process once and selected the appropriate projects in answering each question.
See Table 4.2 for a summary of the total projects sampled. Because sampling was done by
project, not student, the number of projects available for sampling shifted as students
changed the groups with whom they worked.

Table 4.2

Total number of projects sampled by semester, instructor, and time point

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th></th>
<th>Spring</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Levi</td>
<td>Hannah</td>
<td>Levi</td>
<td>Hannah</td>
</tr>
<tr>
<td>First Critiques</td>
<td>13</td>
<td>4</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Final Critiques</td>
<td>13</td>
<td>5¹</td>
<td>7¹</td>
<td>11</td>
</tr>
</tbody>
</table>

¹ Due to schedules and students withdrawing from classes, some classes had different
numbers of students completing critiques at each time point.

RQ1 asked about how students’ performances changed over the course of a semester
with no instruction. This question was answered using data from the fall semester. Students’
critique performances (recorded) were rated according to a rubric based on previously
established communication competencies (Dannels et al., 2008). Each competency was
operationally defined (see Table 4.3) for use in coding and in rating each competency, a
student was given a score ranging from 5 (fully meets this competency) to 1 (does not meet
this competency). Full coding definitions are available in the appendix. This coding provided
an initial aggregate overview of where differences were between first and last critiques of a
semester. The unit of analysis was the competencies, which allowed me to compare how the class overall did on each competency early in the semester and later in the semester. For example, a class overall may do well at explaining their visual aids early in the semester but may not do well at interaction management. At the end of the semester, the students may still be doing well overall at explaining visuals, but may have also improved greatly at interaction management. In order to backup what was explored in the aggregate, I culled examples of competencies from both early and late in the semester to provide examples of changes in performance. For example, if students showed a shift in abilities related to the visuals competency, I would find a recording of a student who posted multiple drawings in the first critique but only talked about two of the drawings and a student in the later critique who posted a smaller sample of drawings and discussed each drawing in a thorough manner.

RQ2 asked about how students’ performances changed in a semester in which they received instruction compared to the semester in which they received no instruction. To answer this question, I compared the data from the fall semester and the data from the spring semester, using the method described above for RQ1. I made comparisons between first and final critiques for each semester. Again, the unit of analysis was competencies. This type of comparison allowed me to see how students in each semester changed. For example, students in the fall semester if students started out low in the visuals competency, they may show a small gain that arena. Students in the spring semester may have started out relatively strong in that same competency but still show a major gain in that category as well as in the interaction management competency.
RQ3 asked specifically about the changes in performance between the two studios who received instruction in the spring. In order to answer RQ3, I followed the same method as outlined above for RQ2, but specifically compared the two spring studios to look for differences between the two classes in the performance changes over the course of the semester.

Table 4.3

*Operational definitions of competencies*

<table>
<thead>
<tr>
<th>Concept</th>
<th>Student clearly articulates a concept and explains the process surrounding that decision.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>Student’s physical and spoken performance consistently enhances his/her credibility.</td>
</tr>
<tr>
<td>Argument</td>
<td>Student provides convincing argument(s) for how his/her design choices and concept address the given site and constraints.</td>
</tr>
<tr>
<td>Visuals</td>
<td>Oral content is coordinated with visual material in a logical manner.</td>
</tr>
<tr>
<td>Audience</td>
<td>Student demonstrates that he/she values feedback from the audience (e.g., takes notes, asks questions) and embraces alternative perspectives.</td>
</tr>
</tbody>
</table>

To support the comparisons examined in the above research question, I used the scores (1-5) that were given to students on each competency and subjected those numbers to the Mann-Whitney $U$ test. This nonparametric test allowed me to support differences between classes and semesters. In order to look at differences, I used two-tailed tests with $p <
.05 as the criterion. Given the nature of the scores given in coding, I looked at each competency individually in order to make assessments of differences.

In addition to coding each performance on the competencies as outlined above, I also looked at the feedback and questions that were part of the critiques. This information was not coded, but was used in writing about the results of the coding as supplemental support for what was seen in the actual performances.

After coding definitions were established for the research questions related to performance, I took a subsample of the presentations and copies of the rubrics to the instructors whose students were involved in the study. I asked the instructors to view presentations and use the definitions given to rate the presentations on the given competencies. I then compared these answers to my own and discussed the operationalization of competencies with the instructors. This process allowed me to ensure that my coding was calibrated to the “indigenous” (Jacoby & McNamara, 1999) view of communication abilities in the design critique.

All results for the RQs were checked for intercoder reliability to confirm that categories were clearly defined and the coding was appropriate. A sample of the data for each question was given to a second coder (a communication graduate student with insider experience in design classes.), whose coding will be compared to my coding. For the research questions, the second coder was asked to view a sampling (approximately 10% of the total data sampled) of the total number of recorded critiques. The coder was asked to evaluate each critique using the given rubric and these responses were checked against mine. The second coder was not aware of the conditions that went with each critique (e.g., if
students received no instruction or the student-focused instruction). However, the second coder was given a brief description of the critique’s purposes and the work students completed leading up to the critique. These summaries were intended to orient the coder so that she would be able to make informed assessments of the critiques. The summaries provided to the coder are included in the appendix. The second coder’s responses were checked against mine using Cohen’s Kappa. The Kappa overall was .71, which is considered good reliability. Kappas for individual competencies ranged from .65 to .89, which are all within a reasonable range.

**Hypotheses**

Prior to testing any hypotheses, each measure was subjected to a reliability check, with the goal of $\alpha > .60$. The measure of general communication apprehension was reliable ($\alpha = .93$), as was the measure of specific communication apprehension ($\alpha = .94$). Similarly, the measure of critique self-efficacy was reliable ($\alpha = .94$). In order to verify the measures, I also ran a factor analysis on each measure. In each case, no more than one factor was supported by more than one item. Given the small sample size for each measure and the strength of the reliability and tendency toward a single factor, I treated all measures as single factors. This decision was also supported by previous research success in using all CA items as a single measurement of apprehension rather than separating items into subscales (e.g., McCroskey, Beatty, Kearney, & Plax, 1985).

The first hypothesis predicted that over the course of a semester, as students gained more experience communicating, their self-efficacy would increase. H1 was tested with a
repeated measures $t$-test and all data. Students’ pre-test scores were compared to their post-test scores; I looked for post-test scores to be significantly higher than pre-test scores.

The second hypothesis took the interest in self-efficacy into a comparison between the different instructional models and the no-instruction semester. H2 was tested with a repeated measures ANOVA, comparing condition and time (pre- or post-test). In order to gain support for the hypothesis, the ANOVA should be significant, and the means for the post-test scores should be highest for the student-focused model, second highest for the instructor-focused model, and third highest for the control group. I also checked the pre-test scores with an ANOVA; there were no significant differences in pre-test scores (meaning all groups are statistically indistinct), meaning I can attribute any differences in post-test scores to the instructional models. To add further details to this investigation, I also checked each condition (no-instruction, instructor-focused, and student-focused) using a $t$-test to compare pre-test and post-test scores.

The next two hypotheses specifically looked at communication apprehension. H3 predicted a decrease in students’ CA over the course of a semester. H3 was tested with a repeated measures $t$-test and all data. Students’ pre-test scores for communication apprehension should be significantly higher than their post-test scores for communication apprehension, which would indicate a significant decrease in CA. The next hypothesis predicted that students’ communication apprehension would decrease the most in the student-focused model, second most in the instructor-focused model and least in the no-instruction semester. H4 was tested with a repeated measures ANOVA, in the same procedure outlined for H2. However, in this case, the mean for the student-focused model post-test scores should
be lowest, with the instructor-focused model post-test being higher, and the control group post-test being the highest of the three post-test scores. To add further details to this investigation, I also checked each condition (no-instruction, instructor-focused, and student-focused) using a t-test to compare pre-test and post-test scores.

The final hypothesis predicted an inverse relationship between self-efficacy and communication apprehension. H5 was tested with a Pearson’s correlation. This hypothesis was tested using all data.

Together, the quantitative and qualitative data described here provided the opportunity to more fully understand communication in design critiques and the effect of communication instruction on students’ formal communication and their attitudes toward their abilities. Although these data are not intended to be generalizable beyond this site, the information garnered from this research adds to literature in CXC and design education in meaningful and productive ways for future exploration.
CHAPTER 5: BASELINE RESULTS

In this chapter, I will address the research question and hypotheses that dealt specifically with the fall semester (baseline) data. The purpose of this chapter is to more fully explore the changes in students’ presentations and self-perceptions over the course of a semester in which they receive no targeted communication instruction, as is the norm in such classes. By looking at both the actual presentations and the quantitative data provided by students regarding self-efficacy and communication apprehension, we can see the natural trends of students in studio courses in order to provide a point of comparison for the next chapter, which will address the introduction of communication instruction. Specifically, in this chapter I will address how students’ abilities increased, although this shift was only significant in two competencies. Students’ self-efficacy decreased over the course of the semester while communication apprehension did not change. I conclude this chapter with overall observations regarding the baseline data.

Research Question 1

The first research question asked how students’ communication abilities changed over the course of a semester. In order to answer this question, I utilized both the ratings given to students’ abilities on each competency as well as examples of students’ performances, feedback given to them, and interview data. Feedback and interview data were used as supplementary material to support what was seen in the competency ratings. After discussing general trends, I will address changes within each competency.

Overall, students’ scores on all competencies increased. The only competencies that had a statistically significant were argument and audience. In all cases with the two classes
combined from the fall, students’ abilities increased (see Table 5.1). The standard deviations decreased in all cases as well. This trend seems to indicate that not only did the classes overall improve over the course of the semester, the amount of variation from student to student decreased.

When looking at the two classes that made up the fall data set, it is clear that Levi’s class saw an increase in all competencies (see Table 5.1). Furthermore, this class also showed the narrowing of standard deviation ranges seen in the overall data. Hannah’s class overall saw an improvement in abilities and a narrowing of standard deviations. This trend had one exception: the average score for visuals decreased from the start of the semester to the end of the semester ($M = 4.25$ to $M = 3.80$) and the standard deviation increased ($0.29$ to $0.57$). This variation from the overall trend may be the result of the plethora of visuals that this class produced, which complicated students’ abilities to adequately address all materials in a short period of time. Examples of students’ actions in critiques support the overall trends; I will discuss the results of each competency in turn.

**Concepts**

The first competency expected of students was that they would be able to clearly articulate both a clear concept for the project as well as a sense of how they arrived at that concept. Students had mixed levels of success in explaining their concepts both at the beginning and end of the semester; there was no significant shift over the course of the semester.
First critiques

Early in the fall semester, students in Levi’s class had difficulties expressing concepts, even though the purpose of the critique was specifically to address

Table 5.1

Fall Data Comparing Pre-test and Post-test Scores by Competency

<table>
<thead>
<tr>
<th></th>
<th>Hannah’s class</th>
<th>Levi’s class</th>
<th>Combined Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>4</td>
<td>4.13</td>
<td>0.25</td>
</tr>
<tr>
<td>Post</td>
<td>5</td>
<td>4.10</td>
<td>0.22</td>
</tr>
<tr>
<td>Credibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>4</td>
<td>3.88</td>
<td>0.48</td>
</tr>
<tr>
<td>Post</td>
<td>5</td>
<td>4.10</td>
<td>0.22</td>
</tr>
<tr>
<td>Argument</td>
<td></td>
<td></td>
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<tr>
<td>Pre</td>
<td>4</td>
<td>3.88</td>
<td>0.25</td>
</tr>
<tr>
<td>Post</td>
<td>5</td>
<td>4.20</td>
<td>0.27</td>
</tr>
<tr>
<td>Visuals</td>
<td></td>
<td></td>
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<tr>
<td>Pre</td>
<td>4</td>
<td>4.25</td>
<td>0.29</td>
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<td>Post</td>
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<td>Audience</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pre</td>
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</tr>
<tr>
<td>Post</td>
<td>5</td>
<td>4.30</td>
<td>0.45</td>
</tr>
</tbody>
</table>
concept ideas. Miriam, a graduate student, began her presentation by talking about her model and in the approximately two minutes she spoke, gave no clear indication of her concept; instead, she focused on her visuals. Her lack of success was reflected in her professor’s feedback that her concept was “undercooked.”

However, some students were successful in Levi’s class early in the semester. For example, Paul, a graduate student in Levi’s class provided clear statements about his concept in his critique. He talked about the site being a transitional space between the campus bell tower and Court of North Carolina and clearly stated, “this site is about movement.” Paul also gave a sense of his design process so the audience could see how he worked through the site analysis to arrive at a developed concept.

Students in Hannah’s class did well overall with explaining their concept and process, with only minor infractions ($M = 4.13$, $SD = 0.25$). For example, Felix had to be reminded by Hannah to address aspects of the site analysis, which is typically included in discussing the design process. Hannah’s class’s success at explaining their process early in the semester was also reflected in a comment made by Gabriel (another faculty member in the department) toward a pair of students, Adam and Lydia. He focused on how clear their process was for the audience, including people who were not familiar with the project:

I’m very excited about the concept of process here where there’s a reason behind it. So, it really begins up here [points to first sheets] where you started with this sort of experimentation and because of certain things beginning to happen, there is a concentration or conglomeration of certain things, which if I look at your studies over
there, I start to see that; things start to gravitate to certain points… and so I applaud you for playing that through all the way.

Overall, students in Hannah’s class were able to express their concept and process to critics early in the semester with only minor problems.

Final Critiques

At the end of the semester, students in Hannah’s class did not see much of a change in their abilities to present their concepts and processes; students still had success in presenting these ideas but this success was tempered by difficulties. For example, Ruth began her presentation by talking about what she was going to address in the presentation, which set up for the audience a sense of her process. However, her concept— that of bringing people together to counteract the tendency for separation – was not clear until the end of her presentation when she explicitly stated this idea as her goal. Throughout her presentation, Ruth talked about the designing process by methodically going through the various steps the class used to design the site.

There were some small exceptions to the success demonstrated by Ruth. At the end of the semester, Susanna, a student in Hannah’s class, had a tendency to jump from topic to topic, which made her process difficult to follow. For example, she started to talk about pedestrian traffic on her site, then realized she should back up and talk about analysis. Such a problem was in stark contrast to Ruth who started her presentation with a clear statement about what she was going to address in the presentation, which reflected the process used in the class. These differences in both what students talked about and how well they talked
about it reflected only minimal variation in students from early in the semester to the end of
the semester.

At the end of the semester, students in Levi’s class had a different challenge: the primary focus of their final critique was to present construction documents to professionals rather than to argue for a concept. Their concept, then, was less explicitly stated but their success in the concept came through in a lack of questions from critics. Students also utilized the class assignment explicitly in order to explain their design process. Julia and Seth, for example, both explained to critics the assignment they were given and the flow of the class in order to address concerns from the critics. While such responses did give a better sense of their process, the actual statement of concepts was often lacking. Instead, critics gathered ideas about concepts from viewing the construction documents students had generated.

The idea of concepts and process being integral to a successful presentation was reiterated multiple times, both by critics and students. A student in Hannah’s class, Adam, highlighted this need to consider process in design:

In design, process is very important because you cannot just pin... I guess you can just throw something on the wall and they are going to look at it. But there is so much. It's a semester's work that led to that one document. And so process is really important about from A to B to C to D and how you got there…. I guess the biggest thing is just being able to explain how you develop your design.

This idea of process is reinforced to students in classes, as highlighted in Felix’s comment about presentation advice he received in his first undergraduate studio:
to be clear and precise in your procedure, to not really, like, leave out details, to make sure that even though it might seem like a really small simple step that you took it could mean everything to the person you're explaining it to. So to really focus in on the all details, not just skip over things. So, be precise in your actual explanations.

Students, then, recognized the need for process to be explained in addition to concepts. Students met this goal with varied levels of success. This variation was further highlighted by the lack of a shift in Hannah’s class and the larger shift in Levi’s class.

Credibility

During a critique, students are asked to talk about what they have accomplished for their project and, in doing so, to present an air of credibility. Students do this by appropriately pacing their presentation, presenting themselves as confident, and displaying appropriate physical behaviors. Over the course of the semester, students’ credibility improved somewhat, but the shift was not significant.

First Critiques

Early in the semester, students exhibited numerous behaviors that reduced their credibility. For example, Candace, an undergraduate student in Levi’s class spent much of her presentation speaking with fillers, having her arms crossed or hands blocking her face from the audience, and shifting her weight. Miriam, a graduate student in that class, presented in casual clothes and leaned against the wall as though she were having a casual conversation with a friend. Noah came to an abrupt end to his presentation, indicative of a lack of planning. Marcus similarly simply trailed off at the end of his presentation rather than providing evidence of preparation. Jared consistently used “um” and “like” and upon
realizing he was about to run out of time with more content to cover, made an offhand (inappropriate) comment about time.

Other students in Levi’s class were able to enhance their credibility through gesturing appropriately to aspects of their designs, pacing their presentations at an understandable rate, and using notes as references rather than crutches.

In Hannah’s class, students started out with higher levels of credibility, but still had difficulties. For example, Felix consistently used terms such as “um” and “like.” He also jumped around with his organization and stumbled in response to Hannah asking him to talk about some of his analysis. His stumbling, followed by an excuse about not really finding anything, projected an image of not being able to explain his work to his audience, and diminished his credibility. Claudia began her presentation with her arms crossed but also spent time gripping her notebook, both of which diminished credibility. She later returned to her arms-crossed status in addition to spending as much time looking at her visuals as she spent looking at the audience.

**Final Critique**

At the end of the semester, students’ credibility was generally higher than it was at the start, but with some exceptions. For example, Susanna, a student in Hannah’s class, consistently used fillers such as “um” and “uh” in addition to awkwardly positioning herself so she was not facing the audience fully. However, she also spoke clearly and at a reasonable pace, which helped improve her credibility.

At the end of the semester, some students in Levi’s class approached the critic in a rather casual manner, such as in their dress. For example, Noah wore a t-shirt and knit cap to
the critique; another student spent the discussion time with the critic chewing on gum. While it was the norm for students to sit down with critics in this setting, many students spent their conversational time leaning on desks or with chins rested on hands, which did not present a confident persona. Another student, Jared, made multiple excuses, such as blaming illegibility of sheets on the rising cost of printing, which meant he had not printed at a large scale prior to the sheets brought into the critique:

Jared: This is the first time I’ve seen it at this size

Critic: Why is that?

Jared: Just cause it’s like 10 bucks a sheet so that’s like 40 bucks.

Critic: Holy cow! 10 bucks a sheet?

Jared: Yeah, they raised the prices this year. I printed it for class and I guess it looks totally different.

During this conversation, Jared played with the hem of his t-shirt, consistently looked at a classmate rather than the critic, and sprinkled his sentences liberally with “like.” He later made more excuses about difficulties with the AutoCAD program he used to generate graphics. Another classmate, Noah, was almost immediately negative about his work when sitting down with a critic.

Such students were in stark contrast to classmates such as Nathan who approached the critique dressed in a button-down shirt and tie and presented a confident air. Other students, such as Abel, presented themselves as credible and knowledge through their engagement in conversation with critics and their ability to answer questions and provide additional information as necessary. Overall, students in Levi’s class – with the obvious
exceptions of some of the earlier examples – presented a more credible image at the end of the semester than at the start. Despite such problematic behaviors, students in Levi’s studio overall spoke confidently about their designs.

*Argument*

Students were expected to provide a rationale for the design decisions they had made. Early in the semester, students provided fewer justifications for their decisions than they did later in the semester. In both classes, this same type of shift was seen, even though the differences were not statistically significant.

*First Critiques*

Early in the semester, students gave little in the way of justifications. For example, a student in Levi’s class described various aspects of her design but gave few reasons for including various aspects of the design. Another student in the class only justified decisions to the extent of saying that he made the decisions based on feedback from the previous interactions with professors. Some students were more successful at providing arguments, such as a student in Levi’s class who was able to explain how the concept related to what she actually did with the site. Statements such as “so how I’ve done this is…” prefaced such justifications.

Students in Hannah’s class initially provided more arguments than did students in Levi’s class. For example, early in the semester, Claudia spoke early in her presentation about “why Raleigh.”

I know that we had the discussion of “why Raleigh?” for this site. I feel like if the prison and parts of this site was made into an open space and Dorthea Dix became a
park and this green corridor was established and connected all the way down to the Capitol and Moore Square, that’s why Raleigh. [It fits] the original idea of a green mesh corridor, large spaces, smaller spaces, and having a great infrastructure.

Her argument for why to turn this space–formerly warehouses–into a green space focused on the history of the area. In using such a justification, she is specifically placing this green space in Raleigh, not just in any city. Such a justification helped support her case for her design concept.

However, not all students were as successful. Felix provided few arguments for his decisions, while Dinah had to be prompted multiple times to provide additional information supporting her decisions. This lack of reasoning was reflected in a critic’s comment regarding the student’s idea of “source” and spreading. The critic asked, “I guess you’re trying to make your source a site? Or are you trying to draw from them? And that was the only thing that was confusing.”

Final Critiques

Later in the semester, students had more success in explaining their reasons. A student in Levi’s class explained that his demolition plan reflected his desire to eliminate everything that was currently on the site because it was going from being a parking lot to a useable space. Other weaker justifications were also offered in this class, such as students reporting that they made particular decisions because of what they were told needed to be on the site.

