STUDENT PREFERENCES FOR TECHNOLOGY-BASED LEARNING ENVIRONMENT INTERFACES AS INFLUENCED BY SOCIAL PRESENCE

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The purpose of this research was to investigate the preferences of online students for technology-based learning environments (TBLEs) as influenced by the level of social presence in the online courses the participating students have taken. This investigation was centered around utilizing TBLEs and methods for establishing social presence in online classes (MESPOC) survey instruments to obtain the preferences of current online students at public university in the state of Texas. This study assumed a qualitative research structure comprising analysis of the data obtained on the TBLE and MESPOC instruments followed by semi-structured interviews with some of the survey participants. The results of the studies indicated that an individual’s preferred online learning environments impacted satisfaction in an online course. Moreover, the study, also explored the students’ preferences when it comes to the organization and facilitation of online courses.
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CHAPTER 1
INTRODUCTION

The information to be found within the pages of this chapter is the context for this dissertation. Specifically, Chapter 1, it will establish the research problem that will be studied and investigated. Chapter 1 builds off an initial explanation of the research problem by describing the purpose and significance of the research, and highlighting the questions to be addressed throughout the course of the study. This chapter concludes with a description of the components that were used to construct the inquiry, as well as the research methods employed to complete this study.

Background

Online or distance education offers an alternative to traditional face-to-face instruction that allows students to pursue an academic degree on a schedule that exists outside of their occupational and social obligations. Regardless of this appeal to the average student, a perpetual and multifaceted question lingers within the minds of individuals not well versed in the practices associated with this method of instruction. This lingering question refers to the perceived notion of equality from a content perspective, as well as the idea of the student's social and academic experience also being equal. The first portion of this question can be answered relatively simply because of continued studies on online academic content; the latter portion requires a more complex investigation to determine an answer.

Is online education similar to traditional methods of instruction from a quality perspective? The general consensus is that online education is just as effective as its traditional face-to-face counterpart with regard to student achievement or learning outcomes (Dell, Low, & Wilker, 2010, para. 5). This level of effectiveness provides a context for the level of quality
between these instructional delivery methods yet it does not explain the factors that make this similarity in quality possible. The second part of the question is where the debate about delivery becomes fascinating, as there is a distinct difference in the experience for a student taking an online course versus a course in a traditional setting. Marchand and Gutierrez (2012) feel that this distinct experience is centered on the importance of the student's perceptions and their motivation. Specifically, these perceptions and motivations refer to the intrinsic nature of the student, their "effort, self-regulation, and more sophisticated learning strategies" (Marchand & Gutierrez, 2012, p. 151).

As mentioned earlier, there is little to no discernible difference between online and traditional face-to-face instruction in terms of the nature of their effectiveness for conveying information from instructor to participating student (Lim, Morris, and Kupritz, 2007). There have been several studies that have been conducted to bolster the notion of comparable effectiveness between both instructional methods from the perspective of the structure of the delivery method (Means, Toyama, Murphy, Bakia, & Jones, 2009; Weber and Lennon, 2007; Bernard et al., 2004). Within the context of this dissertation, an online delivery method is a "method or medium of education delivery via a technology offering an array of connectivity, flexibility and accessibility" to a participating student (Moore et al., 2011, p. 130). The rationale behind the inclusion of a definition is to assist in providing a clear division between online education and traditional methods of instruction and to highlight the instructional design/pedagogical elements that shape the effectiveness of online learning.

A prevailing assumption offered by such as Garrison (2011) indicates that the effectiveness of online learning as a medium and any resulting student satisfaction towards that medium is dictated by the instructional design components implemented in a given course (p.1).
The belief can be assumed that there is a link between "pedagogical” and “technological innovation" that governs the resulting behaviors of students participating in online courses (Garrison, 2011, p. 1). This makes one wonder the implication of which aspect prevails in the results—is it the instructional design components (pedagogical) or the technology that determines the success of learning outcomes or student satisfaction for this method of instruction? This question manifests itself within the interfaces found on the Technology-Based Learning Environments instrument and the overall qualitative nature of this research study. Both of these elements will be discussed at length later in this chapter.

The response to this implication is that both pedagogy and technology assume an active role in facilitating or shaping the experience of the student taking courses in this medium. Namely, the mixture of new communication technologies with conventional approaches to instruction appeals to the individual's sentiment towards learning, which impacts their success within their courses (Lim, Morris, & Kupritz, 2007, p. 27). The underlying premise of the position held by Lim, Morris, and Kupritz (2007) is that these instructional components are not the source for the success or motivation of the individual participating in an online environment; these components merely facilitate such results. To better understand this relationship, the concepts need to be defined to explain what they are, as well as how they influence the student experience.

Online Learning Environments

Online learning was defined earlier in this chapter and the definition provided referred to the concept from a high-level perspective. Namely, the term online learning can best be defined as an “improved version of distance learning” that establishes “access to learning experiences via the use of technology” (Moore, Dickson-Deane, & Galyen, 2011 p.130). Thus, it would be
beneficial to establish a granular description as to what constitutes an online learning environment and its features within online learning. The prevailing definition of online learning environment within a practical context is the utilization of "learning technologies in a manner that lays the foundation for an online environment that facilitates collaborative activities and information sharing" (Colorado & Eberle, 2010, p. 5). In most situations, the previously mentioned online environment assumes the form of a learning management system as this type of system offers numerous methods for collaboration and functions to convey information between participating students and their instructors. The benefit of a learning management system is that it endows an instructor with the ability to engage in the participating student's desire to learn online while also affording an ability to house multimedia elements to enhance the experience of the student (Gautreau, 2011). There are those who consider a learning management system to be nothing more than a "transactional and largely administrative" system and that educators are still struggling to "understand how to best maximize the capabilities of these systems" (Pugliese, 2012, paras. 3 and 1).

Instructional Components

The importance of Pugliese's position is that it highlights the lack of knowledge regarding the instructional components associated with the primary platform used for online learning—the learning management system. For this dissertation, the concept behind instructional components in online learning is how these elements are leveraged and the role of these elements within an online learning environment. Online instructional components typically assume the following formats: course planning, instructional design techniques, and the strategies for using new technologies within an online context (Lee, Dickerson, & Winslow, 2012). While course planning is an important aspect of any online course, the last two instructional components will be
discussed and examined in this research study to provide context to the foremost concept of this dissertation, social presence.

The concept of social presence is a natural by-product of the aforementioned instructional concepts that is devised and implemented successfully into an online course by the instructor or instructional designer. One of the most prominent of these instructional components for the individual participating in an online course is the feeling of being part of a learning community. Swan (2002) explains the importance of a learning community as being centered on the communal interaction that results in the "access, manipulation, synthesis, and communication of content information" (p.24) between individuals within an online course. Once an instructional component has been conceived, the attention turns to the integration of said component in the online learning environment. Specifically, the focus is on the methods employed that result in a defined purpose for not only learning but also increasing the overall experience of the participating student in a course. Two important methods for leveraging these instructional components are the use of synchronous lectures and collaborative activities (such as discussion forums), among other functional aspects of the online environment (Ward, Peters, & Shelley, 2010).

Social Presence

The importance of social presence in online education is established through the concept of Moore's Theory of Transactional Distance and the feeling of isolation Moore believes is inherent to learning set to occur at a distance via an online learning environment (Moore, 1993). Conceptually, Moore's Theory of Transactional Distance refers to the notion that not only the virtual environment but also geographic separation dictates a student’s and an instructor’s behavior (Moore, 1993). The crux of Moore's theory is that social isolation of a participating
student will impact all of the important aspects of the student's experience, their motivation, and the learning outcomes in an online course. Falloon (2011) posits that Moore's theory centers around three aspects that need to be considered when developing an online course, with those factors assuming the form of "dialogue, structure, and learner autonomy" (p. 190). The position of Falloon offers the means by which to understand the elements required for making a successful online course capable of erasing the feelings of isolation caused by Moore's Theory of Transactional Distance.

Social presence is a concept that offers an approach for limiting the effects of Moore's theory in online courses while simultaneously empowering the participating students to take an active role in their learning. Social presence as an educational concept refers to a student's feeling of "being together with another" through the use of "interactions in a mediated environment" (Biocca, Harms, & Burgoon, 2003, p. 465). As one might ascertain, social presence is the direct result of the interactions detailed by the instructional components in an online course that seek to create a communal approach to learning in this environment. Quite simply, social presence is tied to the perception of the environment in which learning is going to occur and if the perception is viewed as "impersonal," then the amount of interaction will decrease as will the information being shared between participants (Aragon, 2003, p. 60). The quest to establish social presence, or create a perception of a course as personal, requires an understanding of the environment to leverage its inherent features in order to create interaction amongst those participating in online versions of courses.

As was mentioned earlier, instructional components such as the instructional design and the online environment itself are essential not only for the cultivation of social presence but also for the reaping of the online environment’s benefits as well. Online learning environments are
 conducive for social presence as they are inherently constructivist in nature and make use of the social activities within these courses (Kehrwald, 2008). It had been hypothesized that social activities occurring online such as discussion boards or synchronous learning sessions (among other methods) have been found to successfully establish social presence through the use of interaction and behaviors occurring between stakeholders. Lowenthal (n.d.) explains that in spite of perceptions of being an impersonal environment for learning, social presence is achievable through behaviors and such techniques as using "emoticons, telling stories, and even using humor" (p. 6).

After the concept has been defined, the focus must turn to the benefits of pursuing social presence in an online environment for the individuals taking an academic course at a distance. The foremost reason has been touched upon earlier, which can dictate the participants’ perceptions and feelings towards the online learning environment as being either personal or impersonal. Building from the perceptions of a student towards the medium itself, social presence carries an inherent benefit of establishing communal cohesion and shared knowledge. Namely, social presence, in conjunction with types of activities based on participant interaction, can result in creating a "sense of closeness" and "a healthy sense of group" that can lead to a learning community (Kim, Kwan, & Cho, 2011, p. 1513). Ultimately, this sense of community participation built from social presence will establish a better understanding of course content, which in turn will result in positive learning outcomes. For instance, social presence seeks to alleviate feelings of "isolation, disconnectedness and loneliness," which could negatively affect a student’s "academic interest and motivation" in a course, thereby keeping students from satisfactorily completing the online course in which they enrolled (Kim et al., 2011, p. 1512).

Problem Statement

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The concept of isolation in online learning environments is an element highlighted in construction of online courses and the necessity of social presence within these environments is well discussed. A variety of studies have examined the benefits associated with the development of social presence in both traditional and online courses. These studies found correlations of online student interaction activities to better communicate with instructors and their peers (Swan and Shih, 2005), enhanced levels of motivation (Robb and Sutton, 2014) and positive learning outcomes (Park and Choi, 2009). Yet, the investigation into student preferences for specific types of technology-based learning environments (TBLE) interfaces based off their respective social presence levels and questions borne from it have gone relatively unanswered.

Purpose of Study

This study investigated the preferences of online undergraduate and graduate students for specific aspects of TBLE interfaces as they relate to social presence levels in current or ideal online courses. Moreover, this study extended into student preferences for the associated methods by which social presence and interaction were integrated into their courses. To avoid any confusion conceptually, TBLE interfaces refers to the systems that are used in an online learning experience and associated methods are the instructional design elements from a theoretical and practical perspective.

For the sake of this specific study, the following research questions are associated with student preferences for TBLEs employed with regard to their levels of social presence. This notion led to the development of the following research questions that were answered by this study:

• Research Question 1 - What was the learner’s preference for technology-based learning environments?
• Research Question 2 - What influenced the student's level of Social Presence in these online courses?

• Research Question 3 - How does the student's preference for online interaction affect their level of social presence in their online course?

• Research Question 4 - What is the relationship between student's responses with regard to TBLE and their desire for courses utilizing one or more Social Presence technologies?

Relevance and Value of Study

From the perspective of definitions, the concept of social presence is known as "the degree by which a person is perceived as 'real' in mediated communication" (Gunawardena, 1995, p. 151). The interesting aspect to be considered from Gunawardena's definition is the notion of mediated communication and how flexible the definition is when faced with the passage of time. Specifically, Gunawardena could not foresee the multitude of TBLEs that currently exist with the purpose of conveying information from one stakeholder to another.

Twenty years have passed since Gunawardena penned that quote and instructors are still trying to overcome the feelings of isolation that occur in online education when the feeling of community is absent while also trying to measure the effect of these elements on motivation (Croft, Dalton, & Grant, 2010).

Online learning and the computer-mediated communications methods utilized within online courses seeking to replicate the behaviors found in face-to-face instruction provide the relevance for this study. Understanding the interfaces of the technology and the instructional methods that best align with the preferences of the individuals participating in online instruction can help to enhance this relevance and provide value to the educational community at large. In addition, the value to be gleaned from this study is the insight obtained from study participants as
they may contain an understanding of elements in this delivery method can be improved upon to increase student motivation, retention, and promote positive learning outcomes.