Two students in Hannah’s class were able to give specific arguments for design decisions. A student in Hannah’s class explained that the downtown site she worked on was
in a bowl lower than surrounding blocks. She wanted to change this feel and make it connect to the surrounding area, which informed the decisions she made. Another student justified her use of wide sidewalks because she wanted to connect back to the downtown area.

This need for making an argument was reiterated in students’ interviews. Lydia, a student in Hannah’s class talked about important it was for the students to convey ideas:

I think you are expected to be able to verbally and physically convey through models and drawings…what you are trying to achieve in a more holistic way versus in the past, we might have put up a couple things here and a couple things there as that's what we were required to do. But in this case it's more of a "you've got to do what you need to do in order to get people to understand what you are trying to achieve."

Dinah, who came from a fine arts background, further reiterated the need to justify decisions in a discipline such as landscape architecture:

Critiquing fine art is a bit different I guess, because it is more open for interpretation and so I've had to switch gears and really learn how to justify what I am proposing here as well as we are before it was this is my painting and this is what it means and you can't really say anything about that, whereas here…I have to learn how to explain myself better so that people can understand…so I think that's been the hardest thing and I still don't think I am there yet.

Being able to explain reasons was clearly a challenge for some students – a problem they recognized in their interviews. This need for argumentation was summarized by Miriam, a graduate student in Levi’s course, who talked about design as “a new language…it's a learning process for me to learn the language and explanation and what it all means.”
The fourth competency for communication in design critiques involved visuals. The importance of visuals and matching the visual and the verbal was reflected in a comment by a student in Hannah’s studio: “what you are saying needs to work exactly hand-in-hand with what's on the board.” Early in the semester, students had fewer visuals overall than they did late in the semester, but over the course of the semester, students showed an improvement in their use of visuals.

First Critiques

Early in the semester, students often had to be prompted to describe visuals they had put on the wall, which at times extended to needing prompting to explain the orientation of site plans. Students often had a mismatch between what they said and the visuals students talked about. For example, Candace, a student in Levi’s class, pinned up sections and perspectives, but only ever referred to her model. Other students ran out of time before they were able to address all materials, and sometimes had the benefit of extra time to describe these visuals. The failure to address some of the visuals worked against students. For example, Samuel did not talk about his model, despite the key role that models played in the class. Levi pointed out this gap to him and asked him to pass around the model. When Samuel started to say something about the model, Levi cut him off saying, “no talking, no talking” so that the group could move on to another presentation.

At the start of the semester, some students in Hannah’s class had problems addressing all of their visuals. For example, Hannah had to prompt Dinah multiple times to talk about different visuals. These visuals included key pieces of information such as sections of the site
cut to show elevation and site analysis sheets. On the other hand, some students were able to clearly move through the visuals they brought, such as when Lydia walked the audience through a chart:

As you move through this chart, you’ll see how a landform combines with an urbanized area to form a big conglomeration of stuff. And when you look at the relationship to the material studies, you see these pockets and areas and the way they are forming and then you throw in an urbanized area, here represented by Adam’s study, and the way that those natural features…react to each other.

During this explanation, Lydia consistently gestured to the diagrams, moving the audience not only verbally, but also visually, through the explanation. This same pair was later complimented on their use of visuals during feedback from critics.

*Final Critiques*

At the end of the semester, students in Levi’s class were more thorough in their description of visuals, but Hannah’s class seemed to struggle more with visuals. In Levi’s class, students were one-on-one or in small groups talking directly to critics. They were using a limited number of sheets joined together as construction documents. Generally, students were able to address various aspects of these sheets, although at times this was done with prompting from the critic. Students in Levi’s class performed effective behaviors such as Samuel tracing with his finger on the sheet to explain a visual aid to a critic. During a conversation with a critic, students Jared and Caleb students pulled out other sheets in order to address an issue with the critic. This ability to easily access sheets represented the student’s abilities to manage visuals in a productive manner.
Students in Hannah’s class had mixed levels of success at the end of the semester. For example, Ruth had to answer questions about the connections between her drawings, while Phoebe had problems dealing with the technology she chose to use. Phoebe utilized PowerPoint, PDFs, and printed sheets; beyond her technical difficulties, she also had to ask critics to rotate their chairs in order to see all the sheets. Susanna was able to talk about her sheets, but also put up sheets she did not use.

Some students in Hannah’s class did well in explaining visuals, such as Adam, who explained small models of the site at different time points before passing them around for critics to examine more closely. However, students in this class often did not have the opportunity to talk about all visuals they had posted, which was reflected in the overall drop in ratings for this competency. Generally, students in this class had numerous visuals because of the volume of work completed on the site. Students were able to accurately and thoroughly explain the visuals on which they did focus, but lacked thoroughness in addressing all visuals.

Audience

As a part of critiques, students are expected to answer questions and generally respond to feedback from faculty and critics. This competency can be particularly problematic for students because they cannot prepare a presentation for this portion of the critique. These difficulties were particularly seen early in the semester; students’ abilities to manage audience interactions improved significantly over the course of the semester.
First Critiques

In relating to the audience, students in Levi’s class showed some difficulties at the start of the semester. For example, Marcus was asked at the end of his presentation about a model, which was part of the class requirements for this critique. Marcus hesitated, then said “screwed it up” and that’s why he didn’t bring it. A classmate, Jared, kept his arms crossed during feedback from Joanna. However, Nathan provided positive nonverbal feedback to the critic by following along with Joanna’s comments by looking at the visuals to which she referred.

Early in the semester, students in Hannah’s class similarly faced difficulties. A student in Hannah’s class, Felix, was prompted by his instructor to talk about some of what he discovered in analysis. His reaction was to stumble briefly over his words before telling the audience that he did not find much and tried to get out of talking about analysis. Later in the critique, he demonstrated limited responses to the audience’s comments, but did clarify at times when critics discussed various aspects of his ideas.

Final Critiques

At the end of the semester, some students still had difficulties in being open to critics’ comments. For example, several students in Levi’s class spent the majority of their time with critics with their arms crossed and not responding to critics’ comments. However, some students were actively engaged with the critics and open to new ideas. For example, one student took advantage of the opportunity to ask his critic detailed questions about grading a site, demonstrating a desire to engage with the professionals and hear alternative perspectives. At the end of the semester, Levi’s students Nathan and Abel consistently asked
questions of the critic in addition to taking notes. Samuel pulled out sheets in response to a critic’s comment in order to be engaged with the critic. Another classmate, Candace, specifically asked for feedback from a critic: “Please let me know if you find anything that I’m missing or that I need to pay more attention to, because the notes were the hardest part for me.” By making this request, she engaged the critic in a conversation about the role of notes on construction documents. She left herself open to the critic’s suggestions in a non-defensive manner.

In Hannah’s class, students were not working one-on-one with critics, but they maintained similar patterns of sometimes success and sometimes failure. A student in Hannah’s class was also overall positive toward the critics. She engaged in a conversation with critics about making “green” sites in the city and responded positively to critics’ compliments about her presentation.

Hannah’s student Ruth also engaged with the audience when telling the critic that she gained a new perspective based on the feedback. At the end of the semester, Ruth began her response to a critic’s comments by complimenting the critic’s insights:

Just to address a couple of things you said, I think you brought up a lot of very interesting and very good points, and I think the idea of the mosaic was something I tried to get into and I was hoping it was something that would come through with my idea of trying to get onto the different planes… I think, like you were saying, I wasn’t necessarily trying to be antagonistic [about the city’s plans for the site], but I do believe that because of the purposes proposed, I think that lends itself to this kind of conflict.
By prefacing her response with a compliment, the student demonstrated that she valued the feedback given by the critic, even if she did not entirely agree with the critic’s perceptions of her goals. Overall, there was a clear shift in students’ abilities to interact with the audience by the end of the semester.

Conclusions from RQ1

The first research question asked about how students’ performances changed over the course of the semester. While students improved on all competencies, not all competencies saw significant shifts. This set of mixed results, which will be more thoroughly discussed at the end of this chapter and in the Discussion chapter, is also reflected in the mixed quantitative results.

Quantitative Results

In order to provide additional insights into students’ communication in design studios, the qualitative data was supplemented with pre-test and post-test surveys. The quantitative data collected from students was focused on two major characteristics: self-efficacy and communication apprehension. These constructs were measured at both the beginning and end of the semester and this information gives insight into students’ perceptions of their own abilities and feelings. Shifts in students’ perceptions can be examined by making a comparison of pre- and post-test data. This data then provides a foundation for making comparisons to a semester in which students did receive instruction, which will be made in Chapter 6.
Hypothesis 1

The first hypothesis predicted that students’ perceived self-efficacy for design communication would increase over a semester. Given the desire to understand what happened naturally in a design class, I used only the data from the no-instruction condition. There was a significant difference between pretest and posttest scores, but students’ self-efficacy decreased rather than increased, $t = 2.48, p < .05$ ($M = 86.17, SD = 8.18$ to $M = 82.30, SD = 8.58$). Therefore, the hypothesis was not supported even though the results were statistically significant.

Hypothesis 3

The third hypothesis predicted a decrease in communication apprehension over the course of the semester. With the data from the no-instruction condition, there were no significant differences between pretest and posttest scores on either the generalized communication apprehension measure, $t = .76, p = .46$, or the situation-specific communication apprehension measure, $t = .06, p = .96$.

Hypothesis 5

The final hypothesis predicted that students’ perceived self-efficacy and reported communication apprehension would be negatively correlated. Utilizing each measure of communication apprehension, this hypothesis was supported. The correlation between the general communication apprehension and self-efficacy was significant, $r = -.51, p < .01$, as was the correlation between the situation-specific communication apprehension and self-efficacy, $r = -.43, p < .01$. In both cases, this relationship indicated that students who were
higher in self-efficacy also reported lower levels of apprehension; likewise, students with more apprehension reported less self-efficacy.

This final hypothesis was intended to test the overall connection of the measures, which did show the predicted relationship between the two measures. This significant result adds to the validity of the measures used.

Conclusions about Fall Data

Together, the qualitative and quantitative data used in this chapter paints the picture of communication in a typical semester of a design studio. Students’ communication abilities shift as their projects progress, but the shifts are not significant in most competencies. Furthermore, rather than increasing, students’ self-efficacy actually decreases; communication apprehension did not change. In this section, I will tie together these results with additional information in order to fully explain the results before moving on to the results of the quasi-experimental implementation of communication instruction.

By looking at each competency, it is clear that students had some areas of improvement over the semester, but that their communication skills still fell short of the competencies desired by their instructors. The overall lack of change in the course of a semester may be attributed to the lack of instruction provided to students, as pointed out by Hannah during her interview:

Because they have so many presentations throughout the semester, I guess you tend to think that they might get used to how to manage their 10 minutes, but…a lot of times I'll say you have two more minutes, and they haven't even reached their design yet. So, I probably need to do a little better job on that.
Students also highlighted the lack of instruction specifically about communication when they were asked about how they learned to communicate in critiques. For example, Claudia, from Hannah’s fall class pointed out that she had learned to communicate in the moment:

I learned by, really getting hammered by Gabriel once….In the middle of my park, I had a circle, and open green space that had trees around it. And he just hammered me. He was like "you need to know why that is an exact circle." And I had a wall in between an eating area and that circle and I was like, "so this is my private space where it's not a complete wall, it's not completely open." And he was like, you know, basically saying that I didn't even know what semi-private meant. And so, I really had my guard down. And now my guard is up. And anything that I say, I better be able to back it up.

Another classmate, Susanna, noted that early in their design career, students would be given more precise details about what to talk about:

The first few times they will go through and say, it they give you basically an explanation of what they are looking for and tell us a common A, B, C, and D. And it's very structured, the first, at least the first few critiques, if not the whole first semester. And then after that you are able to basically understand that when you go through critique, if you state goals you need to meet them in whatever your presentation is.

Comments such as these from students and instructors illustrate the importance of communication for students as well as the general lack of instruction given to students on communicating in discipline-specific ways.
The importance of communication was also highlighted by students in terms of multiple modes of communication. For example, a student from Levi’s class offered this advice:

I would try to underline how important [communication] is. I mean, drawings are great, but communication is... your drawings communicate, you're communicating with your words, and when you were presenting you were communicating with your body language with inflection. And if you can't communicate, and I’ve seen students who can't communicate… it's a train wreck. And I think when people think communication, they're not thinking drawing, they're thinking standing up and talking in front of people. And also, I think as far as drawing goes, it's communicating with yourself.

Students in the design studios recognize the importance of communication in its various forms as well as the struggles they face in learning these communication skills. The purpose of the quasi-experimental design, then, is to help address the importance of communication while helping students struggling to learn communication skills.

This chapter addressed the change in students’ presentation skills and self-perceptions over the course of a typical design semester. Because students do not typically receive instruction about communication, it was important to look at such a semester before introducing instruction. Overall, students’ presentation abilities improved over the course of the semester, but with the exception of concept, these shifts were not significant. The standard deviations also shrank over the semester, indicating that students’ performances normalized. Students’ self-efficacy actually decreased over the course of the semester while
their communication apprehension stayed stable. Together, these results give us insight into changes over the course of a semester, where students’ abilities improve (though not significantly), self-efficacy decreases, and communication apprehension remains relatively constant. With this information, then, we see what can be done with the introduction of communication instruction. The effects of this instruction will be explained in Chapter 6.
CHAPTER 6: COMPARING FALL AND SPRING RESULTS

In this chapter I will address the results of the quasi-experiment wherein communication instruction was provided to students in two design studios. The purpose of this research design was to provide a point of comparison between students who received no instruction and students who received instruction (RQ2). In this chapter, I will present the results of this research question. I will conclude the chapter with an assessment of the overall results from comparing the two semesters’ data.

Research Question 2

Research Question 2 asked about differences between a semester in which students had no instruction and a semester in which students received some communication instruction (of either form). Table 6.1 provides means and standard deviations for all competencies each semester. The abilities of students in the fall semester and spring semester were not significantly different on the concept, credibility, argument, and visual competencies. Students were significantly different on the audience competency \( (p < .01) \), with students in the fall semester being more competent in this area at the start of the semester \( (M = 3.71, SD = 0.77 \text{ compared to } M = 2.91, SD = 0.76) \). Although students in both semesters improved over the course of the semester, students in the spring semester (who received instruction) saw more significant shifts than did students in the fall. While the fall semester saw only two significant differences (argument and audience), the spring semester classes saw significant differences in all five competencies (see Table 6.2). Furthermore, the shifts in the spring semester were more significant. With the exception of argument, standard
deviations also shrank in the spring semester. This trend in standard deviations was also supported in the fall data, where all standard deviations shrank.

Table 6.1

**Means and Standard Deviations for Fall and Spring Data**

<table>
<thead>
<tr>
<th>Competence</th>
<th>Fall Pre Mean (SD)</th>
<th>Fall Post mean (SD)</th>
<th>Spring Pre Mean (SD)</th>
<th>Spring Post mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
<td>3.56 (0.95)</td>
<td>4.12 (0.22)</td>
<td>3.16 (0.81)</td>
<td>4.13 (0.60)</td>
</tr>
<tr>
<td>Credibility</td>
<td>3.35 (1.03)</td>
<td>3.88 (0.49)</td>
<td>3.03 (0.92)</td>
<td>3.97 (0.86)</td>
</tr>
<tr>
<td>Argument</td>
<td>3.59 (0.69)</td>
<td>4.15 (0.42)</td>
<td>3.28 (0.66)</td>
<td>3.76 (0.65)</td>
</tr>
<tr>
<td>Visuals</td>
<td>3.59 (0.89)</td>
<td>3.88 (0.45)</td>
<td>3.16 (0.72)</td>
<td>3.82 (0.63)</td>
</tr>
<tr>
<td>Audience</td>
<td>3.71 (0.77)</td>
<td>4.26 (0.50)</td>
<td>2.91 (0.76)</td>
<td>4.00 (0.69)</td>
</tr>
</tbody>
</table>

Table 6.2

**U values and significance for each competence comparing pre-test and post-test scores by semester.**

<table>
<thead>
<tr>
<th>Competence</th>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U</td>
<td>p</td>
</tr>
<tr>
<td>Concept</td>
<td>201.00</td>
<td>0.05</td>
</tr>
<tr>
<td>Credibility</td>
<td>194.00</td>
<td>0.09</td>
</tr>
<tr>
<td>Argument</td>
<td>218.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Visuals</td>
<td>161.00</td>
<td>0.58</td>
</tr>
<tr>
<td>Audience</td>
<td>205.00</td>
<td>0.04</td>
</tr>
</tbody>
</table>
In order to more fully explore these comparisons between students who received communication instruction and students who did not receive the instruction, I will provide examples for each competency from students at both the beginning and end of the semesters. These examples are intended to be representative of the types of behaviors utilized in these classes. I will add to these examples by using feedback given to students as well as interviews with students and faculty.

**Concept**

Students were required to share their concept with critics in addition to addressing the process surrounding that concept decision. In order to be successful at this competency, students should make this information explicit. Students in the fall semester overall saw no significant difference in their abilities to engage in this competency, although the means did increase. In the spring semester, there was a significant difference from the beginning of the semester to the end of the semester. These differences will be more fully explored with examples from students’ presentations, the feedback they received, and their interviews.

**First Critiques**

Early in both semesters, students had mixed levels of success in explaining their process and concepts. In the fall semester, Miriam, a graduate student in Levi’s class, began her presentation by talking about her model and in the approximately two minutes she spoke, gave no clear indication of her concept; instead, she focused on her visuals. However, some students were successful in Levi’s class early in the fall semester. For example, graduate student Paul provided clear statements about his concept during his critique time. He talked about the site being a transitional space between the bell tower and Court of North Carolina.
and clearly stated “this site is about movement.” Students in Hannah’s class were overall successful in explaining their process, as evidenced by positive comments made by critic Gabriel about how well he could follow the process of a pair of students. Overall, students in Hannah’s class were able to express their concept and process to critics early in the semester with only minor problems.

Early in the spring semester, students were likewise somewhat successful with some obvious exceptions. In Levi’s class, graduate students Adam and Ruth introduced their concept for the hospital site as thinking about the site as an organism. This metaphor then allowed them to introduce specific aspects of their concept within this framework. Similarly, Isaac, a student in Levi’s class, moved through material methodically in the spring semester, but a critic still had to ask him about what the primary focus of his site was from the three main topics of the class: low-impact, daylighting, or active living. Although he gave an answer, he did respond with information about all three on the site, which was potentially confusing to critics.

Some students’ lack of competency in explaining concepts early in the semester was apparent. Hannah’s spring student Esther had a tendency to jump around. For example, she talked about how she wanted a connection between private and public space in relation to her site, then moved to a precedent study, then went to details of her plan. She jumped between talking about textures and materials on the site and talking about the square theme. Without a connection, she moved from talking about repeating the theme of squares on her site to pointing out a picture of pyramids in Mexico and how they were aligned with astrological happenings. She then went from statements about pyramids to the entrance to the city. From
this discussion, she jumped right into night-time programming on the site. There was no clear sense of her process and only minimal sense of her concept. Based on these examples, it was clear that students at the start of both semesters had a mixed set of abilities in explaining process and concepts.

**Final Critiques**

At the end of both semesters, students were better at explaining concepts than they were at the start of the semester, but the change was only significant in the spring semester. This difference is illustrated in examples of strengths and weaknesses of presentations in each semester.

By the end of the fall semester, students had 15 weeks’ worth of process to explain in addition to explaining their process. In the fall semester, Ruth, a student in Hannah’s class, began her presentation by giving a clear sense of the design process but her concept was not clear until the very end of her presentation time. Susanna, a student in Hannah’s class, had a tendency to jump from topic to topic, which made her process more difficult to follow. For example, she started to talk about pedestrian traffic on her site, then realized she should back up and talk about analysis. At the end of the fall semester, students in Levi’s class also had mixed levels of success in expressing their concept and process as they talked about their construction documents. For example, Julia and Seth both explained to critics the assignment they were given and the flow of the class in order to address concerns from the critics. While such responses did give a better sense of their process, the actual statement of concepts was often lacking. Instead, critics gathered ideas about concepts from viewing the construction documents students had generated.
In the spring semester, students significantly improved on their abilities to present their concepts. In Hannah’s class, Elizabeth presented her big idea – an aquarium – explicitly, both verbally and visually, in addition to talking about her process. A classmate, Shiloh, gave a clear sense of process by systematically talking about each component of the process undertaken by the class and giving specific examples of her work at each step and its influence on her larger concept.

In Levi’s class, students were similarly successful in their spring final critiques. For example, Caleb, an undergraduate student, provided the critic with a clear sense of the big idea after giving an orientation to the site. He told the critic, “the big idea was to connect it to the art museum….to make an art-centered district.” He went on to say that he wanted to create a sense of place for the area by tying together different aspects of the Blue Ridge corridor. The process was also presented well by Abigail, who explained that her group started the semester by looking at Rex Healthcare and they took different ideas such as active living as a starting point. She went through the different ideas each person in the group focused upon, before moving into how the group looked at the larger scale of the Blue Ridge corridor. After giving the critic the overall sense of what the project was about and how they changed scales, group members then delved into specific aspects of the site. While they were able to clearly communicate their process, they were not as successful at articulating a specific larger concept.

Over the course of both semesters, students saw some improvement in their abilities to talk about concepts. This shift was stronger as well as significant in the spring semester
compared to the fall semester. With the introduction of instruction, students’ abilities to articulatе their concepts in a critique improved in a way that was not see in the fall semester.

**Credibility**

Students’ credibility was exhibited in their verbal and nonverbal presentation of information as well as in their responses during the feedback component of the critique. Students in the fall semester did not see a significant shift in these abilities, although they did improve somewhat overall. In the spring semester, students who received instruction were rated significantly higher on credibility at the end of the semester compared to the start of the semester.

**First Critiques**

Students in the fall semester had mixed levels of success. For example, Candace, a student in Levi’s class, spent much of her presentation speaking with fillers, her arms crossed or hands blocking her face from the audience, and shifting her weight. Miriam, a graduate student in that class, presented in casual clothes, leaning against the wall as though she were having a casual conversation with a friend. Classmates Noah and Marcus each reduced their credibility with abrupt or unclear endings to their presentations, indicative of a lack of planning. Jared consistently used “um” and “like” and upon realizing he was about to run out of time with more content to cover, made an offhand (inappropriate) comment about time. Other students in Levi’s class were able to enhance their credibility through gesturing appropriately to aspects of their designs, pacing their presentations at an understandable rate, and using notes as references rather than crutches.
In Hannah’s fall class, students started out with higher levels of credibility than did students in Levi’s fall class, but still had difficulties. For example, Felix consistently used terms such as “um” and “like.” He also jumped around with his organization and stumbled in response to Hannah asking him to talk about some of his analysis. His stumbling, followed by an excuse about not really finding anything, projected an image of not being able to explain his work to his audience, and diminished his credibility. Classmate Claudia began her presentation with her arms crossed but also spent time gripping her notebook, both of which diminished credibility. She later returned to her arms-crossed status in addition to spending as much time looking at her visuals as she spends looking at the audience.

In the spring, behaviors seen early in the semester were similar to behaviors seen in the fall semester early critiques. For example, Levi’s spring student Isaac spoke fast and gave the impression that rather than flowing through information, he was running down a checklist of information to share. Furthermore, he spoke with sunglasses propped on his head. A particularly striking example of poor credibility early in the semester came from Esther, a student in Hannah’s class. After nearly 10 minutes of her talking, Gabriel jumped in:

Why don’t we stop there, Esther, because I think you’re starting to ramble a little bit [Esther laughs nervously] and maybe these people can help you. You have something up there [he gestures toward visuals]; I don’t think your verbal presentation is helping you as much. Maybe these people can ask you questions and set you on the right track.

The critique quickly moved to audience feedback in an effort to counteract the rambling, disjointed presentation that Gabriel realized was diminishing Esther’s credibility.
Final Critiques

At the end of the semester, students’ credibility was generally higher, but with some exceptions. Overall, the improvement over the course of the semester was strongest in the spring semester.

The final critique in Levi’s fall class yielded several instances of poor credibility. At the end of the fall semester, some students in Levi’s fall class approached the critic in a rather casual manner, such as in their dress. For example, Noah wore a t-shirt and knit cap to the critique; another student spent the discussion time with the critic chewing on gum. While it was the norm for students to sit down with critics in this setting, many students spent their conversational time leaning on desks or with hands rested on hands, which did not present a confident persona. Another student, Jared, made multiple excuses, such as blaming illegibility on sheets on the rising cost of printing, which meant he had not printed at a large scale prior to the sheets brought into the critique. During this conversation, Jared played with the hem of his t-shirt, consistently looked at his classmate rather than the critic, and sprinkled his sentences liberally with “like.” He later made more excuses about difficulties with the AutoCAD program he used to generate graphics.

Such students were in stark contrast to other students in Levi’s fall class, such as Nathan who approached the critique dressed in a button-down shirt and tie and presented a confident air. Other students, such as Abel, presented themselves as credible and knowledgeable through their engagement in conversation with critics and their ability to answer questions and provide additional information as necessary. Overall, students in Levi’s class – with the obvious exceptions of the previous examples – presented a more credible image at the end of
the semester than at the start. Despite such problematic behaviors, students in Levi’s studio overall spoke confidently about their designs.

In the spring semester, students were successful at presenting themselves as credible; they showed a significant improvement over the course of the semester. For example, Susanna, a student in Hannah’s spring class consistently used fillers such as “um” and “uh” in addition to awkwardly positioning herself so she was not facing the audience fully. However, she also spoke clearly and at a reasonable pace, which helped improve her credibility.

The overall success in credibility for the spring students was exemplified by Hannah’s student Tabitha, who spoke with a nice pace, dressed well, and managed her time well in order to present a credible image. She used gestures to provide variation in her presentation and to help direct audience attention to key ideas and visuals. Her vocal variation likewise helped the audience understand her presentation. She did not feel rushed in her presentation, and at the end, concluded by saying “I’ll open it up to questions.”

Some students gave mixed messages about their credibility. For example, Cyrus (a student in Hannah’s spring class) consistently used “um” and “uh.” For example, in introducing his site, he said “So, um, getting into the site plan, uh, what we have here is these two high points here, uh, are terraces, um, with the low point in the very center.” Overall, though, Cyrus spoke in a clear voice and seemed comfortable talking about his project; he also dressed appropriately for the critique and held himself in a confident manner. In addition to reducing the use of fillers, Cyrus could have improved his presentation by looking more at the audience and adding vocal variety.
In Levi’s spring class, students similarly had success in presenting themselves as credible at the end of the semester. For example, Miriam was able to put forth her credibility from the very start of her conversation with a critic. Miriam, a graduate student, left a conversation with a classmate when she realized a critic had begun looking at her materials. As she approached the critic, she greeted him, shook his hand, and – after assessing where he was in examining her materials – easily stepped into a conversation about her project. She seemed at ease with the critic and was able to carry on a conversation with him despite the somewhat unconventional start to the critique.

Another classmate, Caleb, presented himself as an overall credible designer as he talked with a critic who was not familiar with the site. Caleb provided appropriate gestures to help illustrate his points to the critic. For example, as he spoke about making connections between various aspects of the site, he traced out those connections on the site. He also used his hands to demonstrate aspects such as scale and transitions in order to help the critic better understand his approach. These gestures not only helped his critic in terms of understanding, the gestures also enhanced Caleb’s credibility by giving him multiple modes of communicating ideas to the critic.

While there were changes seen in both semesters in terms of students’ abilities to present themselves as credible, the shift was significant in the spring semester but not in the fall semester. This result suggests that the communication instruction was helpful in improving students’ abilities to present themselves as credible designers.
Argument

Students were expected to provide the rationale behind their design. In doing so, students justified their decisions and demonstrated an understanding of design and of their particular project. Students improved significantly on this competency in both semesters. These shifts are evidenced by the examples outlined below.

First Critiques

Early in both semesters, students had some difficulties explaining their rationale. Early in the fall semester, students gave little in the way of justifications. For example, a student in Levi’s class described various aspects of her design but gave few reasons for including various aspects of the design. Another student in the class only justified decisions to the extent of saying that he made the decisions based on feedback from the previous interactions with professors. Some students were more successful at providing arguments, such as a student in Levi’s class who was able to explain how the concept related to what she actually did with the site. Statements such as “so how I’ve done this is…” prefaced these justifications.

Students in Hannah’s fall class initially provided more arguments than did students in Levi’s class. For example, early in the semester, Claudia spoke early in her presentation about “why Raleigh,” providing the justification for why her design decisions specifically fit within the nature of Raleigh. Her argument for why to turn this space – formerly warehouses – into a green space focused on the history of the area. In using such a justification, she is specifically placing this green space in Raleigh, not just in any city. Such a justification helped support her case for her design concept.
However, not all students were as successful in the fall. Felix provided few arguments for his decisions, while Dinah had to be prompted multiple times to provide additional information supporting her decisions. This lack of reasoning was reflected in a critic’s comment regarding the student’s idea of “source” and spreading. The critic asked, “I guess you’re trying to make your source a site? Or are you trying to draw from them? And that was the only thing that was confusing.”

In the spring semester, students likewise offered some justifications but not as thoroughly as necessary early in the semester. In Levi’s spring class, Jared and David dealt with why they had moved particular buildings on the site, saying that they had moved urgent care to right on Blue Ridge Road for easy access. They continued:

Jared: Then in the interior, we located the birth center and cancer center near the park space and to the north we have our bed towers, which are bordered by a green parking deck and an entry to the courtyard space on both sides.

David: So going off of that, we really wanted to use our building footprints and building designs to create outdoor spaces conducive to the buildings that they were close by.

Throughout this portion of their presentation, Jared and David justified decisions they had made in regards to the site. Their presentation included some reasons for their decisions but did not fully explain the rationale behind all decisions. Similarly, James, a graduate student in Levi’s class, told critics part of his rationale for the green spaces on his site, was that “One of the things I really wanted to stress… was to provide outdoor spaces and trails that people could use whether they were out there for a 15-minute break or for an afternoon.” While
James began to provide rationales such as this, he did not always fully develop the ideas to justify specific decisions he made.

Final Critiques

At the end of both semesters, students were significantly more successful in explaining their rationales. In the fall semester, this significance was largely impacted by the significant change in Levi’s class.

At the end of the fall semester, students in Levi’s class reported that they made particular decisions because of what they were told needed to be on the site. Two students in Hannah’s class were able to give specific arguments for design decisions. A student in Hannah’s class explained that the downtown site she worked on was in a bowl lower than surrounding blocks. She wanted to change this feel and make it connect to the surrounding area, which informed the decisions she made. Another student justified her use of wide sidewalks because she wanted to connect back to the downtown area.

In the spring semester, students were more successful at explaining their arguments by the end of the semester compared to their earlier presentations. One of the areas where students often provided the most robust rationale was in their precedent studies. For example, Shiloh explained that her precedent study came from Seattle and spent time explaining the similarities between Raleigh and Seattle in order to argue for her choices. She pointed out that the two sites (the one she was developing and the parallel site in Seattle) were similar in size as well as relative location within their respective cities. Both sites were also bounded by major arteries, an observation that helped inform the goals of the Seattle site that could also inform decisions about the Raleigh site.
Some students were able to not only articulate multiple reasons for choosing their precedent studies, but also were able to use that justification to further support design decisions. For example, Tabitha used Jefferson National Expansion Memorial in St. Louis for her precedent study. In introducing this aspect of her project, she said she chose this memorial for several factors:

One, because St. Louis is just about the same size as Raleigh, about 350-375,000 people and the site itself – the arch here – was specifically designed as a monument to the spirit of westward expansion. And so I thought between the size and the proximity to the urban area… they also have this railroad bridge going on right by the site. So I thought, this is interesting, how did they deal with it.

She went on to explain that the designer of the St. Louis site chose to make the bridge a feature of the design, thus allowing people to see how the urban space functioned. She said she took what she learned from the St. Louis site and from the other project components done as part of the class, and recognized that “the creation of space would be a good place for me to develop my skills.” Later, in the midst of feedback from critics about the size of the arch she placed on her site, she justified her choice by saying that her goal was not to send people elsewhere but rather to focus their attention in on the site.

Sometimes, students’ most compelling justifications came in response to critic comments. Carmela responded well to questions from the audience about why this site fit with the proposed theme of a gateway:

Critic: How did you conceive of this place as gateway park? Because that’s the big theme that you have. It’s not drawn, but it’s the title of your project. I’m just curious
what led you to think of this place as a gateway. You use the term gateway park, which is being used all over the place in urban design. So, in your mind, how is this a gateway park?

Carmela: I feel like it is a connection between many different principle areas of Raleigh, and whenever you’re coming from out of town, it seems like a gateway into another place. I feel like it’s a transitional place. And that’s why I’m calling it Gateway Park. I feel like especially if you are driving in on South Saunders… you can see this site very clearly…. I feel like it’s in this transitional, these growing areas, especially the warehouse district here.

In this exchange, Carmela provided the argument for her overall concept that the critic felt was missing from her original presentation. Similarly, her classmate Chloe represented her ability to argue for her decisions when she justified why she changed how a required access road to the adjacent convention center sit into her site:

Also, I felt like the access drive did not have a whole lot of positive impact on the site so I moved it up here and it goes down fairly steep to go underground and once it hits the bridge, you do not see it anymore so it’s just this little access point.

Rather than simply saying that she had made this change, she prefaced the statement by giving a reason for moving this required element. In both these cases, students offered valid rationales that enhanced their presentation, but these justifications came after prompting, not organically.
Ideally, students were able to present the justification without prompting, and were able to draw on multiple rationales for their decisions. For example, Shiloh, when showing a model she had created, talked about her decision to leave the service access road as it was:

One thing that I was really responding to was the physical constraint of the surface road and I chose to leave it in my design for the reasons of cost and also that you need a 16-foot clearance if you’re going to cover it. And I also feel like because it’s already there on the site, that to be true to the urban fabric, it was really important for me to leave it daylit, so that’s something I chose to do.

In justifying this decision, Shiloh not only drew on the practical, logistical reasons for her design, she also emphasized her larger approach to the site as a reason for this design decision.

Students’ abilities to articulate reasons for their design decisions improved over the course of both semesters, although the change was slightly stronger in the spring semester compared to the fall semester. This result suggests that students’ abilities to provide rationale in conjunction with a project will evolve as the project evolves, and that while instruction may have some impact, the instruction is not as influential here as it is for other competencies.

**Visuals**

Students utilized a variety of visuals in making their presentations. Over the course of both semesters, students improved in their abilities to use their visuals, specifically in terms of matching their oral content and their visual content. The difference in abilities between
early and late in the semester was not significant in the fall semester, but was significant in the spring semester.

First Critiques

Early in the fall semester, students had fewer visuals overall than they did late in the semester, but over the course of the semester, students showed an improvement in their use of visuals. Early in the semester, students often had to be prompted to describe visuals they had put on the wall, which at times extended to needing prompting to explain the orientation of site plans. One student in Levi’s class pinned up sections and perspectives, but only ever referred to her model. Other students ran out of time before they were able to address all materials, and sometimes had the benefit of extra time to describe these visuals. But the failure to address some of the visuals worked against students. For example, Samuel had to be prompted to pass around his model at the end of his presentation because he had failed to talk about this key aspect of the class’s process.

At the start of the fall semester, some students in Hannah’s class had problems addressing all of their visuals. For example, Hannah had to prompt Dinah multiple times to talk about different visuals. These visuals included key pieces of information such as sections of the site cut to show elevation and site analysis sheets. On the other hand, some students were able to clearly move through the visuals they brought, such as when Lydia walked the audience through a chart:

As you move through this chart, you’ll see how a landform combines with an urbanized area to form a big conglomeration of stuff. And when you look at the relationship to the material studies, you see these pockets and areas and the way they
are forming and then you throw in an urbanized area, here represented by Adam’s study, and the way that those natural features…react to each other.

During this explanation, Lydia consistently gestured to the diagrams, moving the audience not only verbally, but also visually, through the explanation. This same pair was later complimented on their use of visuals during feedback from critics.

At the start of the spring semester, students faced similar issues in regards to visuals. For example, Jared and David, two undergraduates in Levi’s class, talked about their plan and models without ever talking about the sections and perspectives they had brought into the critique. On a more positive note, their classmates Adam and Ruth presented a variety of details through projected slides that included animations of moving through the site. While they addressed these images, they did not address the sheets they had actually pinned to the wall. The critics were impressed with the visuals provided, but one of the first comments highlighted the problem with their presentation of the visual materials:

The film idea I liked. The images were great. I’m not sure how much of this is the format and how much of it is your concept, but… you’re not allowing enough time for the people to process. And also it’s the speed that you’re talking. I’m not sure which one came first: if you set the tempo of how you wanted to present and then you set the tempo of the film, but either way, both are too fast. The more information that you provide, the more time you need to allow someone to process it. And what happened was you went through so much so fast, that none of it can sink in.
Throughout the feedback, Adam and Ruth were complimented on their visuals but the critics noted the difficulty in understanding the visuals because of the tempo and quantity of material.

Final Critiques

At the end of both semesters, students had improved somewhat on their abilities to talk about visuals. At the end of the fall semester, Ruth from Hannah’s class had to answer questions about the connections between her drawings, while Phoebe had problems dealing with the technology she chose to use. Phoebe utilized powerpoint, PDFs, and printed sheets; beyond her technical difficulties, she also had to ask critics to rotate their chairs in order to see all the sheets.

Students in Hannah’s class did well in explaining visuals, such as Adam, who explained small models of the site at different time points before passing them around for critics to examine more closely. However, students in this class often did not have the opportunity to talk about all visuals they had posted, which was reflected in the overall drop in ratings for this competency. Generally, students in this class had numerous visuals because of the volume of work completed on the site. Students were able to accurately and thoroughly explain the visuals on which they did focus, but were lacking in thoroughness in addressing all visuals.

At the end of the fall semester, students in Levi’s class were also somewhat successful at using their visuals. Students were able to walk critics through the booklets of construction documents compiled for the critique and were also able to draw on other sketches and ideas in order to more fully explain the visuals. However, students also had
missing information or illegible markings that took away from their abilities to talk about their visuals effectively.

In the spring semester, students showed marked improvement, but with some small exceptions. For example, Delilah, a student in Hannah’s class, had to be prompted to show her model and during feedback went back to explain some aspects of her site that she had neglected earlier. A classmate, Carmela, glossed over her sections, simply pointing to them and saying “my sections over there dictate a little bit more about the grade change and how rapidly water might leave the site.” She was later asked to go through the sections for the audience in order to explain where each one was cut from the site and how the elevation changes were actually put into place.

In Levi’s spring class, students were able to use their visuals to the advantage of the presentation. For example, Marcus did a nice job explaining a sheet as he traced out various aspects of the diagram with his finger:

This is just kind of showing the regional scale… the main transit line comes in from Durham and then goes through Durham and RTP and stops by our site at Hillsborough Street, goes downtown… so this shows where the site is.

Although Marcus was able to provide such explanations, he also did not take everything into the critique. In trying to describe an aspect of his site, he stumbled and after attempting some gestures, admitted “I have two separate presentations and this has some information but not others I’m realizing.” Despite this setback, Marcus did continue to describe the site using the information he did have with him at the critique. A classmate, Ethan, provided details to a critic about where sections were cut. Upon flipping the sheet to a perspective, he told the two
critics. “This first perspective was taken from the south… looking through the space, right here. And Blue Ridge would be back here [gestures relative to perspective].” He went on to explain where the subsequent perspectives were cut, both in terms of cardinal directions as well as relative to landmarks on the site.

Difficulties with visuals were also noted in students’ interviews, such as a student in Levi’s spring studio:

a lot of the problems I've had this semester have been having enough detail in the drawing to match the detail that I thought through to… I have a context in my head that everybody else does not have then the drawing might not be to the same level as what I've thought about and sometimes what I say is not to the same level. But I would say it's putting the whole presentation package together, everything matches, everything is clear... it's like one whole thing, the little drawings and what you say, just make sure it's coherent.

This comment was made in regards to issues with presentations early in the semester and in anticipation of students’ final critiques. As demonstrated through examples, students had a variety of issues with visuals at both times of the semester but through a raised awareness of how to handle visuals, seemed to improve in the spring semester from early critiques to the end of the semester.

Audience

One aspect of the design critique that students cannot prepare for as easily is the audience interaction in which they are expected to engage. Students in the fall semester did
significantly improve on their abilities to interact with the audience. Likewise, students improved in the spring semester, and that difference was even more strongly significant.

First Critiques

Early in both semesters, students faced difficulties in dealing with the audience. For example, Marcus, an undergraduate in Levi’s fall class, was asked at the end of his presentation about a model, which was part of the class requirements for this critique. Marcus hesitated, then said he “screwed it up” and that is why he did not bring the model to the critique. His classmate, Jared, kept his arms crossed during feedback from Joanna. However, another classmate, Nathan, provided positive nonverbal feedback to the critic by following along with Joanna’s comments by looking at the visuals to which she referred.

Early in the fall semester, students in Hannah’s class similarly faced difficulties. For example, Felix was prompted by his instructor to talk about some of what he discovered in analysis. His reaction was to stumble briefly over his words before telling the audience that he did not find much and tried to get out of talking about analysis. Later in the critique, he demonstrated limited responses to the audience’s comments, but did clarify at times when critics discussed various aspects of his ideas.

In the spring semester, students faced similar difficulties at the start of the semester. For example, Isaac, a student in Levi’s class, alternated between clutching his notebook to his side and writing down notes. Esther, a student in Hannah’s class who had faced harsh criticism received a recommendation of where to go next with her design. Her response demonstrated a somewhat antagonistic attitude toward critics by making excuses:
I mean, this is just my ideal. I’m really slow so, like, when it comes to pulling it all together, it’s like “oh shoot, I have to have something for the crit”…. So I’d love to sit and, you know, design, but I run out of time.

During this response and much of her other feedback, Esther was sitting on the table in front of the room, often sending either nervous or artificial smiles at critics. Through both her verbal and nonverbal behavior, she presented an image of being disinterested in audience feedback.

Despite these problems, some students were particularly successful at indicating their interest in the audience. For example, Adam and Ruth listened intently to critic feedback and both took copious notes in addition to nodding and demonstrating interest in audience feedback. Similarly, James, a student in Levi’s class, ended his presentation by asking the audience if they had any questions. However, he then immediately crossed his arms, which counteracted his original goodwill toward the audience. Overall, students’ communication early in both semesters left room for improvement in regards to audience interactions.