Research Structure

The methods utilized in this study will assume a qualitative approach with the use of the TBLE instrument, the Methods for Establishing Social Presence in Online Classes (MESPOC) instrument, and semi-structured interviews with the participants to gain insight into the research questions. The TBLE instrument, a non-parametric scale instrument, was used to better understand the preference of elements found in online learning environments. The subsequent use of the MESPOC instrument provides a more refined and granular understanding of student preferences of these features through the lens of a circular triads analysis, as well as a ranks sum analysis. The final research method utilized in this study was semi-structured interviews involving participants, which were later transcribed and coded using a descriptive coding method.

Summary

In this chapter, a concise background was provided regarding social presence as it relates to online learning and instructional components. Furthermore, several other elements of the study were introduced including the statement of the problem, the research questions, and the relevance of the study, as well as its purpose. Moreover, this chapter provided a high-level perspective to the case study that will be the result of the research conducted with the involvement of online undergraduate and graduate students within a defined academic department at public university in Texas. These elements regarding the participants and research methods will be discussed at length in Chapter 3 of this dissertation. The conclusion of this chapter further discussed the research methods that would be present in this case study.
Chapter 2 assumes the form of a literature review and discusses current and related research that has been conducted on the subject of social presence in online learning environments. This review of literature helps establish a theoretical and conceptual underpinning to fully understand the background of the elements discussed in the introduction. Also introduced during the course of the literature review are concepts associated with online course design, interaction, technology-based learning environment interfaces and their influences not only on social presence but also on student motivation and satisfaction.
CHAPTER 2

REVIEW OF RELATED LITERATURE AND THEORY

This chapter will provide a theoretical and conceptual context to the research study that was conducted regarding student preferences towards TBLEs. The focus of this chapter will begin with the conceptual basis of online learning, followed by a detailed description of Moore's Theory of Transactional Distance, along with how this theory dictates the need for social presence in online courses. From a defining of social presence, the focus will turn to the elements that facilitate learning within online courses such as instructional practices, technology, and interaction. The literature review will then transfer focus from the elements that establish social presence to the numerous offshoots from pursuing social learning in online classes, such as a community of inquiry and other collaboration activities that emphasize social presence in online learning. The chapter will conclude with an investigation into the creation of communities of inquiry in online courses.

Conceptual Approach to Research

To provide a holistic understanding, this research study and the methods employed to conduct it would assume the form of a case study. In a simple sense, a case study refers to "qualitative research in which a single individual or example is studied through extensive data collection" (Fraenkel, Wallen and Hyun, 2012 p. G-1). The data collection methods for this research study are centered on pairwise comparison survey instruments, which take a series of objects and present them to a participant to be ranked by said participant’s preference for each object (Salustri, 2005). Through the utilization of pairwise comparison and later semi-structured interviews, it is possible for the creation of a further refined type of case study. The use of semi-structured interviews assumed the form of a “verbal exchange” between the researcher and
participants to “generate rich data” directly from the participant themselves (Newton, 2010 p. 1-2).

The utilization of numerous data collection methods, pairwise comparison instruments and semi-structured interviews in a research study result in a more specialized type of case study. Fraenkel, Wallen, and Hyun (2012) further refine the notion of a case study into specific sub-types to provide context to the purpose of said case study. One of the sub-types defined was an intrinsic case study, which assumes the form of a study where the researcher is "primarily interested in understanding a specific individual or situation" (Fraenkel, Wallen & Hyun, 2012 p. 435). The purpose of the research study to be completed for this dissertation fits within the parameters of an intrinsic case study since the purpose is to understand the preferences for the TBLEs (both general and specific) that are being utilized by online students in a specific academic department. This will be achieved through the description of the "particulars of the case in order to shed some light on what is going on" (Fraenkel, Wallen & Hyun, 2012 p. 435).

It was also noted in Chapter 1 that this research study will assume a qualitative approach to understanding and answering the research questions, with this in mind, defining said qualitative approach would be beneficial. This research study will utilize qualitative research methods to understand and answer the research questions discussed later in this initial chapter within this dissertation. To provide context, qualitative research refers to "gaining a deep understanding of a specific organization or event" with understanding of the participants and the event occurring through "firsthand experience, truthful reporting, and quotations of actual conversations" (Saint-Germain, 2001, para. 1 and 3.). The rationale for approaching this particular research study as a case study is that it affords the researcher the ability to fulfill the
premise of a qualitative study. It is the aspect of investigation that occurs with the use of many different tools to better understand the reason for why a behavior occurs (Baxter & Jack, 2008).

Conceptual Background of Online Learning

The foundation of social presence is laid within the concepts associated with the process of learning online. To begin this examination of social presence in online courses, it is beneficial to provide a definition of the medium to better understand how online learning occurs, as well as the associated aspects that both facilitate and impact social presence in these types of courses. From the perspective of definitions, online learning can best be described as the practice of utilizing online technology to administer a traditionally face-to-face class virtually (Allen & Seaman, 2013). The delineation between a traditional face-to-face course and an online course is centered on the notion of the amount of content that is presented virtually as opposed to in an in-person classroom. Allen and Seaman (2013) provide a numeric percentage for identifying online courses as one where "80 percent" of the course takes place within an online context (p. 7).

One of the defining attributes of online courses is the use of online technologies to deliver these courses to students virtually. The foremost of these technologies is usually content or learning management system (LMS), which offers a centralized location where an instructor can not only post content or instructional materials for student use but also provides numerous communication capabilities (Rovere & Kovach, 2011). The main value of online learning is not the technology itself but rather the opportunities it gives the participating student. Students tend to take these courses for three reasons: (a) scheduling is flexible, (b) accessibility options abound, and (c) time worked on a course is at the discretion of the student (Cappel & Smart, 2006). While this flexibility afforded to the participating student is fantastic, it does not explain some of the features that make online learning actually possible.
There are two types of online learning that will be discussed that fit the particular methods of course delivery from a university offering fully online courses to a student. The first method is known as asynchronous learning, which means that learning does not occur at the same time. Instead, each participant completes work at their own relative pace (Bell & Federman, 2013). Bell and Federman (2013) also offer a concise definition for the second method of delivering academic content online, referred to as synchronous learning. Their working definition states that synchronous online learning is where course participants meet at the same time via technology (such as telecommunications software) to facilitate course lectures and discussions in real time (Bell & Federman, 2013). Ultimately, the approach by which an online course is delivered provides the basis by which the effects of isolation can be seen in these types of courses as defined by Moore's Theory of Transactional Distance.

Moore's Theory of Transactional Distance

Feeling isolated while taking an online course could adversely affect the sentiment or motivation towards the course. One of the distinct theories that provide a theoretical and contextual basis for this idea is Moore's Theory of Transactional Distance. Moore's Theory of Transactional Distance refers to the space or distance that exists between both the learner and the instructor, which results in different types of behaviors from both parties (Moore, 2003). In particular, this distance assumes the form of a "psychological and communications" gap between the instructor and student that results in failure of the individuals to understand each other (Falloon, 2011, p. 189). Falloon alludes to several key points about the nature of Moore's theory that include features of the mindset of the participant and the role communication plays within online courses that require further discussion.
It is an oversimplification to reduce Moore's theory down to the notion of a mere communication breakdown between an instructor and their students in an online learning environment. Moore posited there are three components that affect the experience of the online learner, "structure, dialogue, and learner autonomy" (Moore, 1997, p. 22). Moore's position was that these three components acted as variables to determine the level of transactional distance in an online course. Conceptually, dialogue refers to the types of interactions taking place in a course, structure is centered on how the course is structured, and learner autonomy is the concept of the student's ability to work independently, or it might also refer to the learning materials themselves (Benson & Samarawickrema, 2009). As mentioned earlier, Moore asserted that each level of these components affects the other, which in turn determines the level of transactional distance between the instructor and their students. Essentially, a balance should be struck between structure and dialogue without an "overemphasis of the former at the expense of the latter" as each are "inversely related" and high structure/low dialogue approaches tend to increase the transactional distance (Moore, 2004, p. 68; Benson & Samarawickrema, 2009, p. 8). After defining and discussing the concept of Moore's Theory of Transactional Distance and its conceptual components, it would now be beneficial to connect these concepts to the major components of this study.

Social Presence in Online Courses

The dilemma that arises within the context of online or distance learning is the concept of transactional distance between not only the instructor and their students but also the student with their peers. One argument could be made that the resolution to minimize said dilemma is the creation of social presence in this courses. The concept of social presence has a long history that existed outside of the realm of learning that occurs with a modern technology-based learning
environment. The original definition of social presence comes from Short, Williams, and Christie (1976) and centers around the notion that "group members are communicating with people instead of objects" (Joyce & Brown, 2009, para. 1). As time has progressed, the definition of this concept has evolved to become centered on the individual and the medium utilized to convey interactions between participants. Bulu (2012) asserts that individual conception of medium will lead to enriched interaction that is more social in nature. Conceptually, there is some overlap between the historical and modern definition of social presence but that overlap highlights the necessity of interaction between individuals to establish social presence in an online course.

The use of definitions is necessary to provide a foundation by which to understand a concept, however, an examination of the theory is required to fully comprehend the nuances of a particular idea. The origin of social presence theory within the field of education begins with a brief discussion of the nature of human beings from the perspective of their intrinsic desire to be a community. Lowenthal (2009) explains that this desire for community stems from a human's proclivity for engaging in group activities, whether they be related to "learning or work" and fall within the spectrum of being "social creatures" (p. 113). Lowenthal offers insight into not only humanity in general but also the rationale behind pursuing educational opportunities that leverage these desires of the individual. There is agreement with Lowenthal that a worthwhile education experience will embody these social elements as these interactions result in an opinion of the student where said experiences were "engaging, memorable and impactful" (Dunlap & Lowenthal, 2014, para. 1). The question that arises from the position given by Dunlap and Lowenthal is "how does one create these types of learning experiences?" One response to this question is the marriage of pedagogy and the method by which courses are delivered and empowered through social presence (McKerlich, Riis, Anderson, & Eastman, 2011).
As one might ascertain, the essential nature of social presence in online courses is transactional in its composition. The heart of these transactions is established by the technology that creates the environments where these transactions are said to occur. With technology utilized in this fashion Annand (2011), explains that a revolution occurred between the original definition of social presence by Short, Williams, and Christie and the one conceived by Bulu. Specifically, the possibility of interaction between individuals now existed, whether it is instructor/student or student/student in nature, this interaction is made possible by systems that are "cost effective, sustained, and contiguous," affording the aforementioned "two-way interactions" (Annand, 2011). The overarching goal for including elements that bolster social presence in these courses is the development of a distinct type of interaction between stakeholders. The ideal type of interaction between the individuals would assume the form of "visual and auditory cues" through the different types of communication technologies afforded by the technology-based learning environments (Kear, Chetwynd, & Jefferis, 2014, para. 9).

Technology-based Learning Environments

As with any course in higher education, there are locations where learning is set to occur—whether it is in a physical classroom on campus or in a virtual environment for online courses. The environment associated with online courses allows for the conveying of information from instructor to student by providing the ability to communicate. From an abstract perspective, a technology-based learning environment offers a representation of reality for the individuals participating in the processes associated with these online courses. Jarvela, Bonk, Lehtinen, and Lehti (1999) provide a historical foundation for these TBLEs through the explanation that these systems offer the potential for facilitating interactions. Thus, allowing for the understanding the role of the instructor and the motivation of the student, as well. The perspective given by the
Jarvela et al. (1999) alludes to not only the type of interaction that occurs within these courses/environments, but also extends to the types of features that facilitate the relationship between students and their instructors. The essential purpose of these environments is to establish "cooperative, collaborative, and positive social behavior of students" in the courses that take place within them (Silver-Pacuilla, Ruedel, & Mistrett, 2004, p. 4). These historical perspectives are essential for gaining necessary insights into these TBLEs from a structural and features perspective.

The concept of the technology-based learning environment involves a variety of different types of virtual environments; however, this literature review will focus on the relationship between learning management systems as a TBLE and the relationship of a TBLE with social presence. The prevailing purpose of an LMS is to provide a structure in which the necessary facets of online learning can occur. The basic elements of an LMS are born from the requirements of an institution to "deliver, manage, track, and assess learning activities" with regard to their online course offerings (Stone & Zheng, 2014, p. 756). The elements referred to by Stone and Zheng highlight the structural qualities of a learning management system but do not explain the role played by communication in these TBLEs. Communication is essential to the entire learning process in these types of environments and without such; the acquisition of knowledge or achievement of positive learning outcomes could be questioned (Cápay & Tomanová, 2010).