Final Critiques

At the end of both semesters, students were more appropriately responsive to critics. Some students were particularly actively engaged with the critics and open to new ideas. For example, Levi’s students Nathan and Abel consistently asked questions of the critic in addition to taking notes. Candace specifically asks for feedback from a critic: “Please let me know if you find anything that I’m missing or that I need to pay more attention to, because the notes were the hardest part for me.” By making this request, she engaged the critic in a
conversation about the role of notes on construction documents. She left herself open to the
critic’s suggestions in a non-defensive manner.

In Hannah’s fall class, students were not working one-on-one with critics, but they
maintained similar patterns of sometimes success and sometimes failure. A student in
Hannah’s class was also overall positive toward the critics. She engaged in a conversation
with critics about making “green” sites in the city and responded positively to critics’
compliments about her presentation. Hannah’s student Ruth also engaged with the audience
when telling the critic that she gained a new perspective based on the feedback. At the end of
the semester, Ruth began her response to a critic’s comments by complimenting the critic’s
insights. By prefacing her response with a compliment, the student demonstrated that she
valued the feedback given by the critic, even if she did not entirely agree with the critic’s
perceptions of her goals.

These positive examples were somewhat tempered by negative examples, such as the
several students in Levi’s class who spoke with critics either with arms crossed or leaning
their heads on their hands. Both behaviors indicated an unwillingness to or disinterest in
critics’ feedback. Other students failed to respond to critics’ comments.

In the spring semester, students were able to respond appropriately and positively
toward critics by the end of the semester. For example, Delilah, a student in Hannah’s class,
started off her presentation with a positive note for the critics, thanking them for taking time
out of their busy schedules to be there for the critiques. During the feedback time of
Tabitha’s critique, she acknowledged that a critic’s concern about the size of an arch on her
site had merit and that she would consider the suggestion.
Often, students were challenged to respond to specific concerns. After talking to his
critic for several minutes, David, a student in Levi’s class, was confronted with a question
about how to make this site – a potentially dangerous and unattractive area for pedestrians –
useable by people. In responding to the critic, David retained his composure and was able to
give an articulate response to the critic that addressed the concern raised. However, by this
time in the conversation, David was leaning on his elbows on the table in front of him, which
detracted from his engagement with the critic. Overall, however, students in the spring
semester were more adept at responding to critics than were students at the end of the fall
semester.

Conclusion

As established with the fall semester data, students’ performances improved
somewhat over the course of the semester, but generally these differences were not
significant. In comparison, students significantly improved on all competencies when they
were exposed to communication instruction, regardless of the structure of the instruction. A
student in Hannah’s spring class, Saul, demonstrated the difference felt between the start and
end of the semester. He noted that early in the semester, he felt very unsure about the content
of presentations:

That was really when we were keying in on design principles and design elements
and just the vocabulary of design and how to describe the various elements of a
particular project approach to people who were familiar with them. I was not familiar
with them not really having had exposure to that before....for me, that was particularly
tough because... I don't want to say I was talking out of my ass on things in some
respects, but I didn't really know. I was just trying to explain things on the basis of what I'd talked about with the professors during class... so it felt like I was rehashing things I had talked about with them previously which made me feel like I wasn't being very original.

He went on to say that his biggest challenge at the end of the semester had to do with wanting to feel less nervous. He added that as he gained more exposure to the design theory and terms that were integral parts of the class, he became more comfortable talking about the content.

The differences in performance between when students experienced instruction and when they experienced no instruction was also reflected in Saul’s comments regarding the impact on students’ thinking:

I had a class in public speaking before and while I think that the guidance that you gave us was valuable in and of itself... your presentations served more as a reminder to me of things that we need to do and to be aware of when you're presenting in terms of your mannerisms and what you need to address. It was sort of more reinforcement than primary exposure to those sorts of things. I think that probably the most helpful one was the one where you addressed responding to guest juror comments. I don't think that I'm ever really defensive when I answer questions, but that did help me to become more aware of what I do and how I approach responding to criticisms and comments.

In this part of his interview, Saul reiterated that while the communication instructional content may not have been completely new to students, the simple presence of that content in
the classroom impacted his presentations. Based on this data, it appears that communication does impact students’ discipline-specific communication competencies. The exact nature of this impact will be more fully explored in the next chapter, which looks specifically at the two instructional models and their influence.
CHAPTER 7: COMPARING INSTRUCTIONAL MODEL RESULTS

With the baseline understanding of how students’ performance shifted over the course of a semester and the understanding of the impact of instruction, I now turn to an exploration of the two instructional models. Specifically, the aim of this chapter is to explore the variations – both qualitative and quantitative – between a class that received instructor-focused lessons and a class that received student-focused lessons.

I will first address the differences between the two classes that received instruction, with a particular focus on students’ performances at the end of the semester. After addressing those comparisons, I will address the impact of the instruction on the quantitative measures of self-efficacy and communication apprehension. Finally, I will provide concluding remarks on this set of results in preparation for the discussion chapters.

Research Question 3

For the two spring classes, which both received some form of instruction, the classes showed improvement from pre-test to post-test (see Table 7.1). However, the classes varied in terms of the effect of instruction on two aspects: which competencies saw a statistically significant shift and which competencies saw a shift in standard deviations. For Hannah’s studio, the instructor-focused model, students improved on all competencies. Concept, credibility, and audience were statistically significant shifts. The shifts in standard deviations were approximately equal for concept, credibility, and argument, but shrunk for visuals and audience. In Levi’s studio, where students received student-focused instruction, students improved on all competencies. These shifts (in means) ranged from 0.59 to 1.35 (on
Table 7.1

*Spring data comparing the two classes and pre to post test data*

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<thead>
<tr>
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<th>Hannah’s class</th>
<th>Levi’s class</th>
<th>Combined Data</th>
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<tr>
<td>Post</td>
<td>11</td>
<td>3.86*(0.81)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Argument</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>11</td>
<td>3.00(0.63)</td>
<td>6</td>
</tr>
<tr>
<td>Post</td>
<td>11</td>
<td>3.59(0.63)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Visuals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>11</td>
<td>3.05(0.82)</td>
<td>6</td>
</tr>
<tr>
<td>Post</td>
<td>11</td>
<td>3.68(0.56)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Audience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>11</td>
<td>2.77*(0.72)</td>
<td>6</td>
</tr>
<tr>
<td>Post</td>
<td>11</td>
<td>3.86*(0.60)</td>
<td>7</td>
</tr>
</tbody>
</table>

*indicates significant change from pre to post test scores
a five-point scale). Only visuals and audience were statistically significant shifts, although credibility was on the edge of statistical significance ($p = .05$). For all five competencies in Levi’s class, the standard deviations shrunk as students’ abilities shrank, thus normalizing.

The differences between the classes are further supported by examining examples of specific competencies. Given that the students in both classes were approximately equal at the start of the semester ($p > .05$ for all competencies, using two-tailed tests; see Table 7.2), I will focus these examples on end-of-semester abilities. These examples will be further supported by feedback given to students specifically in regards to presentation as well as interview data.

Table 7.2

*Means, standard deviations, U values and significance for each competence comparing pre-test scores between the two spring classes*

<table>
<thead>
<tr>
<th>Competence</th>
<th>Hannah’s studio Mean (SD)</th>
<th>Levi’s studio Mean (SD)</th>
<th>U</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
<td>3.14 (0.64)</td>
<td>3.16 (1.08)</td>
<td>30.5</td>
<td>0.84</td>
</tr>
<tr>
<td>Credibility</td>
<td>2.77 (0.88)</td>
<td>3.33 (0.98)</td>
<td>23.5</td>
<td>0.37</td>
</tr>
<tr>
<td>Argument</td>
<td>3.00 (0.63)</td>
<td>3.67 (0.52)</td>
<td>14.5</td>
<td>0.07</td>
</tr>
<tr>
<td>Visuals</td>
<td>3.05 (0.82)</td>
<td>3.25 (0.52)</td>
<td>27.0</td>
<td>0.58</td>
</tr>
<tr>
<td>Audience</td>
<td>2.77 (0.72)</td>
<td>3.08 (0.80)</td>
<td>24.5</td>
<td>0.42</td>
</tr>
</tbody>
</table>

*Concept*

In order to be successful in the concept competency, students needed to clearly articulate the design concept that drove their work. At the same time, students needed to
provide audience members with a sense of the design process that led to the concept and to the subsequent design decisions. In both classes, students’ abilities to do so improved from the beginning of the semester to the end, but the change was stronger in Hannah’s class than in Levi’s class.

Hannah’s Class

In Hannah’s class, students needed to not only present their major concept, they also needed to talk about the various process steps utilized in the class to help them reach that understanding. After receiving the instructor-focused lessons, students were able to provide students with a clear sense of both concept and process. For example, Delilah talked about face studies, then how the class looked at Raleigh in depth before talking about her precedent study. Such a decision set the stage for her concept while giving critics a clear sense of her design process.

Students also enhanced this sense of process and concept visually. Elizabeth presented her big idea – an aquarium – explicitly, both verbally and visually, in addition to talking about her process. She talked about doing research about downtown and this site in particular in order to better understand the site and city needs. Based on that research, she said “I wanted this to be a place that was very programmed, very much a destination, very much a place that you would want to go to.” She then looked at various aquariums and made the comparison to the site and the city. She briefly showed the audience the work she had displayed at an earlier critique and talked about moving forward from there:

But then I kind of went back and looked at the site again and where people are going to be coming from and what are they going to see when they come in and [I] really
wanted to focus on preserving and creating a view to get to the entrance of the aquarium and then making sure that if you’re not in the aquarium, that the other part of the space can serve as this … activated outdoor space.

Throughout her presentation, she provided a sense of how she had worked on the project – her process – in addition to continually supporting her big idea of having the space be an aquarium.

Although students were overall successful, the sometimes lacking clarity in regards to concept and process came through in the feedback. For example, Carmela had to be prompted to tell what her site was actually about. About seven minutes into her presentation, Titus (an administrator in the college), interrupted her for this exchange:

Titus: I don’t have a clue about what the situation is that you’ve designed. Before you tell us about the elements, tell us what the space is about.

Carmela: What’s it about? [indicates confusion]

Titus: What is it for? What is it?

Carmela: Well, this place, I want it to be for many, many people to use.

She talked about different types of people in various aspects of the city, including neighborhoods and business areas before saying “I wanted to integrate the users of all these places in this site as well as the people who come in from out of town who will see it coming in on South Saunders [Street].” Up until and then after this concern about the big picture, Carmela had addressed her design process but had missed the big picture until prompted to share that information.
Carmela’s presentation was in contrast to her classmate, Shiloh. Shiloh gave a clear sense of process by systematically talking about each component of the process undertaken by the class and giving specific examples of her work at that step and its influence on her larger concept:

For me it was all about mapping the focal points and the emphasis on expression, which to me was in the eyes and the mouth… So we used the small-scale analysis of mapping of character and then moved on to the large scale by using photographs… These are some of the photographs that informed my design. I was interested in form, mainly curvilinear form.

She went on to talk about a key example of this form, which she found in a downtown children’s museum, which fit well with her plan to design a site targeted toward children. After talking about the photographs and the 2-D ideations done in the class, she talked about making connections, which jumpstarted her concept of Raleigh as the City of Oaks.

*Levi’s Class*

Given the nature of the final presentations in Levi’s spring class, students had a slightly different challenge. Rather than their sheets being pinned up to the wall behind them, students utilized a booklet of site plans, perspectives, and sections to demonstrate their concept and process. These students also had to deal with the mid-semester shift in focus from the hospital site to either a more in-depth examination of the hospital or a broader view of the Blue Ridge corridor, which leads to the hospital. Following their exposure to the student-focused instruction, students in Levi’s class were somewhat better at explaining concepts but the shift was on the border of significance.
Some students were particularly successful at explaining their concepts early in the conversation. For example, Caleb, an undergraduate student, provided the critic with a clear sense of the big idea after giving an orientation to the site. He told the critic, “the big idea was to connect it to the art museum….to make an art-centered district.” He went on to say that he wanted to create a sense of place for the area by tying together different aspects of the Blue Ridge corridor.

Other classmates were able to clearly articulate a succinct concept. For example, David started by sharing with a critic the explanation of the concept behind his design, which was also printed in the booklet of sheets he had prepared: “The goal was to try to keep as much of the infrastructure of Blue Ridge as possible, and to use the transit stops as a way for the rest of the area to develop.” He was upfront about his goal in the design process, which then allowed the critic to give informed feedback that was directed toward David’s larger concept.

Students who were particularly successful at this aspect of the critique were able to make connections between their concept and the site. For example, James, a graduate student, talked about different parts of the site as “like fingers” that came together to affect the ecology of the site. He then went on to talk about how the various major portions of the site came together to fit this approach to the ecology of the site. While James was able to provide the big picture, a group of students who worked and presented together were more adept at providing the process. Abigail explained that her group started the semester by looking at Rex Healthcare and they took different ideas such as active living as a starting point. She went through the different ideas each person in the group focused upon, before
moving into how the group looked at the larger scale of the Blue Ridge corridor. After giving the critic the overall sense of what the project was about and how they changed scales, they then delved into specific aspects of the site. While they were able to clearly communicate their process, they were not as successful at articulating a specific larger concept.

While students improved in both classes on their abilities to talk about their concepts, the shift was stronger when students received the instructor-focused lessons. Students who were in the student-focused lessons were on the edge of significance in terms of their change. It seems, then, that the communication instruction was effective regarding communicating concepts, but that the change was stronger in the instructor-focused model.

Credibility

This competency hinged on students’ abilities to present themselves as credible designers. Students in Hannah’s class improved significantly on their credibility, while Levi’s students saw a smaller shift in their credibility. The strengths and weaknesses in students’ abilities to present themselves as credible are evident in examples below.

Hannah’s Class

As they stood in front of an audience of classmates, professors, and critics, students in Hannah’s class needed to present themselves as credible designers. By the end of the semester, students had improved significantly on this ability. Success in this competency was exemplified by Tabitha, who spoke with a nice pace, dressed well, and managed her time well in order to present a credible image. She used gestures to provide variation in her presentation and to help direct audience attention to key ideas and visuals. Her vocal variation likewise helped the audience understand her presentation. She did not feel rushed in
her presentation, and at the end, concluded by saying “I’ll open it up to questions.” A classmate, Shiloh, spoke at a nice rate that was clear; she didn’t rely on notes, but her somewhat casual clothes detracted slightly from the credibility she cultivated. Her voice and nonverbal cues all projected an image of a confident designer who was comfortable sharing her ideas.

Students’ credibility could initially be established then diminished. Peter started by introducing himself and telling the audience “I’m going to take you through my design, which I call Revolution Park, and I’m going to talk about getting here.” He started by putting forth a polished image that quickly degraded by his sitting on the table (rather than standing) and his use of “um.” By placing himself on the table, he restricted his ability to effectively direct audience attention to various diagrams and materials he has brought into the critique. Later, during feedback, he offered multiple excuses for why he was unable to achieve success in his design. When a critic asked him about an aspect of his site not illustrated on his sheets, he said it was probably on a classmate’s sheets. Statements such as this made him look less prepared and capable as a designer because he was trying to place responsibility on a classmate.

Some students gave mixed messages about their credibility. For example, Cyrus consistently used “um” and “uh.” For example, in introducing his site, he said, “So, um, getting into the site plan, uh, what we have here is these two high points here, uh, are terraces, um, with the low point in the very center.” Overall, though, Cyrus spoke in a clear voice and seemed comfortable talking about his project; he also dressed appropriately for the critique and held himself in a confident manner. In addition to reducing the use of fillers,
Cyrus could have improved his presentation by looking more at the audience and adding vocal variety.

In some cases, students reduced their own credibility before critics had the opportunity to have much of an impression. For example, Micah started out his presentation by saying:

I feel like I came at things a little differently sort of than a lot of people. I’ll take you back to the start of the semester and these sheets over here; they’re a little hard to read but as a lot of people have said, we start out abstracting things and analyzing the city, abstracting images of the city.

He went on to talk about the design process in vague terms that gave the impression he was unsure of himself, his design, or both:

I couldn’t really see how this related to what we were going to do. I had a little trouble at first especially because we had to take an abstraction and turn it into a 3-D and I had some kind of mental block.

The above statements were both made within the first minute of his presentation. Micah also used numerous instances of “like,” “kind of,” and “pretty much.” Toward the end of his critique, he again reiterated that he did not have a design background, as though making an excuse. While there were clearly examples of students with continued credibility problems students in Hannah’s class overall improved on their ability to present themselves as credible.

Levi’s Class

In contrast to the more formal feel of the final critique in Hannah’s class, Levi’s students spoke one-on-one with critics. This set-up gave the final critique a more free-
flowing feel, but also forced students to present themselves as credible designers even when they were having what felt more like a casual conversation than a formal critique. This lack of formality was exemplified in the group made up of Abigail, Isaac, and Leah. Group members stood with arms crossed and Isaac talked to the critics with sunglasses on his head. Despite these flaws, students in the group were able to talk to a critic and do so well even with the added challenge of having three people talk about the same project.

A classmate, Miriam, was able to put forth her credibility from the very start of her conversation with a critic. Miriam, a graduate student, left a conversation with a classmate when she realized a critic had begun looking at her materials. As she approached the critic, she greeted him, shook his hand, and – after assessing where he was in examining her materials – easily stepped into a conversation about her project. She seemed at ease with the critic and was able to carry on a conversation with him despite the somewhat unconventional start to the critique.

Another classmate, Caleb, presented himself as an overall credible designer as he talked with a critic who was not familiar with the site. Caleb provided appropriate gestures to help illustrate his points to the critic. For example, as he spoke about making connections between various aspects of the site, he traced out those connections on the site. He also used his hands to demonstrate aspects such as scale and transitions in order to help the critic better understand his approach. These gestures not only helped his critic in terms of understanding, the gestures also enhanced Caleb’s credibility by giving him multiple modes of communicating ideas to the critic.
As with Hannah’s class, Levi’s students presented themselves as more credible at the end of the semester than they did at the start of the semester. However, the shift in Levi’s class was not significant, indicating that the instructor-focused lessons had a greater impact on students’ credibility than did the student-focused lessons.

**Argument**

Not only did students need to present a clear concept and do so in a credible way, they also needed to justify the decisions they had made along the way. These arguments provided the audience with the rationale behind design choices and helped students demonstrate their understanding of design. Overall, students improved at presenting their arguments and were able to provide specific reasoning at the end of the semester. However, neither class in the spring individually improved significantly.

**Hannah’s Class**

In Hannah’s spring class, students worked the entire semester on their downtown site. Along the way, they used several different approaches to design, including 2-dimensional studies, models, and precedent studies. Students needed to justify how these various approaches lead to their design decisions.

One of the areas where students often provided the most robust rationale was in their precedent studies. For example, Shiloh explained that her precedent study came from Seattle and spent time explaining the similarities between Raleigh and Seattle in order to argue for her choices. She pointed out that the two sites (the one she was developing and the parallel site in Seattle) were similar in size as well as relative location within their respective cities.
Both sites were also bounded by major arteries, which helped inform the goals of the Seattle site that could also inform decisions about the Raleigh site.

Some students were able to not only articulate multiple reasons for choosing their precedent studies, but also were able to use that justification to further support design decisions. For example, Tabitha used Jefferson National Expansion Memorial in St. Louis for her precedent study. In introducing this aspect of her project, she said she chose this memorial for several factors:

One, because St. Louis is just about the same size as Raleigh, about 350-375,000 people and the site itself – the arch here – was specifically designed as a monument to the spirit of westward expansion. And so I thought between the size and the proximity to the urban area… they also have this railroad bridge going on right by the site. So I thought, this is interesting, how did they deal with it.

She went on to explain that the designer of the St. Louis site chose to make the bridge a feature of the design, thus allowing people to see how the urban space functioned. She said she took what she learned from the St. Louis site and from the other project components done as part of the class, and recognized that “the creation of space would be a good place for me to develop my skills.” Later, in the midst of feedback from critics about the size of the arch she placed on her site, she justified her choice by saying that her goal was not to send people elsewhere but rather to focus their attention inward on the site.

Sometimes, students’ most compelling justifications came in response to critic comments. Carmela responded well to questions from the audience about why this site fit with the proposed theme of a gateway:
Critic: How did you conceive of this place as gateway park? Because that’s the big theme that you have. It’s not drawn, but it’s the title of your project. I’m just curious what led you to think of this place as a gateway. You use the term gateway park, which is being used all over the place in urban design. So, in your mind, how is this a gateway park?

Carmela: I feel like it is a connection between many different principle areas of Raleigh, and whenever you’re coming from out of town, it seems like a gateway into another place. I feel like it’s a transitional place. And that’s why I’m calling it Gateway Park. I feel like especially if you are driving in on South Saunders… you can see this site very clearly…. I feel like it’s in this transitional, these growing areas, especially the warehouse district here.

In this exchange, Carmela provided the argument for her overall concept that the critic felt was missing from her original presentation. A classmate, Chloe, represented her ability to argue for her decisions when she justified why she changed how a required access road to the adjacent convention center sit into her site:

Also, I felt like the access drive did not have a whole lot of positive impact on the site so I moved it up here and it goes down fairly steep to go underground and once it hits the bridge, you do not see it anymore so it’s just this little access point.