The features inherent to a learning management system become the foundation by which communication is conducted in online courses and by extension; this interaction becomes the primary means for constructing social presence. Namely, these environments require features to support "active engagement" between all of the primary stakeholders through "communication
and feedback occurring in such system features as the discussion boards" (Ryan, Toye, Charron, & Park, 2012, p. 222). As discussed in the preceding section on Moore's Theory of Transactional Distance, interaction is an essential element of social presence and attention must be brought to the how course design leverages the features of the LMS to accomplish these interactions. There exists a means within these systems to engage users at an individual (e-mail) and group (chat and discussion boards) level among its many methods by which to exchange content (Naveh, Tubin, & Pliskin, 2010). In the end, these social interactions endowed by the system are essential and influence the learner experience for the courses that take place within them. Moreover, these communication features offer a means of governing and shaping the learner experience in online courses. Harris and Rausch (2013) assert that "social interaction and learning" are intertwined together with the former being deemed "essential for maximizing the learning potential of online learning experiences" (p. 253). To understand these features fully and the resulting interaction in a technology-based learning environment, there must be an investigation into the influence of online interaction (composition and immediacy) as it relates to the social presence present in these environments.

Influence of Online Interaction and Immediacy on Social Presence

The purpose of technology-based learning environments, such as a learning management system, is to impart the ability to not only present information to participating students in these courses but also to create and maintain interactions among the primary stakeholders. The concept of interaction in online courses can best be described in a simple fashion as "contact between students and faculty" in a virtual capacity (Grandzol, C. & Grandzol, J., 2010, para. 6). Even from this oversimplification of the notion of interaction in TBLEs, it is clear that interaction is a possible resolution to the issues arising from Moore's Theory of Transactional Distance. To be a
more complete resolution to this problem, a richer understanding of the types of interaction that typically occur in technology-based learning environments is required. The originator of the Theory of Transactional Distance himself, Moore, further clarifies the distinctions among the types of interaction that occur in distance education as learner-to-learner, learner-to-instructor, and learner-to-content (Moore, 1989).

The concept of student satisfaction as it relates to online courses is centered on two related elements that affect the perceptions of a student towards a virtual course that they have completed. Student satisfaction in many ways exists as a summative evaluation to better understand how students felt about the course as a whole. The concept of student satisfaction was examined from the perspective of three different elements (social interaction, academic interaction, and technical problems) that can affect the student's level of satisfaction and how these elements could be enhanced using social presence activities.

Learner-to-Learner Interaction

Moore's perspective on interaction in distance education is shockingly applicable to current methods of instruction using an LMS via the Internet, as he understood the importance of two prominent types of interaction in learning that occurs out of traditional learning environments (Moore, 1998). The first type of interaction to be examined is Learner-to-Learner interaction, followed by Instructor-to-Learner interaction that occurs online. Learner-to-Learner interaction refers to the communications that take place between students, whether they are in pairs (one on one) or in a gathering of students (multiple pairs or more) with the instructor being present or not (Shackleford & Maxwell, 2012). The idea of learner-to-learner interaction given by Shackleford and Maxwell (2012) further conceptualizes the definition offered by Moore in that it confirms the basis for this interaction as being interpersonal as it occurs amongst
participating students. The relevance of learner-to-learner interaction in online education is established by the concept of Moore's Theory of Transactional Distance and an individual's desire to overcome feelings of isolation. With this in mind, further discussion is required to understand its relationship to concepts such as social presence and immediacy. The relationship of social presence to learner-to-learner interaction is that the latter concept assists in the development of the former by "developing personal and affective relationships progressively by way of projecting their individual personalities" (Donald, Gallahad, & Kamal, n.d., p. 3).

Moreover, the importance of learner-to-learner interaction and social presence is its creation of an online community where understanding of the information being presented is a communal activity, not something accomplished solely by the individual. In particular, when learner-to-learner interaction is constructed successfully, a learner is able to analyze their peer's responses critically, connect this information to their own conceptual understanding, and reply in such a way that furthers their information (Smith, 2005).

Instructor-to-Learner Interaction

One purpose, or rather the importance of Learner-to-Learner and Instructor-to-Learner interaction is not merely how it shapes the online experience for the learner; it is how it alters the concept of time in relation to communication. To put this into context, interaction in and of itself cannot resolve the issues associated with Moore's Theory of Transactional Distance if there is an extended delay in the response from one party to another (whether it be learner-to-learner or instructor-to-learner). The term for examining this concept is immediacy as it pertains to the interactions occurring in a given online environment. Historically, the original term refers to the communication methods that include "those communication behaviors, some visual, other vocal that enhance closeness to and non-verbal interaction with another" individual (Borup, Graham, &
Velasquez, 2011, p. 43). As one might ascertain, immediacy seeks to remove the psychological and physical barriers that are present in online courses as explained by Moore's Theory of Transactional Distance. Ultimately, studies have shown that both types of immediacy—instructor-to-learner (Kim & Bonk, 2010; McLaren, 2010) and learner-to-learner (Woods and Baker, 2004; Shackelford and Maxwell, 2012) are positively impacted by the relationship by these concepts with immediacy.

Conceptually, immediacy assumes an important role with regard to the creation of different methods of interaction in online courses; it also assists in furthering the development of social presence in these courses as well. Essentially, social presence is facilitated by technologies present in TBLEs that leverage immediacy behaviors such as synchronous and asynchronous learning tools.

Synchronous Communication Technologies in Online Education

To reiterate, there are two predominate methods for communicating in online environments—synchronous and asynchronous communication. The importance of these modes of communication is the role that they assume in establishing social presence in online courses while also positively impacting the level of student satisfaction. As one might assume, synchronous tools act as a means by which to facilitate communications between a course's participants in real time.

The purpose of online synchronous communication tools is the replication of the verbal and nonverbal cues that exist within traditional face-to-face learning environments. In particular, these technologies seek to make the following elements possible in an online version of a course: "turn-taking management, feedback, cognitive support, and the communication of emotion" (Allmendinger, 2010, pg. 43). The core concept of a synchronous session is the notion of
collaboration between individuals, while also facilitating the elements mentioned by Allmendinger (2010) that assist in creating an experience reminiscent of a face-to-face experience online. These synchronous sessions occur as a supplement to online learning by adding the ability to communicate in real-time via tools such as chat and teleconferencing (Park & Bonk, 2007). In particular, these methods seek to alter the negative perceptions of the participating student by developing social presence within a virtual learning environment. Olson and McCracken (2015) discussed the relationship between synchronous tools and the online learning environment, stating that it not only results in enhanced "personal participation" among students but also positively affects student opinions regarding the delivery method and the associated learning outcomes (p. 2).

Asynchronous Communication Technologies in Online Education

The apparent difference between synchronous and asynchronous communication technologies is the latter concepts inability to establish immediate interaction among the individuals engaging in a course utilizing asynchronous technologies. Asynchronous communication in online courses removes the notion of immediacy as the communication becomes self-paced due to the inherent nature of these technologies (Skylar, 2009). This lack of immediate response becomes more apparent when one considers that the prominent method being utilized in online environments is an online discussion board. The type of interaction that occurs with these asynchronous technologies occurs at two different times: the initial post and the responses to that post that later. Specifically, these interactions do not follow the "temporal sequence" of the asynchronous dialogue being constructed since the individuals in the course participate and select the responses of their peers to respond based on their own preferences (Andresen, 2009, p. 252). As one might ascertain, the asynchronous nature of the interactions
occurring within this context require an extra understanding of the aspects that determine the level of quality for a given response.

From a social presence perspective, the issue that typically arises from the usage of online discussion boards stems from facilitation. Bonk and Graham (2012) believes the key to asynchronous methods (such as discussion boards) begins with the level of facilitation, which in turn governs their level of effectiveness in online courses. Zingaro and Oztok (2012) support Bonk and Graham's (2012) position regarding the importance of facilitating online discussions through instructor involvement (i.e. response to initial student posts) and establishing expected student behaviors (number of required responses), and contend that this level of instructor involvement tends to result in an increased quality of interaction. Conversely, without a level of structure and facilitation, the likelihood of success is smaller since there is not a method by which to gauge or create unstructured interactions between stakeholders in an online course (Song & McNary, 2011).

Relationship of Social Presence to the Theory of Social Constructivism

If social presence is the method used to establish a student's presence virtually, social constructivism is the method that uses social interaction for learning. In particular, social constructivism is a learning theory that believes that knowledge is bound socially and "constructed through reflection on one’s own thoughts and experiences, as well as other learners’ ideas" (Ruey, 2010, p. 707). Ruey's (2010) position is interesting in how it views knowledge construction as a collaborative activity. Thus, this position requires more insight into the processes required for it to be successful in an online class. Ke (2010) offers a context for how social constructivism can occur in online courses through an explanation that learning is achievable through activities that contain social elements, with discussion boards being a specific
example mentioned. The other consideration of social constructivism is the role played by interaction as it relates to a collaborative construction of knowledge with an emphasis on the quality of the interaction among peers. The emphasis originates from the social constructivists' belief in "language" and "culture" as the basis for creating knowledge in these learning situations (Kundi & Nawaz, 2010, p. 232). Andrews (2012) also supports this position, believing that knowledge is constructed through these everyday interactions and that language is at the heart of these interactions. Perhaps the most interesting aspect of social constructivism is the concept's relationship to the individual in an online environment to construct knowledge in a communal capacity.

The creation of knowledge in a fashion that is both collaborative and communal in nature is an essential process to social constructivism. Knowledge creation centered on the notion of online engagement and the aforementioned interactions in online education course, can result in "meaningful and worthwhile knowledge" (McGee & Voeller, 2014, p. 102). The complex aspect of constructing this knowledge is the process by which social presence is used in such a way that makes the transmission of knowledge from one person to another relatively seamless. The particular aspect of social presence that makes this process possible is the notion of trust and inclusion of the individual as it pertains to membership within a community of inquiry, a concept to be discussed later. Essentially, social constructivism becomes a reality when participating individuals have a profound feeling of trust that allows them to express themselves freely, along with their perspectives on the content or curriculum with the rest of their peers, perhaps even with an individual's desire to establish cohesion rather than dissension (Tankari, n.d.).

The result arising from the intersection of social presence and social constructivism is a concept known as the community of inquiry. A community of inquiry from a conceptual
perspective is a group of individuals, who "construct meaning through sustained communication" (Annand, 2011, para. 1). The concept of constructing knowledge through communication provides a relatively obvious connection to social constructivism in terms of purpose but it is also helpful to discuss additional implications of the composition of a community of inquiry. A community of inquiry is built around the "interaction" among the three presences (Teaching, Cognitive, and Social)," which establish a focus on the constructionist principles of knowledge construction over objectivist ones with their emphasis on learning objectives (Akyol et al., 2009, para. 1). As one might ascertain for online courses, this concentration on constructionist principals heavily favors a social presence approach in that it provides the framework necessary for creating a community of inquiry. The components of social presence required for the community of inquiry framework is essential for "effective collaboration and knowledge construction" because social presence directly "affects participation and social interaction" within online courses (Kreijns, 2014, p. 8). Overall, the influence of social constructivism in online education occurring in technology-based learning environments is that it utilizes social presence as a means by which to lay the foundation for the communal construction of knowledge. The natural extension from the combination of social presence and social constructivism is a reduction in the negative effects of transaction distance through a community of inquiry.

Social Presence Impact on Student Motivation

Within the context of online learning, student motivation plays an important part in online learning environments as it not only determines how far the student will progress in a course but it also could positively impact the grades received by the participating student. (Knowles & Kerkman, 2007, p. 71). To understand the concept of student motivation, one has to
evaluate student attrition. Quite simply, attrition refers to the notion that not all of the students in a course will complete the course successfully, and the level of attrition is the percentage of students that do not finish the course (Hart, 2012). Unfortunately, one possible reason for attrition within online learning environments is that the level of motivation is inherent to each individual student. For most students, the reasoning for dropping out of a course can assume almost any form ranging from day-to-day obligations (work, family and financial) to the make-up of the student from a demographic or compositional perspective (traditional, non-traditional, or part-time student) (Gilardi & Guglielmetti, 2011).

The discussion for the occurrence of attrition in online classes as explained by Gilardi and Guglielmetti (2011) could best be described as diverse, as a myriad of reasons exist that would lead an individual student to fail to complete a course that include the erosion of student's motivation because of external commitments. The question that emerges from Gilardi and Guglielmetti's (2011) analysis is centered on the notion of how to minimize attrition through the enhancement of student motivation in online courses. One possible solution for minimizing the rate of student attrition in online courses is social presence because interaction is a way to increase a feeling of connectedness that can influence a student’s desire to continue their participation in an online course. Foremost, there have been numerous studies that highlight the positive inroads made through the use of social presence to establish the concept of immediacy in the participant’s mind, which influence how the student interacts, their motivation, and level of participation (Baker, 2010; Kim et al., 2011; Koh & Hill, 2009). Building off the relationship of immediacy and student motivation, attrition can be minimized by emphasizing social interaction between participants in a course. Social presence inherently provides the participant a means by which to engage with others, thereby resulting in positive sentiment towards their own
personal level of learning and satisfaction for the course (Dunlap & Lowenthal, 2009). Thus, the perspective of Dunlap and Lowenthal (2009) implies that motivation is empowered through the leveraging of social presence activities.