Rather than simply saying that she had made this change, she prefaced the statement by giving a reason for moving this required element. In both these cases, students offered valid rationales that enhanced their presentation, but these justifications came after prompting, not organically.
Ideally, students were able to present the justification without prompting, and were able to draw on multiple rationales for their decisions. For example, Shiloh, when showing a model she had created, talked about her decision to leave the service access road as it was:

One thing that I was really responding to was the physical constraint of the surface road and I chose to leave it in my design for the reasons of cost and also that you need a 16-foot clearance if you’re going to cover it. And I also feel like because it’s already there on the site, that to be true to the urban fabric, it was really important for me to leave it daylit, so that’s something I chose to do.

In justifying this decision, Shiloh not only drew on the practical, logistical reasons for her design, she also emphasized her larger approach to the site as a reason for this design decision.

*Levi’s Class*

In Levi’s class, students had worked on both a site-specific and larger regional scale. Because of this dynamic of their projects, they needed to be able to justify on multiple fronts. For example, on a very specific scale, Caleb provided a justification for why he separated two buildings on the site:

These are actually separated right here so the river comes through. The two buildings are actually separated, so I was trying to pull [wind flow] through here in a west to east area it might help in cooling the site as well. So on a hot summer day, you can still come out and use the outside areas.

In providing this explanation, Caleb not only explained *what* he did, he more importantly explained *why* he made those decisions. His classmate, Marcus, gave a larger picture
justification as he explained his rationale for including a particular amount of retail for the site:

I was thinking it should have enough retail to support the transit, to make it where you really could stay in that one spot. And then if you did need to go downtown or somewhere else, you would have a connection to major transit.

These specific statements that addressed the larger approach to the site demonstrated to critics that the students understood their designs and the expectations placed upon them.

As with Hannah’s class, the justifications sometimes came out of a particular line of conversation with critics. For example, David, an undergraduate student, justified to a critic why he had placed the bus stops in particular places on the site:

With [the big idea] in mind, I chose my stop positions in locations that would be easily developed at that moment but then allow for growth around it. And then also close enough to areas that are currently developed.

In conversation with the critic, he went on to explain how he had looked at the walk-radius of the area in order to better assess what would be within a 10-minute walk of different parts of the site.

Both classes improved over the course of the spring semester in their ability to talk about the rationale behind their design decisions. However, even with the communication instruction, neither class saw a statistically significant difference.

Visuals

In the final critiques, students typically had a variety of visuals to present. These materials included examples of process, earlier models and ideas, plan views, perspectives,
and sections. Students were given general guidance about the format and overall content of the materials, but students were left to choose what exactly was brought into the critique, and what would then be talked about during their presentation time. Students were overall successful at talking about their visuals and matching oral and visual content, with some exceptions. The shift, while positive for both classes, was only significant in Levi’s class where students received student-focused instruction

*Hannah’s Class*

Students in Hannah’s class did well on visuals overall, but still had some difficulties. For example, Delilah had to be prompted to show her model and during feedback went back to explain some aspects of her site that she had neglected earlier. A classmate, Carmela, glossed over her sections, simply pointing to them and saying, “my sections over there dictate a little bit more about the grade change and how rapidly water might leave the site.” She was later asked to go through the sections for the audience in order to explain where each one was cut from the site and how the elevation changes were actually put into place.

Other students also had to be prompted to talk about more aspects of the variety of materials brought into the critique. Micah’s boards were placed in the corner where he was speaking. Although some of the sheets were in a logical order, he tended to bounce around in terms of what he talked about in relation to the visuals. For example, his perspectives were pinned up to the upper left of his pictures of downtown Raleigh, which were to the left of his site plan. Gabriel also had to prompt him to tell them about various aspects of the site on the model after he begins talking generally about different elements. A critic also asked him to
point out where the section was cut from, which Micah was able to clearly do, but only when prompted.

In a similar vein, a critic asked Peter about an aspect of his design. He said “the image of the city in the background was very powerful and when this thing is lit up at night, it’s very cool.” A critic asked how he knows about this.

Peter: Um, I probably should have written it somewhere.

Gabriel: It’s not on your plan, that’s all (laughs). Remember it doesn’t exist unless it’s on your plan.

This off-hand remark from Gabriel served as a reminder to Peter and his classmates that visuals are an integral part of design critiques. Furthermore, students were reminded that having a variety of visuals is helpful for audiences. This sentiment was echoed when Shiloh received feedback from Gabriel regarding visuals in which he pointed out that the visuals she had presented were fine, but that he wanted to be able to see more views of the site that were not obstructed so he could gain a better sense of how things fit together.

Levi’s Class

Visuals in Levi’s students’ final presentations took two forms: a projected set of Powerpoint slides intended to attract attention to the project, and a set of 11 x 17 sheets that served as a flipbook of the project. The latter documents were the focal point of presentations in this final critique. Because students talked one-on-one with critics, they often did not follow a set order of sheets. Regardless of order, however, students needed to address the visuals in a meaningful way for the critic. Students in Levi’s class saw a significant improvement from the start of the semester to the end of the semester.
When explaining visuals, students needed to address the aspects of their sheets and provide enough information for critics to be able to understand. Marcus did a nice job explaining a sheet as he traced out various aspects of the diagram with his finger:

This is just kind of showing the regional scale… the main transit line comes in from Durham and then goes through Durham and RTP and stops by our site at Hillsborough Street, goes downtown… so this shows where the site is.

Although Marcus was able to provide such explanations, he also did not take everything into the critique. In trying to describe an aspect of his site, he stumbled and after attempting some gestures, admitted, “I have two separate presentations and this has some information but not others I’m realizing.” Despite this setback, Marcus did continue to describe the site using the information he did have with him at the critique.

As was also the case with more formal presentations, students also had to speak carefully about the specifics of their visuals. Ethan provided details to a critic about where sections were cut. Upon flipping the sheet to a perspective, he told the two critics, “This first perspective was taken from the south… looking through the space, right here. And Blue Ridge would be back here [gestures relative to perspective].” He went on to explain where the subsequent perspectives were cut, both in terms of cardinal directions as well as relative to landmarks on the site.

Students also demonstrated an ability to move through a variety of materials. Miriam began by talking about the part of her project that was projected on the screen, then transitioned into talking about individual sheets. She talked through different aspects of her site by moving the critic through different sheets in order, highlighting specific components.
of the site as necessary. During the conversation, Miriam was able to fully utilize her visuals
to aid her verbal presentation, without needing to reference materials that were not present.

These examples illustrate that although students were able to make educated
decisions about visuals, there were still areas for improvement in students’ use of visuals.
The examples – both of positive and negative experiences – illustrate that students improved
in both classes, but that the shift was only significant in Levi’s class.

_Audience_

The hallmark of a critique is the presence of a variety of critics who are specifically
tapped to provide feedback to students. Not only do the classes’ professors provide feedback,
other faculty and administrators from the college are present. They are joined by outside
professionals with some connection to the project. For example, downtown site projects
typically have someone in a city-planning role present in the critique. Because students need
to explain their project to a diverse audience and respond appropriately, interaction
management with the critics is a key competency for design students. In both classes,
students improved from the beginning of the semester to the end of the semester.

_Hannah’s Class_

In Hannah’s class, students were typically given approximately 10 minutes to talk
before engaging in conversation with critics. There were, however, examples of times when
students were asked questions during their speaking time, often for clarification. Regardless
of the exact flow of a student’s critique, they were required to respond to praise, criticism,
and questions from critics. For some students, this responding to critics helped set the tone
for the presentation. For example, Delilah started off her presentation with a positive note for
the critics, thanking them for taking time out of their busy schedules to be there for the critiques.

Often, though, responses come at the end of the presentation time. Tabitha, in response to a critic’s concerns about the size of an arch she was proposing for the site, explained her rationale for what she had done, but also acknowledged that the critic’s suggestion had merit and that she could reexamine the size choice.

Critic: I was a little taken aback that you started with this big concept – the arch – and then the arch you have over here [on your site] looks like a little dinky thing.

Tabitha: Yeah, it’s about 30 feet tall. It was an effort, really, to create something that would be… not so much that would take people away but that would focus people more on what was right here. And so maybe we could go with sort of a bigger, grander concept. I was just letting you know where I was coming from.

The critic went on to suggest some other designs she could look at for precedents in order to help her develop her idea. At the end of this particular critic’s comments, Tabitha agreed with him that doing so would be helpful.

While students in Hannah’s class did well in managing audience interactions, small steps they took sometimes represented negative audience interaction management. For example, Chloe, who did fine answering questions and providing additional information to critics, counteracted all efforts to have positive audience interactions by cutting off a critic:

Critic: I’m glad you were willing to move the driveway. I’m not sure that physically will work with the kinds and size of trucks that need to get in and out of there. But, still, you were willing to think about it so that’s good –
Chloe: Well, I actually tried to do a lot of research and from what I could find, I think it will work…

Critic: Well, you talked about it being steep, that vertical curve is not the easiest thing for a tractor trailer, but you looked at it so good for you

Chloe: I’m not saying I found the right information…

Critic: But that’s ok because you thought to look

What began as a compliment from the critic about Chloe’s willingness to think of alternative design options became a situation where she demonstrated defensiveness, perhaps because she initially perceived the critic to be saying that she was wrong to have moved the access road.

Positive examples of audience interactions were reinforced by feedback from critics. After Shiloh stated that she was seeking to use indigenous plants on the site, and that the green space was currently simply green space (not necessarily grass), the critic pushed her to state what the material would be, especially because there are no grasses native to the area. She responded, “I haven’t thought that through.” Gabriel responded to her response, saying, “Fair. That’s a fair answer.” Shiloh then went on to offer some of the constraints she saw to her options for the space, such as a steep slope being difficult to mow. Through this exchange, Shiloh demonstrated a willingness to consider different perspectives while also not becoming defensive when she did not have a clear answer for a critic.

Levi’s Class

In Levi’s class, students were talking one-on-one with critics without the initial benefit of explaining their project. Critics approached students and engaged them in
conversations about the project. Therefore, students were left to determine the most effective way to present their work to the critics and had more of a conversation than perhaps they would have had in a more traditional critique. During these conversations, students demonstrated their ability to manage relationships with critics.

Often, students were challenged to respond to specific concerns. After talking to his critic for several minutes, David was confronted with a question about how to make this site – a potentially dangerous and unattractive area for pedestrians – useable by people:

Critic: So how do you make this attractive for the 4,000 people who will use it? It’s not just the distance… because you want them to use it. It’s got to be easy, and it’s got to be safe. It’s got to be walkable.

David: That was one thing I addressed: How do you make Blue Ridge that way? And looking at the sections, introducing a 30-foot median at [bus] stops, so as you’re driving it draws your attention and you slow down. It also creates an intermediary zone so you can feel more like you can cross the street and it also increases the natural environment in that area. So in that way I hoped to make it more friendly.

In responding to the critic, David retained his composure and was able to give an articulate response to the critic that addressed the concern raised. However, by this time in the conversation, David was leaning on his elbows on the table in front of him, which detracted from his engagement with the critic.

Critic: also sometimes brought up material that a student may not have been prepared to address. Ethan, an undergraduate student, was asked to respond to a critic’s question about parking:
Critic: Did you calculate how many spaces that would require?

Ethan: [shakes head no]

Critic: A lot.

Ethan: Based on the size of the existing deck at Rex… there was supposed to be 1,800 in this deck right here and another 1,200.

While initially it seemed that Ethan was thrown off by the critic’s question, he was able to quickly recover and use the information he had in order to respond to the critic in a non-defensive manner.

In the spring semester, with the addition of instruction, students in both classes significantly improved on their abilities to interact with audience members. These interactions took different forms based on the structure of the final critiques, but ultimately students improved on their abilities.

*Conclusions about Qualitative Data*

The data described here illustrates the varying effect of instruction on students’ abilities to communicate competently in design critiques. While the instruction overall had an effect (as outlined in the previous chapter), it also appears that the nature of the instruction affected the nature of change. Students who were part of the instructor-focused model improved significantly on concept, credibility, and audience. Students in the student-focused model improved significantly on visuals and audience. These results will now be supplemented with an explanation of the self-efficacy and communication apprehension results that examine the effect of the communication instruction.
Quantitative Results

Students were asked in both classes to complete a survey at the beginning of the semester and a similar survey at the end of the semester. Items were intended to measure students’ self-efficacy and communication apprehension in order to allow for comparison as students were introduced to communication instruction. The hypotheses reported on here specifically looked at the difference between the fall semester’s no-instruction condition and the two instruction conditions.

Hypothesis 2

Hypothesis 2 predicted variation in the level of student self-efficacy growth between the three conditions. Specifically, the hypothesis predicted that students’ perceived self-efficacy for design communication would increase significantly more in an instructor-focused instructional design than in a semester in which students received no communication instruction and will increase the most in a student-focused instructional design. The ANOVA was not significant, $F(2, 30) = 1.94, p = .16$, indicating that the hypothesis was not supported. However, general trends in the means for different items support the trends predicted in this hypothesis (see Table 7.3 for means and standard deviations). The self-efficacy score mean for the students with no communication instruction decreased over the course of the semester; this drop was significant, $t = 2.48, p < .05$. Students who received instructor-focused instruction saw only a slight decrease in self-efficacy, but this difference was not significant, $t = .17, p = .87$. Students who received the student-focused instruction saw the only increase in self-efficacy; this difference was statistically significant, $t = -2.86, p < .05$. Because the groups were not significantly different at the start of the semester $F(2)=
2.132, \( p = .14 \), this difference between pretest and posttest scores may be attributed to the instruction.

Table 7.3

*Means and standard deviations for critique self-efficacy out of 100 by condition and time*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( M )</td>
<td>( SD )</td>
</tr>
<tr>
<td>No instruction</td>
<td>86.17</td>
<td>8.18</td>
</tr>
<tr>
<td>Instructor-focused</td>
<td>78.79</td>
<td>13.28</td>
</tr>
<tr>
<td>Student-focused</td>
<td>76.15</td>
<td>12.74</td>
</tr>
</tbody>
</table>

*Hypothesis 4*

Hypothesis 4 predicted that students’ reports of communication apprehension would decrease significantly more in an instructor-focused instructional design than in a semester in which students receive no communication instruction and would decrease the most in a student-focused instructional design. As with H2, the results for this ANOVA were not significant for general communication apprehension, \( F(2, 30) = .33, p = .73 \), which indicated that the hypothesis was not supported. However, the trends in means are informative. For generalized communication apprehension, students with no instruction saw a non-significant decrease in apprehension, \( t = .76, p = .46 \). Students in the instructor-focused instruction group saw a slight increase in apprehension, but this increase was not significant, \( t = -.33, p = .75 \). Students who received the student-focused instruction saw a decrease in apprehension, but the difference was not significant, \( t = .34, p = .74 \). Means and standard deviations for
For situation-specific communication apprehension, the model was not significant, $F(2, 30) = .10, p = .90$, indicating that the hypothesis was not supported. However, the trend in means fit the hypothesized shifts. Students who received no instruction saw virtually no change in apprehension, $t = .06, p = .96$, while students who received instructor-focused instruction saw a slight – but non-significant – decrease in apprehension, $t = .35, p = .73$. Students in the student-focused instruction saw a greater but still insignificant decrease in apprehension, $t = .75, p = .47$. Means and standard deviations are available in Table 7.4. There were no significant differences among the groups on the pre-test scores, $F(2) = .36, p = .
176. Because there were not significant differences by condition on pre-test scores, it is possible that these differences relate to the instruction.

Conclusion

Between the two spring classes, it became clear that students were positively affected by the communication instruction. In terms of competencies, students were affected differently by each model. The instructor-focused model had a stronger effect on concept, credibility, and audience while the student-focused model had a stronger effect on visuals and audience. The changes for audience matched the changes in the fall semester in which there was no instruction, but the changes in the spring were more significant. Interestingly, the fall semester students improved significantly in terms of argument, but this change was not significant in either class in the spring (although it was close to significance). Given that the classes were not statistically significantly different at the start of the semester, it seems this change may be related to the instruction. While the quantitative results were not overall significant, they do support the overall impact of the instruction and the variable impact based on the type of instruction.

Caleb, a student in Levi’s spring class, provided a comparison of how he felt early in the semester and late in the semester. He explained that at the start of the semester:

I was really trying to make sure that I explained my process, and I wanted to make sure that I gave a specific concept and then the three specific goals and I thought I did that with my verbal presentation, but the visual presentation did not match and then the three goals that I stated, I stated them clearly but I don't know that I backed them up and give enough detail. So probably the biggest challenge in that one was making
the concept and theory of the stuff I was talking about, in giving them a practical example from the site and showing it as it would be and I had more diagrams and overarching statements, and did not have the support to back them up.

When Caleb was asked about the biggest challenges he might face at the end of the semester, he noted that not much had actually changed:

It's weird, I'm still struggling with the exact same problem….It's always a time crunch so it always depends on how many drawings that you want to do that you can't get done. And then sometimes I would do a drawing that it's really good and no one can see it.

For this student, the issues that were challenging at the start of the semester continued to be of concern, but he also said he felt more prepared at the end of the semester compared to the first critique.

Jared explained that he faced similar issues early in the semester in trying to explain his project with partner, David, and then what he anticipated with the gallery critique:

I just didn't understand how important it was to have your key points lead out. I don't know, we might have gone in a circle and not really explained anything because when our questions, whenever we were done presenting they asked questions, they weren't provocative or helpful questions. They were like we don't know what you did basically. We just didn't have enough time I think to explain to them, but we also didn't do as good of a job as we could have. I guess the biggest challenge in the gallery critique is you don't really get to stand up and present and say this is what I
did and be proud of your work. It just kind of sits there and stands on its own and it has to be able to communicate everything without you there.

Students’ concerns over the semester shifted, as did their abilities. Although there are many potential influences on students’ abilities, student did point to specific aspects of the class that influenced their performance.

Students were able to point to specific steps taken and lessons learned in describing how their performance changed over the course of the semester. In Levi’s class, students pointed to both the lessons conducted with them as part of the research as well as some efforts by Levi to encourage them to think through an explanation. Knowing that they were going to be in a gallery-style critique, Caleb noted how he planned to prepare:

I really like that 30-second thing that Levi was talking about. Just distill it down to a couple of key points that you can communicate quickly because…I don't think somebody will stand in this talk at length maybe and even if they do, if you can get it out in the first few seconds about what it is and get them thinking in the right ballpark, I think that will help a lot and then you can talk about well this is here and this is there. You can go into the details.

Levi’s student Jared reiterated the importance of having a clear, concise explanation, which he noted was stressed in both the communication lessons and with Levi:

the discussions and exercises we've done with you and also a lot of what Levi talks about is just to really pick out what's important, that elevator story he tells, you have 30 seconds to get your point across to President Clinton or someone before he gets off the elevator. That kind of thing of picking out what needs to be said, I guess the
structure of what you've done in leaving all the other really cool things that you want to talk about out just for clarity. It's a struggle.

In addition to pointing out the “big picture” aspects of the lessons, students also pointed out specific lessons and exercises that had an impact. For example, Leah, a graduate student in Levi’s class, noted:

the most enjoyable one was the one where we had to talk to each other and try to draw what the person was saying. It's just a good way to think about how we need to get our design concepts across to the other person on the other side, just thinking deeper so that when I go to present, kind of keeping that exercise in the back of my mind, like how difficult it was for me to draw what he was saying. I mean, it back to be what's happening to the person sitting in that chair listening to my presentation. So giving more time to how my going to use my graphics to support my plan and actually using them. I think that something that I took from that exercise.

Despite some students’ reservations about the exercises, students realized the impact in the moment of a critique, such as Asher, a student in Levi’s class who talked about the lessons:

Sometimes [the activities] were awkward just because they are our classmates and we know them so well and presenting stuff that they've seen before is a little unusual. But I remember in my last critique, I was standing in front, talking to the wall and I felt being here and facing you and showing you, I just kind of turned and I was like “okay this is the way I'm supposed to be positioned to present something.” So although it's unusual, I definitely think that it's been helpful.
Asher went on to note that as a part of improving his communication, he had become a more critical observer of others’ critiques, which included taking notes on successful aspects of other performances as a learning tool.

Saul, a student in Hannah’s class, pointed out a potential barrier to communication instruction:

I think that people will know how they want to present things and that people are set in their ways now. I'm a little bit older than our average age for our class so I've done presentations in school and work alike, so I kind of know generally how it is that I want to present but even still for the younger folks they do too. You kind of develop this style, most everybody has had to make some kind of presentation in the past. But if you could have individual meetings with people, maybe once or twice, even just five minutes, I think that would help people to... it's one thing to make a presentation to us in the group where the anonymity doesn't really require you to think about it, but if you have one-on-one meetings I think that would engender more of a dialogue in terms of what are you thinking about when you do this and that would probably help us because we would be forced to think, yeah, that's a thing that I do or that's a habit I have, maybe I should consider taking this approach as opposed to the one I've been taking. I think the individual meetings would probably be helpful.

The sentiments offered by Saul point to the strengths of the student-focused model, despite the fact that Saul was part of the instructor-focused model. The opinion of students, then, seems to reflect a desire to have some sort of assistance with communication, although not necessarily through lectures.
Students also recognized the value in having the added focus on communication from someone other than their professors. Jared, an undergraduate who was in Levi’s class both semesters, made this point:

that constantly practicing or reinforcing things, that should be incorporated into the studio I think. I don't think many of our professors would be qualified as you are to ask the right questions to get us to come up with it, to get us to distill down, but I think it should be incorporated.

Students’ recognition of the value of the lessons helps reinforce the positive results of the implementation. These results are further reinforced by the quantitative results regarding self-efficacy and communication apprehension.

This chapter addressed the changes in students’ presentation skills and self-perceptions in two different communication instructional models. As described in the previous chapter, students’ communication abilities improved in a semester with instruction compared to no-instruction classes; this chapter more fully explored those changes by looking at differences when students received instructor-focused or student-focused lessons. Students in the instructor-focused lessons improved more on the concept and credibility concepts than did students in the student-focused lessons; students in both classes improved significantly on the audience competency. Students in the student-focused model also improved on their use of visuals. These results, along with the quantitative results, will be more fully explored in the next chapter, which provides both discussion and implications.
CHAPTER 8: DISCUSSION AND IMPLICATIONS

In this chapter, I will explore the meaning of the results presented in the previous three chapters, particularly in light of the literature and theoretical understanding outlined at the start of this dissertation. In discussing these results, I will ultimately make the argument that discipline-specific communication instruction implemented into classes can provide students with the vital connection between knowing and doing. After discussing the results, I will then explain the implications of these findings.

Discussion

At the heart of this dissertation was a desire to more fully understand students’ communication competencies in design studios and the possible impact of instruction on those competencies. This desire necessitated two phases of research: baseline data and quasi-experimental data. The results indicated that students naturally improved somewhat over the course of a semester, although these changes were stronger when instruction (regardless of structure) was introduced. Through the instruction, students learned not only about how to communicate, but also about their own discipline of design. I ultimately argue that communication instruction that is tied to disciplinarity enhances learning by helping students blur the boundaries between knowledge and performance.

Instruction blurred lines between knowledge and performance, and therefore influenced students’ learning on multiple levels. Three assertions support this argument:

1. As students’ projects evolved, so did their presentations. The natural evolution of students’ presentations as their projects were solidified suggests that the culture of design education and the specific genre of critiques ties knowledge of design with
2. Students were able to experience the connection between knowledge and performance in both instructional models, but the differences between the models affected the nature of the outcomes. Student-focused instruction facilitated improvements on relational aspects of critiques, while instructor-focused facilitated attention to content aspects. At the same time, both classes improved on all aspects, indicating that although the nature of the instruction influenced the nuances of growth, the blurring of knowledge and performance was further enhanced through instruction. The discipline-specific communication instruction made salient the connections between design knowledge and critique performance in addition to providing students with a forum in which to explore discipline-specific communication.

3. Although students’ self-perceptions changed somewhat, disciplinary norms and expectations were a stronger influence on perceptions than was the instruction. Students learned about communication – through socialization and the instruction – but as they learned more about performing competently in their discipline, they also learned more about the disciplinary culture, which still casts the critique as a harsh, apprehensive event (e.g., Koch et al., 2002). The overall lack of a positive shift in self-affect about students’ performance abilities indicates that students’ increased knowledge of cultural expectations – which centered on the critique as a negative experience—and their performance were interwoven but in a way contrary to typical expectations. Rather than increased knowledge aiding students’ performances, the understanding of the culture damaged students’ self-perceptions, or, at most, helped
I will support each of these assertions in turn by using the results previously presented as well as through making connections to previous literature.

**Natural Evolution**

In examining how students learned about communication, it is important to first understand students’ communication without intervention. The first assertion to be discussed is that students’ presentations evolved along with their projects; the results regarding the natural evolution of students’ presentations suggests that the critique is an environment in which the divide between knowledge and performance naturally blurs. Students naturally improved somewhat over the course of the semester, especially in the argument and audience competencies. This improvement was likely a part of the process of students learning more about their projects and becoming more comfortable talking about what they were doing. Information was more crystallized in their minds. Furthermore, as students learned more about the genres necessary in communication through socialization, their presentations likely improved. Hannah’s spring class, comprised of third year master’s students with significant experience in design critiques, had fewer differences over the course of the fall semester than did Levi’s class, which further supports that students’ natural changes over the semester were related to socialization. This natural evolution can be tied to two particular notions: legitimate peripheral participation (Lave & Wenger, 1991) and oral genre learning.

As students become more embedded their discipline, they become a more central part of that discipline, as demonstrated through the notion of legitimate peripheral participation (Lave & Wenger, 1991). This tenet of situated learning appears to have held true in this
research as well. Levi’s class in the fall had younger students than did Hannah’s class. Hannah’s class started out at higher levels within competencies, and saw less in the way of changes. This finding suggests that students who are more advanced have learned more about the discipline. Furthermore, during interviews, students talked about learning by experience. Given that becoming a part of a discipline is an ongoing process, it seems important to consider learning about communication to likewise be a process. The implementation of instruction throughout the semester mimicked the process of designing and growing in which students engaged naturally during a semester.

The fall results also point to the impact of socialization on students’ abilities to understand and engage in discipline-specific genres of communication. The general improvement in students’ communication may be the result of their increased awareness of the genres in which they were expected to engage, and the blurring between their cognitive understanding of the genres and their abilities to actually engage in those genres. Genre knowledge is transmitted through socialization (Berkenkotter & Huckin, 1995) and as students took part in their studios, they learned both explicitly and implicitly what it meant to be a designer. Furthermore, engagement in genres is an integral part of participation in communities (Dias & Pare, 2000) and students were asked to regularly participate in these genres as part of their participation in the community of design.

The fall results indicate that students’ performances are not static, but evolve along with their projects. Furthermore, these performances are influenced by students’ level in school, but as the semester progresses, students become more homogenous in their performance. These results indicate that students’ knowledge may grow along with their
performance, but the connection between learning more about design (as students presumably do over the course of a semester) and their performance may only be tenuous in a typical semester. The overall progression, though, does suggest that students’ improvements in all areas of communication competencies indicate a blurring between knowledge and performance. With this understanding of students’ progress in design critiques, I now turn to examining the impact of communication instruction.

Evolution with Instruction

The spring semester added communication instruction to two design studios in order to examine the impact of instruction on students’ communication competencies. Within the spring semester, there were two layers of instruction being tested. First, there was the general layer of what happened when instruction was introduced. Second, there was the layer of the method of instruction. These distinctions are important for untangling what happened in the design classes. In this section, I will first address the comparison between the fall and spring data, which gives insight into the impact of instruction. Secondly, I will address the effect of the different types of instruction. Together, these two sets of results support the notion that instruction blurred the lines between knowledge and performance. Students’ increased knowledge, gained through instruction, was reflected in their performances as they were able to connect knowledge and performance.

Comparing Semesters

The biggest result of the comparison of fall and spring data is that the communication instruction impacted students’ communication competence; students improved more on all competencies in the spring than they did in the fall. This impact reflects the blurring between
knowledge and performance as students improved in both areas; as students took part in the studios and the instruction, they were exposed to more design and communication knowledge, which was reflected in their performances. The comparison of the fall and spring data also highlights three major points for discussion: the impact of genre understanding, understandings of competence, and forms of assessment.

As illustrated in the earlier section, students’ communication is tied to their projects and to the genres that are most salient in relation to those projects. Embracing the natural connection between students’ projects and their communication about the project enhanced students’ communication. Prior to this instruction, students were not explicitly taught about communication, although faculty and students readily acknowledged the need for such instruction. Bazerman suggests that when students are introduced to genre instruction, they are introduced to “new realms of discourse just beyond the edge of their current linguistic habit” (1997, p. 24). Based on the spring data, which showed that students improved more than they did in the fall, this exposure seemed to happen.

This exposure is further complicated by the intricate notions of genres brought into the classroom. Herrington and Moran (2005) noted that teachers bring genre sets into the classroom, and students also bring in genres primarily based on their previous classroom experience. Teachers and students then negotiate around these genres, where informal interactions are a key part of this negotiation; Herrington and Moran note that through informal interactions, “both students and teachers can learn and change their understandings of a given genre” (p. 250). In design classes, faculty – who have both education and professional experience in design – bring with them a deep understanding of the intrinsic
aspects of communication genres. Students bring with them ideas about communicating in classes, larger gathered from the lore of design critiques (Anthony, 1991). As these genres are negotiated, students and faculty develop an understanding of what communication should sound like in the classroom.

The lessons provided as part of this project were not about providing students a set of skills, but instead were about enhancing students’ understanding of the communication genres in which they were asked to engage. This instruction was intended to help students think about the genres of communication in design, which was where discipline-specificity was particularly important. For example, Saul, a student in Hannah’s spring class talked about having taken public speaking classes and having prior experience with presentations. He also noted, however, that having the instruction in the classroom within a design context helped bring pertinent ideas to the forefront:

[the lessons] served more as a reminder to me of things that we need to do and to be aware of when you're presenting in terms of your mannerisms and what you need to address. It was sort of more reinforcement than primary exposure to those sorts of things. I think that probably the most helpful one was the one where you addressed responding to guest juror comments. I don't think that I'm ever really defensive when I answer questions, but that did help me to become more aware of what I do and how I approach responding to criticisms and comments.

The instruction, then, was about providing students a forum in which to work through communicative issues. Although this project did not test for long-term changes, I anticipate that having students work through larger issues rather than simply practicing a set of generic
skills, especially when paired with the data on affective changes, suggests that longer-term effects may come from this instruction. Furthermore, by changing how students are able to interact with the audience, students’ design work may benefit greatly because critics can spend less time trying to extract information from students and more time discussing ideas with students. Students will, in turn, be more open to considering alternative views and actually hearing what the critic is trying to say.

Although previous literature does suggest that it is far easier to change students’ content than delivery, the instruction implemented into the design classes did have an effect on delivery-related competencies. For example, the spring classes improved significantly on credibility, which had elements of delivery, such as rate of speaking and physical form. The nature of the instruction provided, and specifically its discipline specificity likely contributed to this trend. Students’ communication competence has been demonstrated to increase when students are exposed to communication instruction (e.g., Rubin, Rubin, & Jordan, 1997). However, such studies often used self-reports of communication competence, which does not necessarily reflect others’ perceptions of competence (e.g., Rubin, 1985). As seen in other research (e.g., Rubin, 1985), I worked with impressions of competence that were based on actual behaviors. The results here – that students improved with instruction – support previous research focused on more generalized communication competence (e.g., Bassett & Boone, 1983). What the current research adds to the previous understandings of competence is a consideration of specific contexts, which is vitally important with the understanding that competence can and will change based on the situation (Spitzberg & Cupach, 1984). That is,
students who are competent interpersonally or in small groups may not be competent in presentation settings.

The results here are particularly meaningful in light of previous CXC assessment, which focused on students’ self-reported learning or attitudes by examining actual performance. For example, students at Central College reported an increase in their skills (Roberts, 1983) and Steinfatt (1986) reported general success in CXC implementations. Those studies that have specifically looked at changes in abilities demonstrate little success. In another study, Dukes and Flint (1987) found that while students reported positive attitudes toward the communication instruction they received, there were no significant increases in speaking abilities. Cronin and Glenn (1991) found that students reported successful learning and positive affect toward CXC but Cronin and King (1991) reported more mixed results. They found that students exposed to a 90-minute lecture on communication gave longer presentations than did students who were not part of the lecture. A blind rating of clarity was also significantly higher when students had been exposed to communication instruction, but the lesson only explained between 16% and 19% of the variance between control groups and students exposed to the lessons. These varied results point to the possible positive impact of communication instruction but also indicate that, at least with a single-lesson instructional design, the impact is not large. The results here, by examining actual performance, add to the deeper understanding of the impact of communication instruction and also illustrate the complexity of trying to measure success of CXC programs. The shifts seen here – suggesting a blurring between knowledge and performance – indicate that simply measuring knowledge or self-perceived performance is not enough.
In both models, the instruction provided here aided students in the process of disciplinary knowledge construction. Bazerman (1988), in focusing on a model of scientific language, asserted that language is a tool that aids in cooperative activities. In order for language to be beneficial, interactants need to share not only the meaning of words, but also their specific meaning within this context. Shared knowledge includes social interactions. In the design studio, students were engaged in a process of learning about their discipline and the specific genres at play. Through the introduction of communication instruction, students were made explicitly aware of communication. As they worked through the instruction as well as their projects, the boundaries between knowing and doing became blurred. Communication instruction was immediately applicable to their projects and, as evidenced by the positive impact on performance, students were able to use this understanding. As students communicated, they blurred the boundary between knowing and doing; they were learning how to communicate at the same time they were communicating (performing). For example, students did not take part in a series of lessons and then give presentations. The learning and performing were taking place simultaneously, especially when informal communication (such as one-on-one conversations with professors during class) is included. Students here used orality as a site for not only disciplinary knowledge construction, but also disciplinary socialization (Dannels, 2002).

In the spring semester, students improved significantly over the fall semester. The communication instruction made the need for communication competence front and center in classes where such instruction was previously missing. For example, Hannah noted in her interview that the lack of instruction was problematic, saying, “A lot of times I’ll say you
have two more minutes, and they haven’t even reached their design yet.” She also talked about how, because students are asked to present regularly, there is a presumption that students figure out how to use the time. The instruction provided as part of this dissertation, then, introduced explicit instruction about communication. The instruction made communication part of their world of design studios and critiques, which made the need for communication more salient as well as blurred the boundaries between knowledge and performance. Students were engaged with their own projects as the communicative context for the instruction.

*Instructional Models*

Not only did the instruction impact students’ performances, the effect of the instruction seems to have depended on the instructional model. Students who received instruction that was instructor-focused improved on content aspects of the presentation, such as concept. Students in the student-focused model improved more on detail-oriented competencies such as visuals. In both instructional models, students improved on audience interactions. Through instruction on specific aspects of communication competencies, students were exposed to translations between knowledge and performance. The experience of discipline-specific communication instruction heightened students’ awareness of the connections between knowledge and performance, as indicated in their performance. In order to more fully explain this assertion, I will address aspects of disciplinary genre knowledge, relational aspects of communication, situated learning, and socialization.

As previously noted, students’ abilities to convey their concept is an area of major concern for both students and faculty. While students did not significantly improve in this
area in the fall semester, students did improve significantly in the spring semester. This change may be the result of students’ increased practice in addressing their design ideas, as noted by Jared, a student in the student-focused model:

I think what was surprising to me is that getting better at my communication makes my design better because when I'm thinking about how to communicate it, I'm actually thinking about the design and improving aspects that don't connect, that don't make sense.

In such comments, students noted the blurring they were experiencing between their knowledge of design and their ability to communicate as a designer. The added attention to talking through concepts seemed to be a motivating factor in students’ improvement. However, students in the instructor-focused model did not have the advantage of talking through their concepts with classmates in the same way Levi’s students did. Students in Hannah’s class received their instruction in the form of interactive lecture/discussion, so they were able to talk about communication in design but did not engage in practice. In this case, it seems that adding an awareness of the importance of communicating competently, as well as the addition of specific strategies to use, helped students regardless of the instructional model.

When examining the impact of the two instructional models, it becomes apparent that the competencies are interconnected and related to students’ understanding of their discipline. While the interconnectedness was seen in the fall semester data as well, in Levi’s spring class, this interconnectedness becomes even more apparent when looking at the spring data. Students improved more in audience, visuals, and credibility than in concept and
argument. Their instruction was more relational in both form and content, as were the competencies in which they improved the most. Meanwhile, students in Hannah’s spring class had an improvement in concept as well as somewhat in the relational aspects (credibility and audience). Students in this instructional design were more removed from the instruction, which may be the reason why their results fit with more of the previous scholarship that suggests it is easier to change students’ content in presentations than it is to change their delivery.

*Relational competency changes.* Because delivery aspects tend to be more relationally oriented (as opposed to content oriented), these results further support the impact of communication instruction as well as the understanding that the nature of instruction will affect the nature of change. The improvement in relational competencies is explained, in part, by Dannels’s (2009) notion of relational genre knowledge (RGK). RGK emphasizes the system of relationships present in genres. To be successful communicators, students need to negotiate the complex relationships and identities brought forth in the classroom and simulated professional workplaces. RGK moves beyond audience analysis to consider the complexities of the people in the audience and the relational system at play. Students in the student-focused model improved more on the competencies that were relationally oriented, indicating a growth in RGK. These students were engaged in a variety of communication opportunities with their classmates instead of only the one-to-many communication that occurred in the instructor-focused model and in typical critiques. Students in Hannah’s class did not see the same amount of growth, indicating that they did not gain as much RGK as did their counterparts.
In both models, students improved on credibility, but this competency did not see a statistically significant shift in the student-focused model (though the significance was right on the border). This shift is interesting because students who were not as directly involved with the instruction (that is, were more passive consumers of the information and not involved with activities) benefited more on a competency that largely dealt with behaviors. It is possible that the shift was more significant in Hannah’s class because students started at a lower level than they did in Levi’s class (and therefore had farther to go). These findings support situated learning, which notes the process of being socialized into a discipline. Not only did students in Levi’s class have more background in design (because they had taken more studios), they likely were more well-versed in the social aspects of the discipline.

Therefore, Hannah’s students had more to learn about their discipline and more growth that could happen. It is quite possible that students naturally see a large growth in credibility as they go through their first year. Students also were exposed to a variety of design vocabulary in Hannah’s class, so students started the semester needing to essentially learn a new language (one to which students in Levi’s class had more exposure) and as they learned that language, their credibility and confidence likely benefited. The credibility competency in particular highlights the relational aspects of this learning.

The findings regarding credibility also highlight the importance of small steps in adjusting behaviors for relational competencies. Credibility is specifically a relational competency because it – more so than most of the other competencies – is dependent on how students present themselves in relation to the critics. Students are expected to present themselves as credible designers, meaning they should appear as someone knowledgeable
about this discipline. But, at the same time, students were expected to defer somewhat to the expertise of critics. They, therefore, had to find the balance of how they should positive themselves to the particular audience in the critique. Students had difficulties with credibly staging their performance in the fall semester at both the beginning and end of the semester, but improved significantly in the spring semester. It seems that students were able to utilize the information provided in the lessons to make even small adjustments to their presentations in order to help increase their credibility.

The importance of these small behaviors on perceptions of credibility was highlighted during an informal class discussion in Hannah’s class. Students were providing feedback to each other in front of the larger class. A student was speaking while holding an ink pen in her hand. She clicked the pen several times before Gabriel stopped her and pointed out the behavior and how distracting it was for the audience. He pointed out that in my most recent lesson with the class, we had talked about handling the physical objects in a presentation. As the student began to speak again, she clicked the pen a few times, realized what she was doing and, as she stopped clicking, apologized. Throughout the rest of her presentation (and in future presentations), I did not see her click a pen again. In this instance, a relatively small behavior – clicking a pen – was providing the audience with a perception that the student was unprepared and uncomfortable. By changing this behavior, the student was able to greatly increase her credibility. The results indicate that as students were introduced to instruction, the messages they took away from the instruction positively impacted their behaviors and increased their credibility.
While communication scholars may predominately consider visuals to be a content aspect of a presentation, in design, visuals are a highly relational aspect to presenting. For example, a student in Hannah’s fall class noted the importance of visuals to being a designer:

I think as designers…we have ideas all the time and that's great, but they don't mean anything if you don't really talk to anybody about them, and less you can have that second means of communication. And also I don't think you work out your design ideas if you don't draw them out. I think if you don't draw them out, then you cannot communicate them very well.

This student went on to talk about how if ideas were not well thought-out, explaining intentions and concepts in a critique is particularly difficult. For designers, visuals are a key way of communicating, and within design critiques, the onus was on students to provide a coherent explanation of the visuals to critics who would not be able to spend extended time deciphering visuals. Students improved significantly more on the visual competency in the spring than they did in the fall, and that change was particularly significant for students who received the student-focused instruction. Students in the student-focused model regularly dealt with visuals and talking about visuals as part of their lessons. This competency is an area where the interactive nature of the instructional design likely played an important role. Sometimes students dealt with their own materials and sometimes they dealt with provided materials, such as when I gave all students a section to describe. This opportunity to work with physical objects clearly affected the students’ use of that knowledge in critiques. Asher, a student in Levi’s class, noted the impact the lessons had on him in the moment of a critique:
I remember in my last critique, I was standing in front, talking to the wall and I felt being here and facing you and showing you, I just kind of turned and I was like “okay this is the way I'm supposed to be positioned to present something.” So....I definitely think that it's been helpful.

Students in the student-focused model had the opportunity to work with materials in relation to their audience, not simply the content. Students in this class had the opportunity to gain RGK that helped them manage their materials in relation to the audience. While students in the instructor-focused model did deal with visuals, they did not have the opportunity to deal with the relational aspects of using visuals in the same way that students in Levi’s class did.