Social Presence and Student Satisfaction

If the importance of student motivation is that it provides insight into understanding what compels a student to continue participating in a course, then student satisfaction gives clarity to the sentiment of the student once the class has completed. More specifically, student satisfaction refers to "the sum of a student's behavioral beliefs and attitudes that result from aggregating all the benefits that a student receives," including those from the systems employed in their online course (Sinclaire, 2011). Sinclaire's (2011) definition merely provides a high-level perspective on student satisfaction in online courses and further clarification is required to discern which factors impact or influence student satisfaction as it relates to social presence. A myriad of studies have been designed and conducted on the subject that isolated common contributing factors for a decrease in student satisfaction. The reasons offered for a decrease in student satisfaction include issues related to social interaction, academic integration, and technological problems associated with the learning environment (Park & Choi, 2009; Willging & Johnson, 2009; Kuo, Walker, Belland, & Schroder, 2013; Cole, Shelley, & Swartz, 2014).

The logical response to the perceptions perpetuated by the studies listed previously is how to resolve the aforementioned contributing factors to decreasing student satisfaction or to minimize the effects these factors might have on the participants in online courses. There are several means by which this can be attempted. The first element to address is using social presence activities to enhance the level of social interaction occurring within online courses. Kuo et al. (2013) indicate the positive aspects associated with two methods of interaction (Learner-to-
Learner and Learner-to-Instructor) as indicators of enhanced student satisfaction in online courses. To draw a connection to ideas stated earlier in this literature review, there are numerous methods by which to infuse an online course with the types of interaction highlighted by Kuo et al. One such method is the use of technological features that are typically built into a learning management system, such as discussion boards and email, that not only establishes collaborative comprehension of content but also "promotes a level of reflective interaction" that is absent in a traditional approach to instruction (Rovai & Jordan, 2004).

The second approach to increasing student satisfaction, according to the studies mentioned earlier, is by increasing the level of academic integration found in online courses. The notion of academic integration is comprised of numerous concepts but the most applicable to student satisfaction deals with "instructor follow-up and instructional design" (Park, 2007, p. 5). The similarities between instructor follow-up and social presence are the methods of increasing the interaction between the learner and the instructor of their course. Namely, the types of interaction from the perspective of instructor follow-up encompass actions ranging from the framing of course information being presented to students to providing a student with timely feedback to their assignments or concerns (Sheridan & Kelly, 2010). In many ways, the processes and benefits of instructor follow-up are enabled by the instructional design components related to the types of assignments and technological systems utilized in an online course. For instance, the use of technology such as a discussion board used as a graded component in a course provides an opportunity to increase the level of social presence, as well as a communal construction of knowledge (Scollins-Mantha, 2008).

There is a correlation between academic integration and technological problems as they are typically designed for available learning management system that can negatively impact the
level of student satisfaction in a course. This correlation is determined by how well received the learning environment is by those participating with the environment. Of course, the level of acceptance towards the method for delivering content to the student (i.e. Learning Management System) will be determined by how the individual perceives the "usefulness" of the system and the associated "ease of use" of said system (Hermans, Haytko, & Mott-Stenerson, 2009, p. 3). To build further on user perceptions, one must consider the effect that these systems have when they do not work correctly. Investigations have been conducted into how technical problems can negatively influence a student's overall level with satisfaction in an online course (McBrien, Cheng, & Jones, 2009). While social presence will not resolve the technical problems afflicting a course (particularly those centered around the Learning Management System), it can be utilized as a means to limit the effects of technical issues while also maintaining a student's sense of satisfaction. Davidson-Shrivers (2009) offers a logical approach the instructor by addressing the "technical issues" and "locate appropriate assistance for them," which affords the student more time to focus on their studies as opposed to resolving technical issues. These learner-instructor interactions could then positively impact student satisfaction as various interactions between participants (instructor and learner) fit within the narrative formed earlier in this literature review. To further delve into the relationship of social presence activities and an online student, the discussion must change from the level of satisfaction for the course to the impact social activities afforded by available technology (Discussion boards, chat or email) have on the course's learning outcomes.

The Effect of Social Presence on Positive Learning Outcomes

There is an association between the concepts of student motivation, a student’s satisfaction with a course, and social presence that ultimately influences the learning outcomes
within online courses. Learning outcomes as they will be discussed within this literature review refer to "statements of what students will learn in a class or in a class session" (Tips, 2015). With this working definition, attention must be turned to the relationship that social presence has on attaining positive outcomes for students in online courses. Specifically, how does social presence influence the student's ability to achieve the intended learning outcomes defined by the course designer/instructor?

Earlier studies on the subject of social presence and student performance yielded some interesting results. Namely, one such study completed by Picciano (2002) found that individuals attaining increased levels of social presence in their courses tended to do better in conveying themselves in their written assignments compared to their peers with lower social presence levels. Another study conducted by Richardson and Swan obtained results that would support the findings of Picciano. The results from Richardson and Swan (2013) were interesting as they noted that the integration of social presence activities and positive learning outcomes could achieved from the immediacy gap being minimized with these interaction activities (Richardson & Swan, 2003). The research results from Richardson and Swan (2003) bolstered the claim of Picciano, showing that the perception of a student towards their respective learning was greater among those students with higher levels of social presence than with those students with lower levels. The benefit of Richardson and Swan's study is that the participants demonstrated a clear understanding of the value of social presence within the context of their group activities and could draw connections to their own perceptions of the work they were required to complete. There are a myriad of recent studies that build on the earlier work that found a relationship between social presence and increased learning outcomes; these outcomes include things such as better grades on assigned work (Hostetter & Busch, 2013; Caspi & Blau, 2008). The importance
of the impact that social presence has on learning outcomes is that it assists in understanding the elements that positively affect the learning outcomes in online courses. This influence or relationship between the two involves the interplay between the individuals in the course with different types of technology and activities that enhance not only the necessary social interaction but also the learner experience. (Anderson & Dron, 2010, para. 7).

**Summary**

During the course of this literature review, several elements were examined to define the role of social presence and the types of activities used to develop it in online courses. This development was discussed from the perspective of leveraging the tools available through the LMS (discussion boards, chat features, and e-mail) and synchronous sessions to create social presence among not only the students in an online course but also the instructors. In many ways, social presence extends past a concept centered on learner-to-learner or learner-to-instructor communication as it influences many factors for success in online classrooms. Social presence provides the foundation of a learning theory (social constructivism), as well as contributing important indicators for student success. In the arena of student success, social presence can influence levels of motivation and satisfaction, in addition to the associated learning outcomes for a course. It is with an understanding of the various correlations between social presence and the other facets of online learning that a study such as the one introduced in Chapter 1 was undertaken.

In the next chapter, the methods associated with investigating the influence of social presence on student preferences towards technology-based learning environments will be discussed in detail. Specifically, there will be an examination of the data collection and analytic methods that were used in this study, including the Technology-Based Learning Environments
(TBLE) assessments, the Methods for Establishing Social Presence in Online Classes (MESPOC) instrument, and a discussion on the topic of paired comparisons. After examining the instruments, there will be a discussion of the method for obtaining qualitative data using semi-structured interviews, how to conduct qualitative analysis from the perspective of validity and trustworthiness, and the use of triangulation to better understand the data obtained from this study.
CHAPTER 3
RESEARCH METHODS

This chapter describes the process by which data was obtained and later analyzed to understand the findings of this research study. In addition, these methods provide the ability to report these findings accurately. From a paradigm perspective for this research study, a non-positivistic approach was taken that is also highly interpretivist in nature. The rationale behind this approach was that it reflects the nature of this study better than other research paradigms. This chapter will also discuss the steps taken throughout the data collection phase to ensure the data validity and reliability of this study.

Strategy for Inquiry

A qualitative study was used and completed in three distinct phases. The first phase was the use of an instrument known as the TBLE Survey, a non-parametric instrument that was used to understand the preferences of an individual student as it pertains to the design elements used in technology-based learning environments (Rose, 2012). The ability to obtain demographic information about the participants was built into the TBLE survey and was later used to describe the population who completed this first phase of the research study. Analysis of the data from the first phase involves the ranking of the information received through the administration of the TBLE.

The second phase of this study was the creation of an instrument, Methods for Establishing Social Presence in Online Courses (MESPOC), which was based on specific technologies correlated with the ranked elements from the TBLE survey. This second instrument was given to the same participant pool as the TBLE during the first phase of this study.
The third and final phase of this study involved the use of semi-structured interviews to obtain insights into participant preferences for technology-based learning environments. The use of interviews allowed responses from participants that were in their own words as opposed to a survey instrument. Throughout phases one and two, participants were asked if they were willing to participate in these interviews at a later date. Willing participants were contacted to complete these interviews after the conclusion of the second phase.

Participants

The participant pool for this study was recruited from undergraduate and graduate students at a public university in Texas beginning in the summer of 2015, with recruitment continuing until the required 115 were met. The assistance of professors at this university was required to achieve the number of students necessary to complete this research study successfully, as well as to provide statistically relevant data. Assistance offered by the university’s instructors in this project was essential in obtaining the number of students required to achieve a level of .05 statistical significance.

The necessity of having a sufficient number of students to participate in this study raised a distinct question that was addressed. Specifically, was the available student population from the academic program being investigated large enough to draw from? There was a firm belief that this department had enough students participating in online or distance courses to achieve the number of students necessary to provide a thorough investigation of the research questions. The participating department listed a total of 60 students within the distributed PhD program alone at the time participant recruitment started. Moreover, there were avenues available for recruitment, such as pursuing participants within the department's online undergraduate courses that would not overlap with the online/distributed students, which would result in the desired
number of participants. In addition, this group of students had enough members to account for such eventualities as not having 100% participation or the attrition of participants during the course of the study.

The prevailing thought on obtaining the required number of participants was to make use of contacts within the department, either by using their electronic mailing list or by enlisting the support of individual instructors of online courses. The latter proved to be the more beneficial route to take as it provided a more personal approach for recruitment that might not be present in the mind of potential participants who simply receive an automated email. Furthermore, the assistance of online instructors allowed for reminders or additional calls for participation throughout the course of the data collection phase of this research study. The additional value of enlisting instructors to assist in obtaining participants to complete at least the first two instruments was that these individuals have the discretion to provide incentives for participation such as extra credit. While there was not an expectation that the instructors would provide incentives for participation to their students, they had the ability to do so. This approach could be used to get more participants to complete the survey instruments.

From a demographic perspective, the age of the participating students was eighteen years and older. This study collected demographic information, such as gender and academic level (undergraduate, master’s, or doctoral), to allow for contextual information about the individuals completing the instruments and semi-structured interviews required for this study. The demographic information collected implied that the students were legally capable of understanding the requirements and verbiage of the IRB consent provided prior to their participation in this study. In this document, the participants were informed that their participation in this study was completely voluntary and that they could withdraw from the study.
at any time without any negative impact to their grades in the courses they were taking at the time.

Another question in the demographic section of the survey asked the participants the number of online courses they had taken during their entire academic career. The number of online courses taken by the participant implies that the individuals who completed these instruments had a measure of familiarity with technology-based learning environments. This information was relevant for the participant to rank a TBLE or specific technology used in prior online courses completed in order of their preference. If an individual had not taken an online course at the current institution or any other university/college that was attended previously, their responses were removed from the study data. The rationale for removing these responses was that the individual did not have any experience with this method of course delivery and thus, these responses would not yield any insights due to the level of inexperience with the medium. Moreover, the decision to ask the number of online courses taken was that the information provided a contextual clue that gave insight into experience with online coursework. This relationship between the number of courses taken and preferences for a given TBLE were then correlated through the questions used during the interview portion of this dissertation.

This study contained a total of 147 students who started the research study instruments. Of those 147 who started, 137 students completed the TBLE survey. The same number of participants finished the Methods for Establishing Social Presence in Online Classes (MESPOC) instrument and 14 students participated in the semi-structured interviews. Given the levels of participation, it was possible to achieve participation levels required to achieve .05 statistical significance for the pairwise comparison instruments used in this study. This sample size was large enough for the creation of confidence levels related to the results obtained from both
instruments provided to the participant pool of this study (Smith, 2013). In addition, this level of significance occupied an important aspect of the analysis of the data collected as it gave insight into the distance between each preference choice present within both the TBLE and MESPOC instruments.

Methods and Procedures for Data Generation, Collection, and Analysis

The selection of research methods used for data collection is this study was chosen based on their applicability to the purpose of this research study. The two survey instruments selected were distinctly different in their composition but were used to assist in understanding the responses provided by the participants as they related to the research questions constructed for this study. The first research method was the TBLE instrument, which used a non-parametric scaling to determine the preferences of the individual participants for the elements and interfaces that appear in online learning environments. The second instrument, the MESPOC, took types of social presence elements from the initial TBLE instrument and presented them to a participant in the form of a pairwise comparison instrument to understand their preferences for specific types of social presence activities. The third and final research method assumed the form of semi-structured interviews with the participants that explored the responses given for the first two instruments.

Method 1 - TBLE Short Form Data Collection and Analysis

Data Collection - TBLE Short Form

The version of the TBLE administered in this study mirrored the version utilized by Rose in his doctoral dissertation research because it better emphasized the social presence nature of this research study (Rose, 2012). The difference between the short form version of this
instrument and the original is that the short form version has six items, as opposed to the 68 items appearing in the regular version of the instrument.

The delivery method for this instrument was an online survey service known as Qualtrics. As well as housing the actual survey instrument, this service provided for the use of email to send a URL to the recruitment pool of students (the university department's electronic mailing list for distributed PhD students) and for instructors to send to their students, as well. This survey service also provides a secure location where the acquired demographics, survey responses, and contact information for each student was housed. Once the initial phase of data collection was completed, the MESPOC instrument was sent to the students via the same delivery method.

Data Analysis - TBLE Short Form

The short form version of the TBLE was analyzed using two distinct methods, the first being circular triads and then, a rank sum analysis. Circular triad analysis, as defined by Dunn-Rankin et al. (2004), is the "basis for determining object scalability and individual judge consistency when using complete paired comparisons data" (p. 66). Namely, circular triads occurred in responses that are considered "intransitive" or "inconsistent" (Dunn-Rankin et al., 2004, p. 66). The logical premise for this phenomenon is the presentation of three choices to a respondent. The responses resemble the following structure: A>B, B>C, C>A. Examining this data obtained via the TBLE, it was possible to isolate these inconsistent responses and remove them prior to pursuing the rank sums analysis on the remaining pieces of data. The resulting analysis of this process discussed key concepts, such as judge consistency (selections of respondent), overall circularity (average number of circular triads), and pairwise circularity (associated circular triad among pairs) (Dunn-Rankin et al., 2004). These analytical concepts are important as they allow for greater insight in the mindset of the participant towards the choices.
that were ranked in order of preference—a concept that required a participant to follow a logical flow or structure. Ultimately, the exclusion of circular triads from the collective results strengthened the quality of results that were later analyzed.

The second method for the investigation of the TBLE data was by conducting a rank sums analysis. A rank sums analysis is a nonparametric instrument that allows for a "two-way analysis of variance by ranks" (Dunn-Rankin et al., 2004, p. 55). This method of analysis was conducted after the removal of the data containing circular triads. The use of a rank sums analysis resulted in the ranking of each participant's preferences for the six technology-based learning environment interfaces provided. In addition to ranking these preferences, it provided the researcher with the distance between each ranked TBLE interface, which gave significance to these rankings.

Method 2 - MESPOC Data Collection and Analysis

Data Collection - MESPOC

Data for the MESPOC was collected during the same phase as the TBLE. Much like the TBLE survey, the MESPOC instrument is also a nonparametric research tool centered on the concept of paired comparisons. Specifically, this instrument seeks to compare different types of tools for creating social presence in online courses that relate to the interfaces described in the TBLE survey. Specifically, the types of methods for creating social presence examined in the MESPOC instrument were: Google Docs (Collaboration), Email (feedback), LMS (Organization), Adobe Connect (Rapport), Blogs (Reflection), and Multiple Interfaces (Pedagogy).

Data Analysis - Methods for Establishing Social Presence in Online Classes

Data Analysis - MESPOC
The MESPOC data was split from the combined data collection process and examined separately in the same manner as the TBLE survey using both a circular triad and rank sums analysis. The analysis resulted in an understanding of the participant's preferences for the technology associated with the elements from the TBLE instrument. This correlation, or lack thereof, between instruments will be discussed at length to understand how a participant felt towards the theoretical underpinnings of the interfaces associated with online learning (TBLE), as well as the technologies employed within these online environments as they relate to student preference and social presence.

Method 3 - Semi-Structured Interviews

Data Collection - Semi-Structured Interviews

The combined TBLE and MESPOC surveys contained a question requesting participation in semi-structured interviews about these previous instruments. The expected level of participation for this portion of the study was lower than the phases that preceded it, while also being sufficient to get a full understanding of the participant's responses towards the technology-based learning environment interfaces. Moreover, the responses that were obtained from the semi-structured interviews allowed for a triangulation of the data obtained throughout the entire data set.

Individuals participating in this portion of the study were informed that their participation was completely voluntary and that they could withdraw from participation at any time. In addition, steps were taken to make participation in the interview process as painless as possible. The participant was given a choice as to the medium where their interview would take place, whether a correspondence via electronic mail, a conversation on the telephone, or a virtual conversation meeting on a platform such as Skype. The length of the interviews was dependent
on their preference for the interview. Skype was emphasized as the method of communication for use with the participant. Each semi-structured interview was also dependent on the flow of the conversation as it occurred but was limited to 15-30 minutes. The interviews were recorded with the verbal permission of the participant. These interviews were later transcribed to provide an accurate recollection of the events, as well as the ability to code and categorize the responses of the participants as a group. The data collected from the interviews, including the MP3 recordings of the interviews and subsequent written transcripts, were kept with all other data collected until the study concluded.

Data Analysis - Semi-Structured Interviews

The transcripts from the interviews themselves and the social science process known as qualitative coding provided the foundation of the analysis of the semi-structured interviews. Coding refers to a qualitative data analysis method that involves the "assigning units of meaning to descriptive or inferential information" (Gläser & Laudel, 2013, para. 45). The approach to coding these transcripts required a method that complemented the social nature of the study itself. With that in mind, descriptive coding was chosen. Descriptive coding is a method that provides the researcher with the ability to frame the interaction with the interview participant (Saldana, 2009). Essentially, descriptive coding allows the reader to “see what the researcher saw” and “to hear what they heard” (Saldana, 2009, p. 71). The overarching method for this approach to coding is naturalistic inquiry, which places an emphasis on comprehending the social nature of action (Schwandt, 2007). Namely, descriptive coding and naturalistic inquiry endow the researcher with the ability to isolate and draw connections in participant's responses. In this research study, descriptive coding and naturalistic inquiry allowed responses between
preference and social presence levels to be connected to the types of technology-based learning environment interfaces present at the institution where the study took place.

As mentioned earlier, descriptive coding techniques and naturalistic inquiry allowed the researcher to better understand the responses given by the participants. The process for coding data in qualitative research extends past the initial work to be completed by the researcher to coding done later by several other individuals to better highlight similarities between each of the individual coding efforts. These similarities between each completed coding effort assist in minimizing coder bias while also increasing the notion that the codes accurately reflect the implied meaning of the participant's responses. In addition, by approaching qualitative analysis in this manner for the current study, it was possible to better frame the participant's opinion and preferences towards the online learning courses/TBLEs within their academic program and identify areas that might be improved. This approach fit within the decision to pursue the coding from a naturalistic inquiry approach for understanding the academic program of the participants.

Rigor and Trustworthiness

Rigor and trustworthiness are interesting concepts as they assist in establishing a framework by which to assess the "value of the findings" obtained from a research study (Krefting, 1990, p. 215). Four criteria assist with understanding the role of rigor and trustworthiness within social research projects. These four criteria provide a foundation for this study: credibility, transferability, dependability, and confirmability (Shenton, 2004, p. 64). These concepts also provided insight in how to devise and leverage the research methods to allow for data collection that accurately reflected the attitudes held by the participant.
Credibility refers to the "confidence in the 'truth' of the findings" (Cohen & Crabtree, 2006. para. 1). The techniques that follow allowed for an emphasis on credibility, as outlined by several researchers (Loh, 2013; Cohen & Crabtree, 2006):

- Prolonged engagement
- Persistent observation
- Triangulation
- Referential adequacy

This study made extensive use of these concepts as a method by which to increase the credibility of the process and resulting data by providing a theoretical approach for completing the collection of the data. The foremost concept behind establishing credibility is prolonged engagement, which seeks to provide the researcher with the ability to not only "overcome" but also "test the biases and perceptions" of the stakeholders in a research study, including both the participant and the researcher (Guba, 2012, p. 84). Prolonged engagement assumed the form of the multiple research methods in this research study and allowed for extensive interaction with the participant using survey instruments and the more personal approach of semi-structured interviews. The natural by-product of this prolonged engagement was a more thorough understanding of the participant and by extension, the data contained within their responses.

The second aspect of credibility that existed within this study was persistent observation. Persistent observation was built upon the previously discussed notion of prolonged observation. The working description of persistent observation within this study is the investigation of elements, such as "characteristics, traits and attributes," that are considered most relevant to the events being examined by the researcher (Onwuegbuzie, Jiao, & Bostick, 2004, p. 219). For the purpose of this study, persistent observation took the form of the actions taken during the data
collection phase, as each research method provided numerous opportunities to observe the participant behaviors on a deeper level. Essentially, the act of prolonged observation affords the researcher with understanding about the extent of a study and persistent observation provides the researcher with a measure of deeper understanding (Erlandson, 1993). For this study, persistent observation took the form of monitoring the results of the study as they came in, and understanding not only the relevance of the data but also knowing the course of action to take at later phases of the study. In particular, the observations of the data carried over from one research method to the next before being integrated as an element of the semi-structured interviews, providing lines of questioning and/or follow-ups with a participant.

Triangulation represents the third aspect of rigor and trustworthiness in this study and provided a means to better understand the data that was obtained from these three research methods. Triangulation was used to draw connections between the multiple data sources, as well as acting as a validator between each source of data (Cohen & Crabtree, 2006). Furthermore, triangulation gave the researcher confidence in the data that was obtained throughout the course of the research study. It can be implied that triangulation provides a different way for a researcher to compare data obtained using different methods; it also serves as the primary method for explaining the qualitative data that goes beyond the numbers obtained by the instrument (Jick, 1979). In this study, the purpose of triangulation was to establish a context and link between each of the methods employed to obtain quantitative and qualitative data. For the sake of this study, the interviews with the participants acted as a method by which the entire data set was triangulated, offering a method for explaining the choices of the student contextually with regard to the quantitative methods used.
The final method that was used to establish rigor and truthfulness in this study was the concept of referential adequacy. Referential adequacy refers to a piece of data that is kept for the duration of the study but will not be used in the construction of the overall findings (Cohen and Crabtree, 2006). Within the context of this study, referential adequacy involved the archiving of transcripts from the semi-structured interviews that were not coded or investigated during the initial phase of analysis for this data. At the conclusion of this initial phase, the archived interview transcripts were then coded and analyzed to validate the findings from the initial study of the data.

Triangulation of Collected Data

Triangulation of data represents an important approach for understanding data that is collected in a qualitative fashion. A broad definition of triangulation is the "combination of methodologies in the study of the same phenomenon" (Jick, 1979, p. 602). The importance of triangulation stems from its ability to assist the researcher with using multiple sources of data. Namely, triangulation allows the researcher to corroborate differing types of data, ranging from interviews to survey instruments (Cresswell & Miller, 2000). For the current study, triangulation was achieved using the data collected using two survey elements (the TBLE and MESPOC instruments) and semi-structured interviews. Triangulating the data in this study allowed the researcher to make connections between concepts and explain these concepts.

Authenticity

The authenticity of this study was of paramount consideration for the researcher. Thus, the data collection processes were conducted in a fashion that emphasized not only a fair but also an accurate representation of the participant. This notion of fairness extended to the assumptions made by the researcher at the beginning of the study and, if information was received that altered
the context surrounding these initial assumptions, who would reevaluate these perceived biases. In addition, these methods allowed for the ability to maintain the privacy of those who participated in this study by keeping the information collected about them in a place that was password protected. All of the phases of this study, whether the collection of data, the analysis, or the maintenance of data privacy, used these approaches to meet the rigor, trust, and validity typically associated with studies of this type.

Assumptions and Limitations of Study

One of the foremost assumptions for this study was the positive reception of instruments and data collection methods by the participants in this study. Namely, it was hoped that the participants would be excited about the process and welcome the opportunity to provide insights into their experience with online learning. This concept meant that the participants would treat the data collection processes accordingly, by being honest and by completing all aspects of the process, whether it was the initial TBLE study, the MESPOC instrument, or the semi-structured interviews.

Another assumption and limitation was that the participant pool was representative of a typical participant of an online course. It is conjectured that the individuals experienced online courses in a way that was considered consistent with other individuals at the institution that they attend. This premise was considered both an assumption and, also, a limitation of the study. Student participants in the current study were participating in a program with a heavy offering of online courses. It was also assumed that these participants would provide insightful answers into their experiences as online students. Conversely, the participant pool could have been considered a limitation, as it was representative of only one department at an institution and thus, the practices or decisions of the instructor or instructional designer. However, this was a minor
limitation as the study was focused on the preferences and social presence of the student towards
the available TBLE interfaces, which could still be achieved through an investigation of students
from one department that utilizes numerous TBLEs in their courses.

While planning this study, the selection of the instrument also presented another
assumption and limitation that was considered. The assumption was that the Technology-Based
Learning Environment instrument, devised by individuals supervised by Dr. Greg Jones at the
University of North Texas, and the resulting pairwise comparisons would accurately measure the
participant's preferences for the TBLEs utilized in their courses. A perceived limitation for this
study was the perception of survey fatigue associated with the use of the TBLE instrument—that
it would contain too many questions and would be considered overwhelming to the participants.
In a bid to minimize this limitation, an abbreviated version of the TBLE instrument was used for
this study that included only the sections that dealt with social presence. The purpose of the
TBLE and MESPOC instruments were to serve as a method by which to structure the interviews
that would occur once the phase involving data collection utilizing both instruments. This
structure assumed the form of providing insights into student preferences for online learning
environments that could be correlated with the coded interview responses.