In terms of audience interaction, both classes improved significantly. This finding supports the tenets of situated learning, and specifically the idea of legitimate peripheral participation (Lave & Wenger, 1991). As students became more engaged within their discipline, they learned the communication of the community and were more easily able to converse with members of that community: critics. The stronger increase in the student-focused model supports situated learning further because students in this model were more involved with conversations and slowly introduced to the communication through activities, which they could then draw on in critiques. Furthermore, students who took part in the instruction, particularly in the student-focused model, likely had increases in their understanding of relational genres, which would also improve their abilities to relate to an audience. While students in the instructor-focused model gained some RGK, as evidenced by the increase in the audience competency, the greater increase in the student-focused model indicates a greater increase in RGK in this model.
Content competency changes. The one particularly surprising result about individual classes in the spring was that neither class individually improved significantly on argument. It appears that the nature of the instruction did not significantly impact students’ argumentation competencies. While these competencies do seem to evolve naturally over the course of the semester, the lack of significance in either class indicates that another approach to instruction may be more beneficial to effect change in this competency. The socialization that students gained over the course of a semester may not be enough to fully socialize them into an understanding of how to argue for their designs. Furthermore, their process of legitimate peripheral participation (Lave & Wenger, 1991) was not as advanced in the spring as it was with fall classes, especially considering that all of Hannah’s spring students were only in their second semester in design. This lack of a shift warrants further research into understanding the role of students’ understanding of argument in their abilities to successfully argue for their concepts.

Communication instruction helped students in all competencies and improved both their knowledge and performance of discipline-specific communication. As in the fall semester, students’ progression through their projects was also reflected in the progression of their communication abilities; however, with the addition of instruction, these shifts were stronger. Furthermore, the form and focus of the instruction affected which competencies improved most. While students who were in an instructor-focused model improved more on content-related competencies, students in the student-focused model saw a greater growth in relational competencies. The areas of knowledge and performance that were made most salient in the different instructional models were reflected in the areas in which students
improved the most. The addition of discipline-specific communication instruction in the design studios created an environment in which the connections between design knowledge and the application of that knowledge in design critiques was particularly salient for students.

Affective Elements of Evolution

In addition to looking at students’ performances, I was interested in students’ attitudes about their own competencies and apprehensions. Although not all results were significant, the instructional semester data indicate that the instruction did influence students’ self-perceptions, but not strongly. These results, I argue, are tied to the disciplinary culture that remained unchanged despite the communication instruction. The instruction began to blur students’ attitudes toward knowledge and performance but the students’ affect was ultimately more strongly influenced by disciplinary culture; as students became more entrenched in the disciplinary culture, they learned the cultural lore that counteracted efforts to create a more positive perspective about their communication in critiques. In order to more fully address the evolving affect of students, I will address each of the two self-perception constructs I used here: self-efficacy and communication apprehension.

Self-efficacy

Previous work in self-efficacy suggested that students’ self-efficacy should increase over the course of a semester because of students’ experience in communicating (Bandura, 1997). However, without instruction, students’ self-efficacy actually decreased significantly. There are several possible explanations for this finding. The decrease may come from the pressure of the end of the semester or from earlier negative experiences during the semester (e.g., Anthony, 1991). Students may also have felt a lack of confidence about their projects in
the particular studio, so when asked to complete the measure, the current class was most
salient. Students in the fall semester interviews noted that they had not been taught how to
effectively communicate. It should not be surprising, then, that students felt no more
comfortable at the end of the semester in an activity for which they received minimal (at
best) support. Given what has been written about the typically hostile nature of critiques
(Koch et al., 2002) as well as the “hidden curriculum” that underlies much of what happens
in design studios (Anthony, 1991), the negative slide may be the result of students’ increased
awareness that there are communication expectations that they do not know how to meet. As
this awareness increases, students’ self-efficacy likely decreases, as suggested by the
influence of psychological states on self-efficacy (Bandura, 1997). Therefore, the connection
between knowledge and performance may actually contribute to a decrease in self-efficacy
when students are not supported in their communication needs.

While the instructional semester provided students with a greater understanding of
communication, the shift in self-efficacy was not as strong as might be expected based on
other CXC work. Previous research has demonstrated that students report positive affect
toward communication after instruction (e.g., Cronin & King, 1991). With the instruction,
students’ self-efficacy did not decrease as it did in the fall, but the instructor-focused model
(which more closely matched previous CXC implementations) yielded no significant change.
The one hopeful result that came from looking at self-efficacy was that students who
received the more relationally oriented instruction saw a significant increase in self-efficacy.
Positive experiences with communication – as students experienced in the student-focused
instruction where they had informal, low-stakes communication opportunities – increase self-
efficacy as can verbal persuasion. Students in both instructional models received verbal support of their abilities to engage in the communication advocated by the lessons, which likely influenced students’ self-perceptions, but this shift was not as much as could have been expected. Furthermore, although previous literature supports that self-efficacy can be predictive of success when the task is familiar and specific (Pajares & Miller, 1994), it seems that the growth over a semester in students’ disciplinary genre knowledge is not enough to have a substantial effect on self-efficacy. Given the critical nature of design presentations, it seems that the norms of students feeling stressed and incapable of performing to their fullest potentials affected students more so than did the instruction. Legitimate peripheral participation (Lave & Wenger, 1991) provides further support for this interpretation. As students became more entrenched in their discipline, they learned to perform, but they also learned the cultural lore that indicates that critiques are supposed to be harsh, difficult rites of passage. Part of becoming part of the culture, then, seems to be interpreting critiques as challenges and a negative experience rather than viewing critiques as positive. This negativity may also be translating to students’ self-perceptions as they come to believe more firmly that they should not feel they can communicate well in a critique.

*Communication Apprehension*

Similar to the prediction for self-efficacy, experience should also affect communication apprehension. As students gained more experience communicating, their apprehension should decrease as novelty decreases (Buss, 1980). However, students reported no decrease nor increase in CA in the fall semester. The lack of change in the fall semester is not surprising considering the lack of instruction and targeted efforts to deal with
apprehension. Furthermore, CA literature suggests that CA can be difficult to change (e.g., McCroskey et al., 2001). The often hostile nature of critiques (e.g., Anthony, 1991) may have counteracted any possible reduction in communication apprehension that could have resulted from the decrease in novelty.

Based on previous CA literature, which supports that students who receive skills training often have reduced communication apprehension, I anticipated that students in the spring semester would see reduced communication apprehension. However, this shift was not seen. Students in the student-focused instruction saw the biggest (though still insignificant) drop in CA. Previous literature suggested that students who practice with an audience reduce more CA than students who do not practice with an audience (Smith & Frymier, 2006). In the student-focused instruction, students saw the biggest decrease in CA. These students were asked to regularly engage in communication about their projects with classmates, which effectively served as a form of practice. The CA results also speak to performance continuing to take precedence over knowledge for students; while they may have the knowledge necessary to make the presentations, they may not see that knowledge coming to fruition. However, there are indications that the line was beginning to blur for students, as seen by the decrease in CA for the student-focused instructional model. As with the self-efficacy results, legitimate peripheral participation (Lave & Wenger, 1991) may also play a role in students’ perceptions of their apprehension. As students learn from the culture that they are expected to be apprehensive, not confident, in critiques, this negativity may be reflected in their self-reported apprehension.
Through this instruction, students’ communication competencies were positively impacted. A large element of this success is likely the discipline-specificity infused throughout the instruction. This instructional approach both supports and is supported by notions of situated learning. In making these instructional implementations, students are affected on a variety of levels, included enhanced understanding of their discipline (design). With this overall finding that communication instruction embedded in disciplinarity blurs lines between knowledge and performance, I now turn to the implications of this research for both theory and practice.

Implications

In this section, I will address the implications of this research. The implications are two-fold: theoretical and practical. The research here makes a theoretical contribution to the realm of CXC and CID. Furthermore, the research has practical implications for CXC as well as for design education.

*Theoretical for CXC/CID*

This dissertation was grounded in three theoretical assumptions, which, when tied with the results here, provide a greater picture of communication-across-the-curriculum instruction. The assumptions from which I started reflected my understanding of communication and learning: learning is a situated process, communication is a source of learning both content and social aspects of a discipline, and genres in teaching and learning are socially constructed. Based on these theoretical groundings and the results here, I now move to expanding on CID by adding an instructional framework. Within this framework, I argue for CXC implementations that hold several aspects true: communication competency
should be considered as genre-specific, instructional efforts should take advantage of the intrinsic connection between communication and projects, learning should involve both knowing and doing, and communication should be embraced as a key to learning.

First, communication competency should be considered genre-specific. The results here lend further support to CID and the emphasis on discipline-specificity. Because the genres required of design students are different than genres required of other students, it is important that communication competencies be taught and evaluated in relation to those specific genres. A major part of disciplinary learning is learning to communicate and students need to understand the genres specific to their discipline. Likewise, students in plant pathology classes would not be asked to present in the same manner as design students; their presentations also should not be evaluated in the same way as those of design students.

Secondly, instructional implementations should take advantage of the intrinsic connection between students’ communication and that about which they are communicating. Given that what is considered competent communication varies by genres, it makes sense that students’ communication is tied to current projects. This assertion was further supported by the results of the fall data collected here. As students worked on their projects, their communication about those projects likewise grew. Furthermore, knowledge is inextricably part of the situation in which it is produced (Brown et al., 1989).

Thirdly, instructional design should consider learning that is about both knowing and doing. Knowledge does not equal final objective facts (Clancey, 2009) and as students learn, they learn social aspects as well as content aspects of the discipline. It is vital that students learn within a context that fits with what will be expected of them later. Past experiences
shape the interpretation and actions in future situations viewed as similar (Schank, 1982) so
developing instruction in a way that fits with what will be expected of students in the future
will help support students. Students need to learn about the genres specific to their discipline
in both theoretical and practical ways.

Finally, communication should be considered a key aspect of both knowing and
doing. The instruction provided here aided students in the process of disciplinary knowledge
construction. Not only did students learn about what they needed to do in a critique, they also
learned more about their discipline. In this way, the situated nature of the instruction allowed
the “hidden curriculum” (Dutton, 1987) of what is valued within the discipline to be
uncovered by students. The communication here is vital in both what students learn and how
they learn it. Students are learning to communicate and the communicative means by which
that knowledge is transmitted will influence the success. Engagement in genres is vital to
learning (Berkenkotter & Huckin, 1995), which is important for instruction. Communication
provides a source for this learning. In situated learning, the role of teachers is supportive, not
directive. Therefore, students’ engagement in communication as a means of gaining
knowledge provides new opportunities for faculty to be supportive of the communication.

Practical for CXC

The implications of this project also extend into practical considerations for CXC
research and implementations. The results highlight the need for flexibility in discipline-
specificity, the supportive role of instructors, the need to assess by outcomes not attitudes,
and the need for a communication scholar to be involved.
The competencies utilized here, though empirically derived, are intrinsically interconnected. The interconnectedness was felt when devising a coding scheme and distinguishing how to evaluate students’ presentations in a way that took into account that one competency affected others. The connection seen between the competencies highlights the importance of considering the discipline when designing communication instruction. There is no “one size fits all” approach to implementing discipline-specific instruction.

Instructionally, the results here further support that the role of the teacher is supportive, not directive, a role advocated by situated learning (McLellan, 1992). Therefore, as CXC scholars implement communication instruction, the role played by those instructors should be supportive of students, not directive. This assertion requires that instructors strive to implement instruction not as a decree of “do this, not that,” but rather work with students to support them as their competencies evolve. By infusing communication instruction into other disciplines rather than simply tacking on instruction, instructors will be more easily able to provide this supportive role through all of the instruction provided to students.

The information presented here also highlights the need for assessing CXC programs by outcomes, not attitudes. In interviews, students were generally positive toward the instruction, but not entirely. While student attitudes are important and self-report data are interesting, more robust support for CXC implementations comes from careful analysis of the actual impact of the instruction where it matters – students’ communication. Furthermore, this assessment should be completed based on discipline-specific communication competencies. While generalized speaking rubrics may allow for comparisons and
standardization, such forms are not sufficient for tapping into the complexities of disciplinary communication.

Furthermore, when attitudes are involved, to the extent that students’ affect influences their performance, it is important that these measures are discipline-specific. The results here were in contrast to previous results indicating positive affect toward communication after instruction. However, these previous measures were generic. In this research, I used a variety of measures, and the measure that was most discipline-specific (self-efficacy) yielded the most significant results. Within the two communication apprehension measures, the more specific measure yielded stronger results than did the generalized measure. The previous measures, like the previous examinations of outcomes, provide only generalized approaches to understanding communication. The results here, when added to the growing body of discipline-specific CXC work, further add to the need for discipline-specificity.

Finally, these results highlight the importance of having a communication scholar involved throughout such communication implementations. In order to diminish the possibility of communication theory becoming watered-down through CXC work, the continual input of communication scholars is important. By implementing communication instruction with a communication scholar as part of the implementation, what could have simply been a focus on formal communication skills or a list of specific things to do or not do (as articulated in previous design literature, e.g., Anthony, 1991) instead became an opportunity for students to learn about communication more holistically. By having a communication scholar provide the instruction, the lessons were specifically focused on communication (albeit within the context of design), which often gets lost in favor of “real”
content (e.g., Dannels et al., 2003). Furthermore, the instruction was situated, not a separate class which helped make the connection between knowing and doing by making the communication part of the social context. The instruction helped emphasize to students both social and content knowledge in design. The presence of a communication person in the classroom helped provide additional relational aspects to the instruction.

Practical for Design

The communication instruction made a difference in students’ communication competencies and, as noted by faculty and students, this instruction is not typically integrated into design students. In light of the complex communication required in design and recent calls for changing the critique atmosphere (Koch et al., 2002), design program administrators are well poised to undertake efforts at integrating communication. Guidance comes from the growing body of empirical research on design education and design communication. By grounding curricular alterations in this literature, administrators will be making strategic choices that not only ensure the continued success of their programs, but also benefit students. Specifically, I make three recommendations for design education: consider when to implement instruction, build instruction on students’ natural progression, and adapt instructional models that fit the culture and needs of the institution.

The results here indicate that students who are earlier in their design education are more readily affected by communication instruction and the natural flow of communication in relation to projects. Based on this observation, the results suggest that design educators should consider how to implement instruction early in the curriculum. Because students at this point are learning about their discipline in a variety of ways, explicit attention to
communication will help enhance not only their communication competencies but also their understanding of the discipline.

The data here suggest that as students progress through their projects, their communication about the projects also progresses. Based on this finding, it seems that as design educators consider how to implement communication instruction, they should build the instruction on how students’ projects progress. For example, asking students to articulate their main concept in the first two weeks of a semester would not be beneficial because students are not at a point of being able to even somewhat articulate a concept. Rather, this time in the semester could be used to discuss with students aspects of presentations such as nonverbal communication or handling visuals. As students are expected to have chosen a concept to pursue, the communication that relates to concepts and arguments can then be introduced.

Finally, the different instructional models here also point to the variety of ways in which design educators can choose to implement communication instruction. Given time constraints in particular classes, it may be most beneficial for students to receive the instructor-focused instruction. In other cases, it may be preferable to engage in short activities on a regular basis. These decisions should be made with the goals of the instruction in mind, as well as with a consideration of the students and their needs. Likewise, instructors can consider other ways to infuse communication into the curriculum, such as by providing students with feedback explicitly about their communication during critiques (or in a post-critique wrap-up) in order to provide additional information and support for students.
In considering these results, design educators can see that communication instruction, especially when carefully implemented, can have a positive impact on students. To maximize this impact, design educators should consider how when to implement the instruction, how to embrace students’ natural progression, and how to best fit within the culture of the department or institution.

Limitations and Future Directions

The results and discussion here should be carefully considered in light of several limitations. These limitations reflect decisions made prior to engaging in the research process as well as issues that emerged as the project proceeded. These limitations, as well as the results here, also open the door for future directions in this area of research. In this section, I will address both the limitations of the study and possible future directions for research.

Limitations

Within this instructional study, there were several limitations. First, because this design utilized a case study, the results from this study are not generalizable beyond the institution, college, and classes under investigation. The data gathered and analyzed here bring with them natural restrictions about what can be said and should not be interpreted as being applicable to other classes. Furthermore, the quasi-experimental nature of the research limited the number of variables that could be controlled within this study. Working within the naturalistic approach, I was not able to control what happened within the classes outside of the time that I was given to work with students. Therefore, other forces (stress, instructor comments, etc.) may have either bolstered or negated instruction that was provided. Even
with these problematic aspects of the research design, however, every precaution was taken to carefully document the process and possible influences on results.

A major concern about the emergent design came from the instructional elements of this study. The two instructors who allowed access to their classes did so on a purely volunteer basis. They were under no obligation to follow my research design. This issue was less of a concern in Levi’s class where he allowed the time for the instruction as he would any other aspect of the class; Levi was also explicitly supportive of the need for this instruction in class. However, Hannah’s class faced several scheduling challenges. Not only did Hannah have a large class, students also lost class time to departmental presentations that severely limited their in-class time. As a result, lessons were cut from that implementation. Despite this deficit, the demonstrated impact of the instruction still stands as a sign of what can happen with instruction. It is possible that if all of the instruction had been completed, results would have been even stronger in this instructional model.

Finally, students took part in the study as part of their class work because they were enrolled in classes with instructors who had agreed to work with me. Therefore, students may not have fully engaged in the project, and the response rates for quantitative data were lower than ideal. Still, the results reveal the impact of the instruction, which would likely be strengthened by a larger sample size and response rate.

Future Directions

Based on the results of this study, it is clear that the division between knowledge and performance was blurred. What is still unknown is the influence of feedback on
communication instruction, alternative ways to integrate communication instruction, and the long-term growth of design students.

Future work should look at the feedback given in design critiques. Feedback varies in content from level to level (Dannels & Martin, 2008) as well as the time in the semester when it is given (Housley Gaffney, 2008). The question remains how the changes that occur in feedback relate to what students are actually doing. Weaving feedback on communication (as some faculty do) into the critique may make the communication more concrete to students and get around issues of students considering communication instruction to be fluff or irrelevant (Dannels et al., 2003).

Future research should consider other ways to integrate communication instruction, such as the team-teaching approach utilized by the CLEAR program at the University of Utah (http://www.coe.utah.edu/clear/). In this program, faculty in engineering (the focus discipline of the program) are aided by a communication graduate student and a writing graduate student. These graduate students provide instruction and support for students. By working consistently with a class throughout the semester and by working in conjunction with the engineering faculty, the CLEAR graduate student assistants are able to provide students with discipline-specific communication support that also draws on the graduate students’ home disciplines. This approach would tie together some of the benefits utilized here (e.g., having communication people involved) with making the instruction an even more seamless integration into the classroom.

Future work should also look at the long-term tracking of students as they grow as designers, and perhaps even beyond the classroom. Communication performance may move
in a cycle as projects grow, meaning that each semester a student needs to improve on communication in relation to a specific project. However, instruction would likely be cumulative which means that a student’s starting point in one semester is likely higher than the starting point of the previous semester. Similarly, this long-term tracking could be utilized in other disciplines or with students across disciplines as a way to better understand students’ growth and the natural rhythms of variation in communication competencies.
CHAPTER 9: CONCLUSIONS

In connecting previous literature and the current dissertation results, I ultimately make the argument that students learn both content and performative aspects of their discipline by learning discipline-specific communication. This type of communication blurs the line between knowledge and performance. In making this argument, I move away from the usual distinction made in CXC between “communicating to learn” and “learning to communicate” in an effort to look at the broader impact of utilizing discipline-specific communication instruction. In that way, I am blurring the lines between communicating to learn and learning to communicate. Such instruction has the ability to both enhance students’ understanding of content in their discipline as well as their understanding of how to better communicate; students are learning to communicate to learn. This approach embraces students’ natural growth as communicators and the culture of the discipline in order to most effectively reach students in empirically grounded ways.

Students’ communication abilities are an important influence on their success in design, but aspects that are often neglected instructionally. While these abilities naturally evolve throughout their education, this research suggests that discipline-specific communication instruction can further aid that evolution. Specifically, the results indicate that students who received instruction improved over the course of a semester more so than did students who received no such instruction. Furthermore, some competencies were more affected by particular instructional models than others. When students were more involved in the lessons, they benefited more on performative aspects of their presentations while students who were more passively involved in the instruction improved more in terms of their content.
Furthermore, students’ self-perceptions were positively impacted by the addition of instruction.

The need for discipline-specificity in evaluating communication has been highlighted in genre research, both in oral and written genres. While communication-across-the-curriculum research has examined genres of communication, instructional research thus far has neglected to examine the means by which students can learn to communicate in those discipline-specific ways. I have helped meet that goal through this discipline-specific grounded work. This work was situated in the genres and contexts of design and reflects that focus by looking at discipline-specific, rather than generalized, genres.

The main purpose I set forth for this dissertation was to understand the influence of discipline-specific communication instruction on design students’ communication. Through the research process, it became clear that the communication instruction filled a gap in the design curriculum and students were able to use the information gained from the instruction, albeit to varying extents, when placed in the critique environment. The specific nuances of how and why the instruction impacted students warrants further research, but the key outcome here is that the instruction matters for both what students both think and do, and specifically blurs the boundaries between knowledge and performance.

This influence on what students think and do is an important observation given the unique environment in which I undertook this project. I was truly an outsider, someone with no background in design, who quickly learned at least the bare minimum to be able to speak the language of design. My ability to work with students in my role as a communication scholar was directly tied to my ability to be in the moment with them and with their
discipline. As I talked with colleagues about this project, I found that I had to “translate” for them so they too could understand at least the basics of design and what is asked of students in those contexts. Colleagues who helped with my recording (people who regularly taught and gave conference presentations) noted that they would in no way want to be placed in the design students’ shoes. But for the design students, the critique was a way of life. Not only did they understand the thought process of design, they also understood how to design.

As I spent more and more time in the design classes, I maintained elements of my outsider-status, but was still accepted as part of the community of these particular design studios. Students came to anticipate my presence in the classes and understood that I was not there to change their design process (at least not intentionally) but rather was there to help in my area of expertise: communication. Toward the end of the spring semester, a student in Levi’s class, in a casual conversation, mentioned an upcoming department-wide picnic hosted by a faculty member. She asked if I knew about it, and when I said I did not, she asked for my email address in order to forward the invitation. Through this invitation, initiated by the student, I realized that I had not only blurred boundaries between knowledge and performance with these students, I was blurring boundaries between disciplines. Students saw communication as something that was part of their discipline, not simply something that lived in a department across campus.

I began this dissertation with a quotation from a design student about how communication influenced his thinking. Communication – regardless of topic – can influence thinking, as can instruction. Communication-across-the-curriculum instruction, especially when grounded in disciplinary communication, has an even greater potential to work with –
not against students’ current communication in order to effect change in students’ thinking and doing. With the benefit of communication instruction, students can learn about the discipline which they are joining through experiencing that discipline first-hand.
REFERENCES


course presented at the meeting of the National Communication Association, Chicago.


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Instructor-Focused Lesson

Topic: Credible Staging of Presentation

When you are presenting your design, you are in the role of the designer. Your audience wants to know that you understand the design process and fundamentals of design, and want to see you apply what you have learned about design. You should be presenting yourself as professional and knowledgeable. While this can be difficult to do when you are feeling the pressure of a critique, there are a few specific things you can do that will help project your professionalism and credibility. Today we’re going to cover four parts of making yourself appear professional and confident: your use of design vocabulary, your ability to persuade your audience, your use of high quality visuals, and your personal presence.

One cue for your audience that you know what you’re talking about is the appropriate use of design vocabulary. For example, terms like “grading plan” and “scale” have a specific meaning within design. When you first started in design, you probably had a learning curve to figure out what all of these words meant, but now they’re terms you use all the time.

Question: What terms are specific to design and landscape architecture? (make list)

As you talk to your audience about your design, you should be using these terms – and making sure to use them correctly. Refer to your grading plan as a grading plan, not just another sheet you chose to pin up. When you make notes for yourself before a critique, put the design language into your notes. This will serve as a reminder of what to say. One other consideration in terms of language is to know who will be in the audience.

Question: Who are the people typically in your critiques?

The people who may be in a critique (or in a presentation at your future job) may vary, but it’s important to use what you know about the audience. If your audience is other designers, you won’t need to explain most of the terminology you use. However, if you have outside people (such as a client) who will not be familiar with the jargon, make sure you provide some sort of context or definition for the terms you’re using. If you know you will have non-designers in your audience, consider asking a friend to listen to your presentation and see if they can understand your brief explanations of terms.

Question: From the list we generated (above), what five terms are people least likely to have understood? How could you have explained those terms briefly so they understood? (get examples from class of different definitions)

You’ll see these definitions don’t have to be long or complicated in order to work. The point is to make sure your audience knows enough to understand what you’re talking about. If they don’t understand you, they can’t follow what you’re doing and then can’t appreciate your design.

Another important part of your job in presenting is to make sure your audience believes in what you are doing. You want your audience to believe that your concept and design are the perfect fit for their needs.
Question: When someone is trying to get you on board with an idea, what do they do that makes you want to listen to them?

These behaviors are a good start. You can see that an important part of getting someone into your design is through the passion that you show. In order for your audience to believe in your design, you need to believe in your design.

Question: How do you know when someone is excited about their idea? How can you transfer those cues to your presentation? (generate a list of examples)

Very good. Remember that it’s hard for your audience to get excited about your idea if you’re not excited about it yourself.

In addition to showing your passion for your design and what you’re doing, it’s also important to think about how you look. In everyday life, we take cues from how people look and present themselves when we judge if we should believe them – or even listen to them in the first place. The same thing is true in design. How you present yourself will go far to helping your audience believe in you as a designer. It sounds pretty basic, but make sure to take a few minutes the day of the critique to dress up a bit (no ratty jeans) and make sure you look put together.

Question: How do you think your professors (and outside professionals) expect you to look?

Good – we don’t expect a designer to come in wearing a tux or a ballgown, but there’s a big difference between coming in wearing sweats and wearing nice pants and a sweater. Along with the fairly simple decision of what to wear, you should also think about looking awake. While you may have been up late the night before the critique (if you even get any sleep), do what you can to look awake and alert. Simple things such as drinking extra water or splashing water on your face can wake you up and make you appear more pulled together.

Beyond those steps you can take to prepare how you present yourself, it’s important to also think about how you present yourself while you’re in the front of the room. How you hold your body and hands will also help project confidence. Let’s start with how you hold your body. I need two volunteers, please. (One volunteer gets a card asking him/her to stand rigidly; the other gets a card asking him/her to stand in an overly casual manner). These two volunteers are going to demonstrate ways people sometimes stand when making presentations. (I will stand in an appropriately relaxed but still professional manner).

Question: When you look at each of these people, what do you think of them?

The way you hold yourself gives your audience impressions of you so you want to make sure they’re getting the impression you want.

Use gestures to help add variety to your presentation and to help your audience understand what you are talking about. Your gestures should appear natural and confident. (demonstrate – what looks more natural?) Get your hands and arms away from your body so you’re not making barely noticeable movements. (demonstrate – which is more effective?)

Question: What parts of your presentation may be particularly conducive to the use of gestures?

There’s no single right way to use gestures, but they help the flow of your presentation and help your audience know what you’re talking about. Be careful not to
gesture all the time (as I sometimes do) because it can be distracting. On the other hand, it’s not uncommon to get nervous and forget to use gestures. If this happens to you, don’t worry. Over time, you can work on adding gestures slowly. It can also help to plan out where you might gesture as you prepare notes before a presentation. Make little notes to yourself about where you might be able to use gestures. Making gestures part of your plan takes some of the pressure off of you when you’re actually in the critique. If you’re not sure where you might able to use gestures, ask a classmate or friend to make note of places where you naturally gesture while you’re talking about your design. These notes will give you a good starting point.

One of the major places where you may use gestures is in reference to the visuals you show your audience. In addition to helping your audience understand your design, the visuals you present help your audience assess your credibility as a designer. The visuals you choose to show your audience (such as models, sketches, or CAD drawings) should appear professional. For each critique, the exact materials you need to include may vary, but regardless of the details of those materials, you can still meet certain criteria for professionalism.

Question: What makes this drawing a poor choice to put up in a critique? (hold up a drawing I did). What information should be on a drawing?

Typically, high quality visuals means that your materials should be of a standard size, be marked with identifying information such as your name and the project, and include important interpretation information such as the scale. Make sure the materials are clean (not smudged) and have a consistent appearance. Plan ahead of time how you are going to arrange and pin up the materials. Have a plan for details such as where your model will sit. Planning these things out will not only make sure that the presentation is as strong as it can be, but will also help you be prepared for the presentation and cut down on the last minute stress of not knowing how to pin up.

Your audience is more likely to leave with a positive impression of you if they can understand what you’re talking about and what’s on your visuals. Thinking ahead and adding details to your visuals will help your audience understand you. When you add that to the steps you can take to make the audience believe you are more credible, you can see that there are many little things you can do that together will make a big difference.

The material we’ve covered today is all focused on helping you present yourself in as a credible, knowledgeable designer.

Question: What’s the take away from today?
Communication Lesson for Feb. 20 – Comp. Explanation of visuals

Set-up: Pin-up sheets with aerial view of site (1 sheet for every 3 students in the class).

Today we’re going to practice using visuals while you talk. There are a couple of specific things we’ll focus on: how you physically use the visuals and how you talk about the visuals. Physically, the way you interact with the visuals can help or hurt your audience’s understanding. Actions such as standing directly in front of your sheets, turning your back to the audience, or gesturing vaguely toward the sheets will hurt your presentation. Instead, you should stand near your sheets, being careful not to block the sheets or turn your back to the audience. Gesture to your sheets, being specific about what you’re talking about. As you speak, you should also be specific in your language to help your audience understand what you mean. Talking about the diagram or sketch using precise language helps your audience understand what you’re talking about.

**Group Activity:** Get into groups of 3. You’ll need an A person, B person, and C person. Once you have your group, stand next to one of the sheets pinned up. We’ll rotate through the different roles, but to start, Person A should stand near the sheet as though you were going to present about the sheet. Your job is to explain to your audience (your group members) how the site is currently being used. Person B, your job is to listen carefully to Person A so you can provide feedback on how well Person A is being specific in the language that he or she uses. Person C, you have responsibility for the physical aspect of this presentation. Your job is to readjust – as many times as necessary – Person A to make the most of the presentation. That may mean turning Person A, getting them to gesture, or moving their hands. Person A, you have 90 seconds to talk – use all of that time. Next, we’ll rotate through so Person A is listening, Person B is adjusting, and Person C is talking. Finally, Person A adjusts, Person B talks, and Person C listens. After we go through each of these, give quick feedback on how precise the person was being.

**Class Discussion:** What parts of the talking were especially successful at being specific? What physical parts of the presentation were especially important?
Thank you for your participation in this research. You may be asked to answer questions at various points in time this semester. In order to match your answers, please provide the last four digits of your phone number (whatever number you use most often, such as a cell phone) as an identifier. Your name will not be associated with your answers in any way, and your identifier will only be used for matching purposes and will not be used when results from this research are reported.

Last 4 digits of your phone number: __________

PART 1. These first questions ask about your general experiences interacting with other people in various contexts. Please indicate the degree to which each statement applies to you by circling the number that best reflects your level of agreement, using the following scale:

1. I dislike participating in group discussions. ........................................1 2 3 4 5 6 7
2. Generally, I am comfortable while participating in group discussions. 1 2 3 4 5 6 7
3. I am tense and nervous while participating in group discussions. ........1 2 3 4 5 6 7
4. I like to get involved in group discussions. .........................................1 2 3 4 5 6 7
5. Engaging in a group discussion with new people makes me tense and nervous. ..............................................................1 2 3 4 5 6 7
6. I am calm and relaxed while participating in group discussions. ........1 2 3 4 5 6 7
7. Generally, I am nervous when I have to participate in a meeting. ........1 2 3 4 5 6 7
8. Usually, I am comfortable when I have to participate in a meeting. ....1 2 3 4 5 6 7
9. I am very calm and relaxed when I am called upon to express an opinion at a meeting. ..............................................................1 2 3 4 5 6 7
10. I am afraid to express myself at meetings. .........................................1 2 3 4 5 6 7
11. Communicating at meetings usually makes me uncomfortable. ........1 2 3 4 5 6 7
12. I am very relaxed when answering questions at a meeting. ..............1 2 3 4 5 6 7
13. While participating in a conversation with a new acquaintance, I feel very nervous. ..............................................................1 2 3 4 5 6 7
14. I have no fear of speaking up in conversations. ................................1 2 3 4 5 6 7
15. Ordinarily, I am very tense and nervous in conversations. ...............1 2 3 4 5 6 7
16. Ordinarily, I am very calm and relaxed in conversations. ...............1 2 3 4 5 6 7
17. While conversing with a new acquaintance, I feel very relaxed. .......1 2 3 4 5 6 7
18. I'm afraid to speak up in conversations. .........................................1 2 3 4 5 6 7
19. I have no fear of giving a speech. ..................................................1 2 3 4 5 6 7
20. Certain parts of my body feel very tense and rigid while giving a speech. ...........................................................................1 2 3 4 5 6 7
21. I feel relaxed while giving a speech. ..................................................1 2 3 4 5 6 7
22. My thoughts become confused and jumbled when I am giving a speech. 1 2 3 4 5 6 7
23. I face the prospect of giving a speech with confidence. .......................... 1 2 3 4 5 6 7
24. While giving a speech, I get so nervous I forget facts I really know. .... 1 2 3 4 5 6 7

PART 2. Please respond to the following questions about how you felt the last time you participated in a critique. Please indicate the degree to which each statement applies to you by circling the number that best reflects your level of agreement, using the following scale:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly disagree</td>
<td>disagree</td>
<td>somewhat disagree</td>
<td>neutral</td>
<td>somewhat agree</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

1. I was apprehensive ................................................................. 1 2 3 4 5 6 7
2. I was disturbed ........................................................................ 1 2 3 4 5 6 7
3. I felt peaceful ........................................................................... 1 2 3 4 5 6 7
4. I was loose .............................................................................. 1 2 3 4 5 6 7
5. I felt uneasy ............................................................................. 1 2 3 4 5 6 7
6. I was self-assured .................................................................... 1 2 3 4 5 6 7
7. I was fearful ............................................................................ 1 2 3 4 5 6 7
8. I was ruffled ............................................................................ 1 2 3 4 5 6 7
9. I felt jumpy ............................................................................ 1 2 3 4 5 6 7
10. I was composed ....................................................................... 1 2 3 4 5 6 7
11. I was bothered ........................................................................ 1 2 3 4 5 6 7
12. I felt satisfied .......................................................................... 1 2 3 4 5 6 7
13. I felt safe .............................................................................. 1 2 3 4 5 6 7
14. I was flustered ........................................................................ 1 2 3 4 5 6 7
15. I was cheerful ......................................................................... 1 2 3 4 5 6 7
16. I felt happy ............................................................................ 1 2 3 4 5 6 7
17. I felt dejected .......................................................................... 1 2 3 4 5 6 7
18. I was pleased ......................................................................... 1 2 3 4 5 6 7
19. I felt good ................................................................................ 1 2 3 4 5 6 7
20. I was unhappy ........................................................................ 1 2 3 4 5 6 7

PART 3. The following questions ask about your experience in design studios during the final critique of a project. Please rate how certain you are that you can do each of the following things by writing the appropriate number, based on the scale given below. An example question is answered for you.

<table>
<thead>
<tr>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot do at all</td>
<td>Moderately certain</td>
<td>I can</td>
<td>Highly Certain</td>
<td>I can</td>
<td></td>
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EXAMPLE:
When participating in a final critique, I can…
1. Speak loudly enough for my audience to hear me............................. 73

When participating in a final critique, I can…
1. Talk about specific parts of my drawings, models, and other visuals. ......... ___
2. Clearly explain the details of my drawings, models, and other visuals. .... ___
3. Respond to questions without being defensive...................................... ___
4. Use my visuals to explain my concept................................................... ___
5. Explain my design process from start to finish ......................................... ___
6. Describe the design problem that was given to me.................................... ___
7. Show the connection between my original concept and my final design..... ___
8. Use design terminology correctly............................................................ ___
9. Use language that is appropriate for my audience.................................... ___
10. Persuade my audience of why my concept is appropriate for the design problem I was given................................................................. ___
11. Make my audience believe I am a credible designer............................... ___
12. Use professional looking visuals............................................................. ___
13. Appear confident..................................................................................... ___
14. Reflect on both positives and negatives when responding to questions about my work ..................................................................................... ___
15. Explain my concept in specific terms ..................................................... ___

PART 4. Please answer the following questions about yourself:

1. How many design studio courses are you currently taking? _________

2. Not counting this semester, how many design studio courses have you taken?
_________________________

3. What is your major?_______________________________________________

4. Circle the range that reflects your grade point average within your major:

4.0-3.75   3.74-3.5   3.49-3.25   3.24-3.0   2.99-2.75   2.74-2.5   2.49-2.25   2.24-2.0 below 2.0

5. Circle your current year in school:

freshman     sophomore     junior     senior     1st year master’s     2nd year master’s
other: ____________
6. Do you have professional experience in a design field? Yes No
   If yes, please briefly explain:

7. Circle your gender: male female

8. Prior to this semester, have you been in a studio where other research on communication in design was completed? Yes No
   If yes, during which semester? __________
Critique Coding Scheme

For each of the five criteria below (concept; credibility; argument; visuals; audience), please select the description that best reflects your assessment of the student’s communication. You may also identify a student as falling between two descriptions (e.g., if a student exceeds the description under 4 but does not quite reach the level of 5)

Concept
5: Student identifies the overall concept of the design and describes his/her work on the project in an organized flow that addresses both the beginning and end.
4: Student identifies the concept but with some vagueness; addresses the beginning and end of work; explanations of how the student worked are generally fine with minor points of confusion.
3: Student identifies the concept, but in vague ways; explanations of how the student worked are clear and confusing at approximately equal rates.
2: Student does not address concept in obvious ways; addresses the beginning or end of work in vague or confusing ways; organization and connections are difficult to follow.
1: Student does not address both concept and presents no understandable sense of design process.

Credibility
5: Student’s physical and spoken performance consistently enhances his/her credibility.
4: Student’s credibility is generally supported by physical and spoken performance with some small exceptions.
3: Student’s physical and spoken performance both supports and detracts from the student’s credibility at approximately equal rates.
2: Student’s physical and spoken performance generally detracts from the student’s credibility with some small exceptions.
1: Student’s physical and spoken performance consistently detracts from the student’s credibility.

Argument Note: A student may present a convincing argument for the specific choices made even with an unclear concept.
5: Student provides convincing argument(s) for how his/her design choices address the given site and constraints with evidence to support the argument.
4: Student provides overall solid argument(s) with evidence for how design choices address the site but with minor aspects of the argument missing or confusing.
3: Student provides argument for how design choices address the site but with key aspects of the argument (e.g., key pieces of evidence or connections) missing or confusing.
2: Student provides little, vague, or incomplete support for how design choices address the site.
1: Student provides no convincing support for how design choices address the site.

Visual
5: Oral content is coordinated with visual material in a logical manner.
4: Student talks about most of the displayed visual material in a logical fashion with a few notable exceptions (e.g., needs to be prompted to explain some of the visuals).
3: Student often matches oral content and visual material but connections are not consistent and/or are disorderly.
2: Student consistently does not make connections between oral content and visual material; connections that are made are disorderly.
1: Visual material and oral content are not matched.

Audience
5: Student demonstrates that he/she values feedback and embraces alternative perspectives through overall positive (e.g., nodding, answering questions) reactions to audience
4: Student shows some interest (by way of reactions) in audience feedback and considers alternative perspectives but at times either does not react or demonstrates slight negativity.
3: Student shows approximately equal amounts of interest and disinterest in audience feedback and perspectives; reactions are approximately equally positive and negative.
2: Student shows little interest in audience feedback and perspectives and shows hesitance/resistance to suggestions.
1: Student shows no interest in audience feedback or alternative perspectives.
Critique Summaries Given to Second Coder

Fall Data

Levi’s Class
First Critique: In this critique, students were asked to individually present three potential concepts for a site that would serve as the gateway to the campus; the site is currently a parking lot. Prior to this critique, students completed site analysis as a group.

Final Critique: In this critique, students shared construction documents they had developed in order to support the implementation of their concept to a site that would serve as a gateway to campus; the site is currently a parking lot. Students met in small groups with professionals who worked through the documents with students; there were no formal presentations. Although students met in groups, each student completed an individual set of documents.

Hannah’s Class
First Critique: In this critique, students presented their concepts for the development of a former warehouse site downtown. Students were focused on reclaiming contaminated land and making the space as a potential transportation hub for the city. At the start of the semester, students completed material studies about the relationship between organic and created materials. Students also completed site analysis as a class. At this stage, each student has an individual concept to present.

Final Critique: In this critique, students presented their plans for the former warehouse site downtown. Students were focused on reclaiming contaminated land and making the space as a potential transportation hub for the city. At the start of the semester, students completed material studies about the relationship between organic and created materials. Students also completed site analysis as a class. At this stage, each student has an individual concept as well as a developed plan for the site to present.
Spring Data

Levi’s Class
First Critique: In this critique, students presented their concepts for a redesign of the campus of a local hospital. Students worked together on site analysis then worked individually (with some in teams) to develop concepts, which were proposed here.

Final Critique: In this critique, students presented on one of two possibilities. First, some students presented a fully developed plan for the redesign of a local hospital campus. For these students, this was a second time talking about the concept. Secondly, some students worked on a broader scale and talked about the redesign of a strip of road (near the hospital) that was in need of redevelopment. Constraints for these students included the need to consider the businesses’ concerns and the need for public transportation. Regardless of which projects students presented, students needed to discuss a concept for the site and a plan for implementing that concept.

Hannah’s Class
First Critique: In this critique, students presented concepts for the development of a currently unoccupied city block that is up against the newly opened convention center. Prior to this critique, students worked on face studies where they explored various characteristics of faces as a means of looking for shapes and textures. Students also completed black and white studies and built models (all of which are seen in the critique). These earlier tasks were intended to build students’ design vocabulary and to encourage them to think about more than simply the site as they designed.

Final Critique: In this critique, students presented concepts and plans for the development of a currently unoccupied city block that is up against the newly opened convention center. Prior to this critique, students worked on face studies where they explored various characteristics of faces as a means of looking for shapes and textures. Students also completed black and white studies and built models (all of which are seen in the critique). These earlier tasks were intended to build students’ design vocabulary and to encourage them to think about more than simply the site as they designed. These concepts were previously presented and then refined more fully developed for this critique.