Summary

This chapter described two qualitative research methods used to gain insight into the
level of students preferences towards TBLEs and the creation of and/or maintenance of relative
levels of social presence in online college courses. The two survey instruments used offered a
rank order quantitative approach while the semi-structured interviews acted as the selected
method used for qualitative analysis. Rigor and trustworthiness; triangulation of data;
authenticity; and assumptions and limitations of the study were also discussed. The focus of
Chapter 4 will be on the data that was collected from the research methods discussed in this
chapter, which will be examined at length.
CHAPTER 4

DATA ANALYSIS

This chapter contains an analysis of the data collected via the survey instruments and semi-structured interviews. The examination of demographics from the 137 participants that completed the surveys will begin the chapter. The discussion of the demographics will be followed by an analysis of the collected survey data through the lens of circular triads and ranks sum analysis. The conclusion of this chapter is a presentation of insights obtained from the semi-structured interviews with participants from the initial data collection.

Demographics

The survey instrument included questions that provided context for the individuals participating. The demographic elements that were collected in the survey instrument were as follows: age, gender, academic level, and number of online classes taken up until the current semester. The demographic information collected does not affect the results obtained from the ranks sums analysis nor the circular triad analysis that will be discussed later in this chapter.

The survey instruments utilized for this survey, the Technology-Based Learning Environments (TBLE) and Methods for Establishing Social Presence in Online Classes (MESPOC), were sent to all PhD students in the defined academic department's distributed PhD program. The survey instruments were also sent to all of the sections of courses for two professors from that same academic department. The essential criteria for selection for inclusion in the study were that the participant had taken at least one online course in the defined academic department up to that point. The results of the data collection process yielded 137 participants that spanned the demographic spectrum and are discussed in the next section.
The demographics for these participants were strikingly distinct in categories that were tracked for this study. Of the 137 individuals who completed both surveys, there were 51 males (37%) and 86 females (63%). The academic level of the participants was tracked as either undergraduate or graduate, with the latter including students pursuing either a master's or doctoral degree in the defined department. The percentage breakdown for academic level was closer than with gender, with 65 undergraduates (47%) and 72 graduate (53%) students completing these survey instruments.

The remaining demographic information collected during this study was age and number of online classes completed. The average age for the participant was 38.32. The ages were also separated into five ranges of ten, beginning with ages 19-29 (30 participants/21.89%), 30-39 (46 participants/33.57%), 40-49 (40 participants/29.2%), 50-59 (18 participants/13.1%), and ages 60 and over (three participants/.021%).

The number of classes taken online by participants was also separated into ranges of five to better understand the average number of classes taken by the participants in this study. The ranges were zero to five courses (37 participants/27%), six to ten (40 participants/29.2%), 11-15 (15 participants/10.9%), 16-20 (26 participants/19%), and 20 or more courses (18 participants/13.1%). It should be noted that ranges of courses (i.e. If a student said they completed 10-15 courses, they were listed with the lowest number in the range.) and one respondent was excluded because they stated that they have taken "too many courses to count," which is not a numerical value. The average number of classes completed by a participant was 12.33. This average was also higher than the median number of classes completed, which was 12. The conclusion from this calculation is that the vast majority of participants have experience with taking and completing courses online.
After completing the analysis of the participant pool, two elements emerged as important for understanding the participants as a group: the age of the participant and the number of online courses completed. The reason that these demographic elements outweigh the other two is that they relate to the experience of the user with technology used in these courses. Specifically, if you look at the averages for age (38.32), as well as the number of classes completed online (12.33), the impression is that these participants have experience with not only the technology but also the method of taking courses. This familiarity coupled with the experience of taking courses in the defined academic department indicates that the participants probably understand the types of technology-based learning environments presented to them in these courses. Moreover, their participation in these courses exposes them to the specific types of technologies listed in the MESPOC instrument.

Analysis of TBLE Survey Results

TBLE Survey Administration

This research study contained two survey instruments; the first was the TBLE instrument. The second survey was the MESPOC. The TBLE and MESPOC were presented with the expectation that the participant would complete both instruments during the same session. The rationale for presenting both instruments at the same time was to not only reduce the time spent collecting data but also limit the likelihood of attrition among the participants. By including both instruments in the same participant session, it was impossible for the participant to submit responses to only one instrument as all questions were required. Thus, presenting both surveys in one session ensured that the participants completed both surveys. This guaranteed that the responses for both instruments came from the same individual that participated in a survey session.
Circular Triad Analysis of Paired Comparison Instruments

The first approach to analyzing the collected data involved the use of a circular triad analysis. To briefly describe a circular triad analysis, this particular concept provides the foundation for understanding "object scalability" and "overall judge consistency" (Dunn-Rankin et al., 2004, p. 66). When the concept is broken down further, a circular triad analysis seeks to determine if each participant adheres to a logical structure for their selections when making choices between pairs presented to them. If inconsistent responses are identified during circular triad analysis, these inconsistencies should be described to provide context. A circular triad occurs when one of the selected pairs violates the logical choice from the pairs presented. In a most basic sense, if presented with three objects with the participant tasked with providing their preferences by selecting an object from the pairs being compared, a circular triad occurs when the following choices occur: A>B, B>C, C>A. As witnessed in this example, the inconsistency of the judge lies with the selection of C instead of A as the logical choice would have been reversed: A for C. The importance of circular triads with regard to paired comparisons is twofold, one is that highlights a "linear ranking" ranking of preferences and, second, this method of analysis acts as an "index of intransitivity" (Dunn-Rankin et al., 2004, p. 66). Circular triad analysis offers a method to isolate illogical responses by participants from the results and determine if these results should be removed from the study.

A circular triad analysis examined the presence of circular triads from the perspective of judge consistency, overall circularity, and relative consistency. Before analyzing and discussing the results of these facets of a circular triad analysis, it would be best to explain the role these elements play within the context of this study. The foundation of a circular triad analysis begins with the judge consistency, which refers to a test to determine whether a participant has fewer
circular triads when considering all of the objects. This analysis also signals if these occurrences arise from chance (Dunn-Rankin et al. 2004, p. 67).

According to the output from the data collected from the TBLE instrument, the average number of circular triads occurring among the responses provided by the participants was .905. There was zero participants within this data that had the maximum number of circular triads possible (eight); however, there were nine participants with four (.066%), two with five (.015%), one with six (.007%), and two with seven (.015%) circular triads each. The overall judge consistency with three circular triads or less was 90.5% and the percentage of judges with zero circular triads was 65%. The fact that the percentage of judges with zero circular triads was so high offers insight into why the mean average was less than one circular triad per participant. Also, the insights gleaned from an individual's judge consistency values provided a method by which to isolate and remove the judges whose consistency levels indicated intransitive or illogical selections. Moreover, Kendall’s Coefficient of Concordance was .3227, which indicates a measure of disagreement among the participants of this survey. To assist in understanding the pertinent information from the figure below, Object references the six elements from the TBLE instrument and CT’s In references the number of circular triads for each element.

<table>
<thead>
<tr>
<th>Object</th>
<th># CT's In</th>
<th>ABS Z</th>
<th>ABS Prob</th>
<th>Grp Z</th>
<th># Votes</th>
<th>Scaled</th>
</tr>
</thead>
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<td>-1.56</td>
<td>165.</td>
<td>24.09</td>
</tr>
<tr>
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<td>455.</td>
<td>66.42</td>
</tr>
<tr>
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<td>-1.54</td>
<td>0.0620</td>
<td>-0.70</td>
<td>548.</td>
<td>80.00</td>
</tr>
<tr>
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<td>0.0688</td>
<td>0.17</td>
<td>261.</td>
<td>38.10</td>
</tr>
<tr>
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<td>0.0785</td>
<td>1.30</td>
<td>290.</td>
<td>42.34</td>
</tr>
<tr>
<td>6</td>
<td>65</td>
<td>-1.48</td>
<td>0.0695</td>
<td>0.26</td>
<td>336.</td>
<td>49.05</td>
</tr>
</tbody>
</table>

*Figure 1. Circular triad information for TBLE instrument data.*
Building from the insights into judges, the circular triad analysis also gave clear information about the number of circular triads occurring with each TBLE interface, which acted as an itemization for this information. More specifically, this itemization allowed for an understanding of the choices themselves and a foundation by which to examine these preferences from the perspective of the objects that might be included in future iterations of studies such as this.

When the values displayed in Figure 1 were evaluated with regard to the number of circular triads per participant (Collaboration had the fewest number of circular triads with 44 and Reflection had the most with 77), it was decided that it might not be beneficial to remove any of the objects from this dataset. After all, if circular triads represent intransitive or illogical selections, then the average judge consistency would conceivably be lower than the 0.8869 obtained from this dataset. The implication of this value was the notion that the average participant or judge clearly understood the objects placed before them.

Upon further review, there were roughly 15 individuals with four or more circular triads, each of which carried a level of individual judge consistency of .500 or worse. If one takes individual judge consistency within context, it was assumed that these participants were guessing with regard to their responses to the questions posed in the TBLE instrument. Removing these responses from the data set prior to rank sums analysis of the data was considered. While the impact of these responses could be minimized using a semi-structured interview, it could also be argued that these responses should be removed as these participants might not understand the interfaces being discussed in the survey. Moreover, the removal of these participants would not jeopardize the required number of participants since the survey received 137 respondents over the required 57 needed to conduct an effective variable rank sums analysis with a significance
level of .05, according to Dunn-Rankin et al., (2004, p. 59). After further consideration of this issue, the decision was to keep the original version of the data and include the fourteen participants with multiple circular triads with the remaining 123 participants. The decision was made to run the data only once regardless of the fourteen participants with multiple (three or more) circular triads, which would no doubt have a negligible impact on the rank sums analysis. The notion that this impact would be negligible or non-existent is the previously mentioned average judge consistency score, 0.8869, which is relatively high considering that the maximum score is 1. If the average judge consistency score had been much lower, a variance rank sums analysis would have been conducted to compare the differences between the results obtained by running the data twice.

Variance Rank Sums Analysis

The next step in this analysis was to examine the data from the perspective of a variance rank sums analysis, which provided a detailed view into the preferences of the participants for the interfaces listed in the TBLE instrument. As defined by Dunn-Rankin, Knezek, Wallace, and Zhang (2004), the purpose of a variance rank sums analysis is "two-way analysis of variance by ranks" where "nonparametric (distribution free) subject by treatment analysis in which the treatments are the psychological objects that are scaled" (p. 55). To be more succinct, the purpose of the variance rank sum analysis was to rank the preferences of each participant for the interfaces that are typically found in online courses and determine the distance between each interface on a unidimensional scale.

The first element that comprises the backbone of a variable rank sums analysis is a unidimensional scale, which assumes the form of a scale that runs the length of a minimum of zero to a maximum of 100 rank totals while also acting as a "linear transformation" for these
values (Dunn-Rankin et al., 2004 p. 55). The unidimensional scale for this study was developed to provide insights into the six different technology-based learning environments included in this study: Collaboration, Feedback, Organization, Rapport, Reflection, and Pedagogy. These six environments were used to construct 15 paired comparisons that were presented to current online students who were then asked to select their preference for one environment over another. This data was extracted, formatted, and analyzed within the RANKO software program to determine the linear representation of participant sentiment from least to most preferred.

Figure 2. Unidimensional scale for TBLE results.

The results from the variance ranks sum analysis found that the unidimensional graph revealed the following preferences for learning environments (from least to most): Collaboration
(24), Rapport (38), Reflection (42), Pedagogy (49), Feedback (66), and Organization (80). These values will be henceforth known as scale values (SV), and will be utilized in future calculations related to this data set. Prior to an examination of the scale values as it relates to the scalability and relative scalability indexes, there must be a discussion about the distances between each preference on the unidimensional scale. Dunn-Rankin et al. (2004) explain that a "small difference of three" between each preference on a unidimensional scale "has a high probability of occurrence by chance" (p. 59). As evidenced by the scale values listed, the closest proximity of distance between scale values is four and occurred between Rapport and Reflection, which implied that none of this distance was the result of chance but rather demonstrated the preferences of the respondents.

Of course, the unidimensional scale and associated values were useful for visualizing the distribution of preferences for specific TBLEs. However, these visuals lacked the specificity required to obtain more in-depth understanding about these preferences. To obtain critical range, tests of significance and the relative scalability index (RSI) were conducted. To obtain the critical range, a simple formula \(E(S) = \sqrt{N(K)(K+1)/12}\) was completed with \(K\) referring to the number of objects (six) and \(N\) equal to the number of participants (137). Another element to be considered is the range distribution (Qa), which is a value selected from a chart (4.030) based of a desired level of significance (.05) and objects that were multiplied to the results of critical range formula. The calculation of \(E(S)\) is as follows: \(E(S) = \sqrt{N(K)(K+1)/12} = \sqrt{137(6)(6+1)/12} = \sqrt{137(6)(7)/12} = \sqrt{137(42)/12} = \sqrt{479.5} = 21.897\). This value was rounded up to 21.9. To fully calculate the critical range, the value for \(E(S)\) (21.9) was multiplied by the value of Qa (4.030), for a total of 88.257.
The importance of the critical range value is that it is utilized to determine the scalability index through the calculation of the Scalability Index formula of Number of Significant Pairs/(K(K-1)/2) with K referring to the number of objects being compared (six). A pair is deemed significant if the value on the table of rank differences exceeds the critical range value (88.26). The SI calculated for the TBLE data was equal to 13 significant pairs divided by 15 after completing the aforementioned formula (K(K-1)/2 = 6(6-1)/2=15). Thus, the SI translates to .866 after completing the remaining act of division. A Relative Scalability Index (RSI) was also calculated, as RSI will equal the SI (.866) when the number of participants (137) surpasses the critical range (88.26). Ultimately, the purpose of the scalability and relative scalability index is to provide insight into which pairs "could be significantly different" from one another (Dunn-Rankin et al., 2004, p. 57).

The final aspect of determining the significance relates to the number of participants (or judges) and the desired level of significance. Namely, to achieve .05 significance with the results, a specific number of judges were needed for the results to be considered significant. The number of required participants is tied directly to the number of objects that were ranked by individuals taking the survey. With this in mind, the TBLE had six items to be compared and the
number of judges required (at a minimum) was fifty-seven participants to achieve .05
significance (Dunn-Rankin et al., 2004, para. 1). As discussed earlier, 137 individuals completed
this instrument, which means that the results of this data achieved a .05 level of significance.

Analysis of MESPOC Survey Results

MESPOC Survey Administration

The administration of the MESPOC instrument occurred at the same time as the TBLE; it
was presented to students in a fashion that maximized the number of participants in both
instruments while also removing the potential of attrition amongst students. Because of the
administration of both surveys in the same session for each participant, the level of participation
with this secondary instrument was identical to the TBLE. This was important as it assured that
the second dataset contained responses from the same individuals as the first.

Circular Triad Analysis

The circular triad analysis for the TBLE found that the responses for nine participants
could be removed from that dataset prior to conducting a variance rank rums analysis with little
impact on the resulting scale values. Circular triad analysis was conducted on the data collected
from the MESPOC instrument and was used to understand the number of circular triads in the
data collected for this instrument, as well as the judge consistency and level of concordance
among all of the participants.

There were clear differences between the values returned during this circular triad
analysis, the first was the average number of circular triads was considerably less than from the
TBLE instrument (0.905) to the MESPOC instrument (0.686). The impression is that the specific
descriptions associated with the concepts from the TBLE might have reduced the level of
confusion on the part of the respondent and made it easier for them to rank their preferences
accordingly. In spite of the drop-off in circular triads, it was interesting to also see a slight drop as well in Kendall's Coefficient of Concordance between the two instruments. The value returned (.3047) pointed to a measure of disagreement among participants with regard to the responses made for this second instrument.

In terms of judge consistency, an in-depth examination was given to the responses of the participants where there were four or more circular triads since these individuals would have judge consistency levels at or below .500. The results of the circular triad analysis revealed nine individuals with four or more circular triads. Specifically, there were three individuals with four circular triads (.022), one with five (.007), another three with six (.022), one with seven (.007) and one had eight (.007) documented circular triads. Much like the TBLE, a revised dataset was considered for use in comparing the impact of removing these nine individuals from the subsequent variance rank sums analysis. However, the decision was made to continue with the original dataset that includes these ten participants, who had multiple circular triads in their responses.

As with the TBLE, building from the notion of judge consistency, an investigation into the circular triads associated with the objects occurred to understand the level of consistent responses from the judges in this study. The fourth object (Adobe Connect (Rapport) resulted in

\[\begin{array}{ccccccc}
\text{Object} & \text{# CT's In} & \text{ABS Z} & \text{ABS Prob} & \text{Grp Z} & \text{# Votes} & \text{Scaled} \\
1 & 45 & -1.59 & 0.0564 & -0.29 & 219. & 31.97 \\
2 & 54 & -1.54 & 0.0620 & 1.02 & 449. & 65.55 \\
3 & 49 & -1.56 & 0.0588 & 0.29 & 508. & 74.16 \\
4 & 39 & -1.62 & 0.0528 & -1.17 & 257. & 37.52 \\
5 & 40 & -1.61 & 0.0534 & -1.02 & 189. & 27.59 \\
6 & 55 & -1.53 & 0.0627 & 1.17 & 433. & 63.21 \\
\end{array}\]

\textit{Figure 4. MESPOC circular triad analysis.}
the fewest amount of circular triads with 39 while the sixth object (combination of multiple social technologies – *Pedagogy*) had the most circular triads with 55. When compared to the initial TBLE instrument, the objects within the MESPOC instrument are closely clustered from the perspective of circular triad values rather than having a wide differential between those values (16 as opposed to 33). In addition, the insight gleaned from these values was that the lower number of circular triads infers that the participants were able to make logical selections of their preferences because of the addition of specific technologies to the interfaces listed in the TBLE instrument. This notion would bolster the case that none of the objects would need to be removed from the survey instrument in future iterations since the average judge consistency levels was very high (.9142) and the average number of circular triads was relatively low.

**Variance Ranks Sums Analysis**

Like the analysis of the TBLE instrument, the data was run twice—once with the data containing circular triads and a second pass where these responses were removed. While there was a loss of 13 participants, there was no change in the preferences as they appeared on the unidimensional scale and only minor differences in the scale values; thus, the variance rank sums analysis focused solely on the full set of participant responses. The foundation of a variance ranks sums analysis is a discussion of the unidimensional scale and the values that fall on it from 0 to 100. Beginning from least preferred to most preferred social technology and interface, the participants rankings (by scale values) were as follows: Blogs - *Reflection* (28), Google Docs - *Collaboration* (32), Adobe Connect - *Rapport* (38), Combination of multiple social technologies - *Pedagogy* (63), Email - *Feedback* (66) and Learning Management System (LMS) - *Organization* (74).
After the unidimensional scale was constructed, the critical range was calculated to obtain insights into the number of significant pairs, scalability index, and relative scalability index. The formula \( \sqrt{N(K)(K+1)/12} \) remained the same, as did the range distribution \( Q_a = 4.030 \), the value for \( K = 6 \), and \( N = 137 \). As one might ascertain, the values used to obtain the critical range were identical for the second instrument because the level of participation did not diminish or increase from the first instrument to the second. In spite of the identical nature of values, the formula was calculated again for the sake of ensuring that the values correspond.

\[
E(S) = \sqrt{N(K(K+1)/12} = \sqrt{137(6)(6+1)/12} = \sqrt{137(6)(7)/12} = \sqrt{137(42)/12} = \sqrt{479.5} = 21.897.
\]

After rounding the value for \( E(S) \) to 21.9, it was multiplied by the range distribution (4.030), which resulted in a critical range of 88.25.

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**Figure 5.** Unidimensional scale for MESPOC results.
As described with the TBLE instrument, after the critical range was calculated, it was relatively easy to obtain the number of significant pairs. In turn, the number of significant pairs was used to calculate the Scalability and Relative Scalability Index. The number of significant pairs is based on the pairs that contain values larger than the critical range as they appear on the Table of Rank Differences. According to the Table of Rank Differences, there were nine significant pairs out of the available 15 total pairs that could be verified from the formula used earlier in this analysis. The Scalability Index was then calculated to divide the number of significant pairs by the total number of pairs. This act of simple division yielded an SI value of .60, which also was used to construct the Relative Scalability Index as the number of participants exceeded the critical range.

Comparison of Data Analysis for the TBLE and the MESPOC

After analyzing the resulting data for both instruments utilized to survey the participant pool, several interesting occurrences should be considered and discussed. Foremost, the removal of circular triads resulted in no change to the preferences of the individuals participating as they appear on the unidimensional scale nor did it result in noticeable or major differences in the scale values. After examining the data thoroughly, it was clear that the results from the MESPOC

Figure 6. MESPOC rank differences information.

Table of Rank Differences

<table>
<thead>
<tr>
<th>Items</th>
<th>3</th>
<th>2</th>
<th>6</th>
<th>4</th>
<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>59</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>75</td>
<td>16</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>251</td>
<td>192</td>
<td>176</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>289</td>
<td>230</td>
<td>214</td>
<td>38</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>319</td>
<td>260</td>
<td>244</td>
<td>68</td>
<td>30</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 6. MESPOC rank differences information.
instrument are clustered closer than the results from the TBLE instrument. The argument could be made that the given association of the specific technology to the broad type of interface might have influenced the selection of a choice. Specifically, their experience with a definite type of technology might have influenced their selections during the second round, which would influence the scale values and the number of significant pairs.

The purpose of both instruments and the data analyzed through the lens of a variance rank sums analysis was to provide the foundation for understanding the participant preferences for not only the types of interfaces found in online courses but also their feelings towards specific technologies. The information revealed by the variance rank sums analysis provided insight into significant pairs in the data and required that semi-structured interviews be conducted to obtain the necessary context to fully understand the data obtained during the earlier phases of this study. In particular, there was hope that the semi-structured interviews would allow for insight into themes that might explain preferences towards interfaces and technologies or why one was preferred more than the other.

Semi-Structured Interviews

The approach for recruiting interviewees from the pool of participants assumed a quota sampling approach. Specifically, quota sampling refers to a method of non-probability sampling where the researcher selects a specific number of participants, who fit pre-determined criteria and are selected as they become available to participate (Acharya, Prakash, Saxena, & Nigam, 2013). The main intent of this type of sampling was to obtain interviewees that would fit within two different levels of experience (novice and experienced) with taking classes online. It was hoped that roughly 10% of all participants would agree to a semi-structured interview and that these interviewees would agree with the level of experience with online courses found across the
different types of individuals that had taken both the TBLE and MESPOC instruments. The individuals quotas used were six individuals who were relatively inexperienced and six others who had extensive experience in online courses. The reality of this approach resulted in 13 participants with 10 participants being more experienced with the medium and three being newer to it.

The decision was made to proceed with the semi-structured interviews close to the time of the completion of the surveys to maximize the willingness of prospective individuals to participate in the interviews. Moreover, it was hoped that the individuals who participated in the survey would remember the context and subject matter of the initial TBLE and MESPOC instruments.

The recruitment of the desired number of participants began with the emailing of individuals in groups of 10 until 12 interviews were conducted. The decision to email groups of 10, as opposed to all 137 participants at once, was to maintain a manageable list of individuals to interview at a given time. Specifically, after several days had passed and individuals agreed to participate in the semi-structured interviews and those interviews were completed, the next group of individuals was emailed. If the situation had required it, all of the participants would have been contacted until 13 individuals completed a semi-structured interview.

The total number of email invitations for the semi-structured interviews was approximately 35. The email message informed the initial survey respondents that the semi-structured interviews would center around five questions related to the four research questions framing this study and would last roughly 15 minutes. From these requests for interviews sent out to participants, 13 individuals responded to the request and completed the semi-structured interviews over a two-week period.
The group of thirty-five interviewees could be deconstructed into various sub-groupings that began with the number of classes completed online. The thought process for selecting individuals from this type of grouping was that those participants who had completed a multitude of online courses would allow for greater insight into the social interfaces utilized in the online courses of this academic department. Specifically, their experiences would be more detailed than those respondents who had not taken few-to-no classes online or were students pursuing degrees from other academic departments. Ultimately, the purpose for this approach for recruiting individuals was less about the generalizable nature of the findings and more about the content of the interviews. The intended result was to gather a better understanding into the preferences of individuals towards the social technologies and interfaces being employed in these online courses and to reveal recurring themes among the responses.

Upon the completion of the 13 semi-structured interviews, the audio recordings of the individual's responses to the interview questions were transcribed to provide a more thorough and in-depth analysis of these responses. Once the process of transcribing was complete, these interviews were coded to isolate the emerging themes. These interviews were coded twice, once by myself and a second time by another individual, to ascertain if there was any conceptual overlap with the themes present.

The approach for coding utilized in this study was known as descriptive coding, which takes a "word or short phrase" that acts as the "foundation to a qualitative inquiry" (Saldana, 2009, p. 70-71). The rationale behind this approach to coding was to organize the phrases into parent and child sub-codes, thereby affording the measure of "specificity" and "categorization" to reveal the desired themes in the mass of data contained in the transcripts (Saldana, 2012, p. 72). Interview Data Analysis
The purpose of coding the semi-structured interviews was to highlight multiple instances where particular thoughts occurred and then to later group these thoughts around a theme. This process taken by the coders in this study, descriptive coding and parent/child codes, made the isolation of specific thoughts much easier to organize.

The secondary coder was given an explanation into the particulars of descriptive coding but was not given an example from the first set of codes to preserve the integrity of the initial coding efforts. Specifically, these insights described descriptive coding and the notion of parent/child sub-codes. The decision to have the secondary coder remain impartial was very essential to this process because it gave more credibility to the coding efforts that occurred. Coding was done independently without any influence from the initial coder to the second individual and vice versa. This credibility stems from the notion that any similarities between the resulting codes from both coding efforts would be greater than a situation where the second individual was provided with extensive information about descriptive coding. This was important as it resulted in a second set of interview codes that were distinct and reflected the impressions of the secondary coder towards the responses provided during the interviews. After both individuals had completed the coding process, the coding results were compared to obtain an idea of the connections that might be made between the researcher and the second coder.

After being compared for similarities in the codes identified by both reviewers, all of the codes identified from each question on each of the transcripts were placed into a spreadsheet and the results from both reviews were again compared. The number of similar occurrences within the spreadsheet was calculated and the codes that appeared most were determined to be themes that would then be compared to the interfaces presented in the TBLE. Moreover, the parent and child codes were examined together to calculate the references to specific technologies as listed
in the MESPOC instrument. The purpose of examining the child codes was to correlate a specific technology to an interface and also to examine the attitudes towards these technologies that are present within the academic department from which the interview participants were drawn. The results from this analysis will be discussed as themes that will contain a highlight of the number of occurrences of codes appearing and note the attitudes towards these interfaces/technologies.

Table 1

*Table of parent codes from both author and second reviewer*

<table>
<thead>
<tr>
<th>Author Codes</th>
<th>Instances</th>
<th>Reviewer Codes</th>
<th>Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synchronous Sessions</td>
<td>85</td>
<td>Social Technologies</td>
<td>35</td>
</tr>
<tr>
<td>Blogs</td>
<td>25</td>
<td>Social Activities</td>
<td>30</td>
</tr>
<tr>
<td>Social Technologies</td>
<td>25</td>
<td>Synchronous Sessions</td>
<td>26</td>
</tr>
<tr>
<td>Instructors</td>
<td>24</td>
<td>Technology</td>
<td>22</td>
</tr>
<tr>
<td>Asynchronous</td>
<td>19</td>
<td>Social Interaction</td>
<td>14</td>
</tr>
<tr>
<td>Social Activities</td>
<td>18</td>
<td>Instructor</td>
<td>13</td>
</tr>
<tr>
<td>Interaction</td>
<td>16</td>
<td>Asynchronous</td>
<td>11</td>
</tr>
<tr>
<td>Technology</td>
<td>14</td>
<td>Preference</td>
<td>10</td>
</tr>
<tr>
<td>Social Presence</td>
<td>13</td>
<td>Social Engagement</td>
<td>9</td>
</tr>
<tr>
<td>Discussion Boards</td>
<td>13</td>
<td>Online Courses</td>
<td>7</td>
</tr>
</tbody>
</table>

Results of Coding Semi-Structured Interviews

Prior to examining and discussing the connections between the codes provided by the first and second reviewers of the interview transcripts, a holistic explanation of the codes
themselves is included first. A listing of the top 10 parent codes from each reviewer of the interview transcripts is listed in Table 1. The interesting takeaway from just a rough examination of the codes shows that there were many similarities in the selections of the transcript coders. The only noticeable difference between the coding was that the number of occurrences for each code differed between each reviewer, which was expected because of the subjective nature of coding.

These two groups of 10 parent codes established a foundation from which to develop the themes present within these sets of codes. Combining codes that had some contextual overlap revealed these themes. In particular, parent codes such as synchronous session and social activities could be combined, as synchronous sessions are social activities. After these contextual overlaps were determined and similar codes grouped, two overarching themes emerged from the codes. The two prevailing themes derived from the list of parent codes deal with social presence and instructor presence.

Themes Present in the Interviews

Two themes emerged from the collection of the most utilized parent codes: social presence and instructor presence. The conceptual basis for each of these codes resides in the fact that many of the social technologies could not be utilized by themselves. While synchronous meetings and asynchronous activities (such as discussion boards) are distinctly different, they seek to accomplish the same objective. Specifically, the objective of these social activities, technologies, and interactions is to facilitate social presence in online courses. The second theme dealt with the role of the instructor in an online classroom as it was the only remaining concept that could not fit within a theme that described social interaction within an online environment. The idea of instructor presence was examined in a way that sought to understand the perspective
of the interviewee about the role that the instructor should assume to best manage an online course.

Social Presence

One definition of social presence is "the degree of feeling, perception, and reaction of being connected on Computer Mediated Communication (CMC) to another intellectual entity" (Tu, 2002, p. 2). As evidenced from the list of codes, social presence—whether it was the general term, interaction, social technology, or social activities—all of these social presence elements impacted the sentiment of the participating individual being interviewed. As evidenced by the parent codes presented by both the author and the reviewer, it was apparent that social presence was a reoccurring theme amongst all of the individuals participating in the semi-structured interviews. This section will discuss the types of responses received from these participants on the TBLE and MESPOC instruments.

Social presence in relation to the TBLE refers to the notion of collaboration, or more specifically, the interaction between individual students in an online course. The responses from individuals regarding social presence elements in online courses dealt with several different aspects of this concept from the perspective of social technologies, social activities, and interaction. Moreover, these responses provided an in-depth assessment from the respondent's perspective about the positive and negative implications of these social presence aspects in the classes that they have completed or might be taking currently.

The parent and child codes that refer to social presence are overwhelmingly positive with only two being noted to have negative attitudes associated with them. For example, respondents referred to social presence as being a method by which belonging, connecting/connection, and content-driven and authentic interactions are said to occur. To understand these child codes
further, some of the responses that contained them are highlighted. The purpose of this activity will allow the respondent's own words to convey their positive sentiment towards the concept of social presence as a whole from both a positive and negative perspective.

The interview participants found social presence activities to be the means by which they were "connected" or established "connections" to their peers in an online environment. One participant explained that these connections influenced their experience positively as a learner in online classes. Another positive aspect of social presence as evidenced from the child codes is that this concept leads to "active participation" of the participating student. One participant elaborated on this notion through their explanation that the importance of active participation is the level of interactivity, which in turn influences the student's social reactions in online social activities. In contrast, there was also the feeling that social presence in online classes results in "artificial interactions" with their peers rather than more realistic interactions that were initiated by the instructor. Another interviewee stated that these artificial interactions originating with the instructor did not “feel like it’s necessarily helping create belonging” amongst their peers. These artificial interactions, as described by another interviewee, tended to conjure feelings of “dread” which could impact their “ability to participate and willingness to participate.”

Social presence from the perspective of parent codes is more of a general concept that is fleshed out further by the responses regarding social activities and social technologies. Of the 17 highlighted responses that received a parent code noting the response as a social activity, there were numerous responses that were designated as positive. These positive associations dealt with the feeling that social activities allowed the participant to engage in online interaction that was not only "beneficial" to the student but also offered a means by which to "interact," "develop relationships," and "collaborate" with peers. One of the participating interviewees explained that
the positive nature of social activities was engaging in the sense that the participating students attention was drawn to the course, which allowed them to "speak up and contribute" in a social context. While the overwhelming majority of child codes for social activities could be considered positive, there were responses that questioned the value of the activities ("not needed"), as well as the inefficiency of these activities. Responses such as these overlap with the remaining elements of the social presence theme and the second theme of this study, as well. One of the students interviewed provided clarity to the inefficiency of social activities when they responded that a multitude of social activities could be considered a negative. Namely, when there are “many different channels and so many different platforms” it makes it difficult for the student to track where interactions need to occur.

Social technologies facilitate the instructor’s ability to not only conduct the day-to-day aspects of a course online; they are the proverbial backbone for creating interaction among students, and not only with their peers but also with their instructors, as well. Of the 24 responses containing the parent code of social technology, eight contained negative sentiment, 13 were considered positive, and three were neither positive nor negative. The negative responses ranged from questioning the validity of these technologies in the educational process ("frustration at technologies not working"), inconsistency with the technologies, inability to utilize the technologies properly, and the belief that the technologies did not affect satisfaction. One student interviewed describes one negative aspect of social technologies was when the instructor did not understand the nuances of the technologies, which entailed that "the technology doesn’t work obviously, it’s very frustrating." The crux of this issue is not an issue with the technology, it is with how well the instructor understands the technology and how they leverage it in their online courses. This could affect the level of satisfaction for the activity by the participating students
and, by extension, the satisfaction of these same students for the course. Overall, it is clear that social technologies contain some positive elements that connect them to the types of social activities (synchronous and asynchronous activities) that one finds in a typical online course within this academic department.

Synchronous sessions were the most used code between both individuals who coded the interview responses. While most of the responses contained positive attitudes, there were some responses that viewed these activities as "daycare," questioned the "flexibility" or "structure," and one mentioned that they "cringe[d]" at the prospect of a synchronous session. This individual explained the source of the synchronous session cringe-inducing aspects was that they contained "little to no structure," which in the mind of this respondent caused them to lose "two or three hours" of their time. In spite of this sort of sentiment, it was interesting to see that others enjoyed the "feedback (peer and immediate), the "natural interaction," and increased level of "engagement." One interviewee explained that their favorite aspect of the synchronous sessions was setting their respective level of engagement in the course; it "dictates my preparation and it dictates my involvement." In other words, synchronous sessions set the expectation that one must be an active participant in the exchange of information within this real-time environment.

The responses from the interview participants regarding the subject of asynchronous activities, such as discussion boards, were interesting in how said participants framed their attitudes towards these types of activities. Some of the positive responses highlighted the lack of real-time interaction as a positive as it allowed for a "focus of thoughts," as well as "more effort" and "active feedback" among peers. To elaborate on the focus of one's thoughts, an interview participant stated his preference for asynchronous communication as offering more control over the activity and his responses. Another participant enjoyed these asynchronous activities from a
similar perspective, as it offered them more time to formulate a response to a posted question. Another positive aspect of asynchronous activities in online courses is the aspect related to "student initiated" communication in this element of social presence in an online course.

Communication originating from the students themselves offers a method by which to reduce the feelings of being "alone and makes them feel like they have someone to turn to if they need help or are struggling in the course." Thus, these activities become a means by which to connect with their peers and strengthen their engagement in these types of courses. The negative associations from participation dealt with the "lack of immediacy" of peer responses, which lead one participant to feel "less engaged" when expected to interact with these activities. To provide a context to this sentiment, the participant explained that her satisfaction and participation levels in an online course would alter to reflect the loss of immediacy. Namely, if synchronous sessions were replaced with asynchronous activities, the respondent said that they would be less active and resemble a "lurker," a succinct way of saying that they would observe but not actively engage in the virtual discourse.

The argument could be made that blogs are a type of asynchronous activity. This particular online social activity was separated from the other asynchronous activities because of the reflective nature of this particular activity. The interesting aspect of these responses was that virtually all of the responses were negative in terms of the interviewee's attitudes towards them. The negative sentiment towards blogs stemmed from being an isolated method of communication but one that also contained a lack of immediacy. One interviewee stated this "social" activity tends to be more reflective but isolated since "nobody replies" and the student did not know if anyone even read the blog posts being created as a requirement for the course. This same interview participant offered an interesting insight: that they perceived this activity as
“more of a social non-educational thing.” This perspective was interesting because it highlighted the fact that the instructors might not have integrated the social aspect into this reflective activity. In addition, the assertion to be made from the second comment is that the purpose of blogging as an activity is not conveyed to the participating student.

If one attempted to understand the reason that blogs were not well received by the individuals participating in the interviews, it was evident from such child codes as "no structure," "lacks feedback," "waste of time," and "pointless." These child codes implied a lack of value that stemmed for want of structure from the instructor running the course. This apathy towards the activity could be mitigated by more instructor involvement. The feelings held by one participant was that this specific activity was "laborious" with little payoff or feedback as they believed that "the posts were probably never read." This respondent added a statement that aligned with the position related to a lack of peer engagement from such activities that would offer little social benefit from the perspective of the technology.

Conclusions on Social Presence

The conclusion to be drawn from this theme is that social presence is not simply one activity or type of technology; it is the sum of all its parts. Specifically, social presence as evidenced in the types of responses provided by the interview participants is constructed using social activities such as synchronous sessions, asynchronous technologies, and self-reflection activities (blogs). Turning the attention to how these elements compare to their place on the unidimensional scale, the more social interfaces appearing on the TBLE and MESPOC instruments (Reflection, Rapport, and Collaboration) yielded some interesting results during the semi-structured interviews. The foremost of which was that the negative response to blogs
(Reflection) coincided with its position as the lowest placed technology on the unidimensional scale.

The remaining interfaces were also interesting since Rapport (Adobe Connect) speaks to a synchronous context that had negative responses in only 30% of the instances that touched on this subject. The interesting aspect of this figure is that in spite of the high number of positive mentions, this did not correspond with its place on the unidimensional scale nor the responses given in direct questioning regarding social technologies/activities in the semi-structured interviews. Much like Reflection (blogs), the lack of instances for Collaboration fall in line with its low placement on the unidimensional scale for both the TBLE (lowest scale value) and MESPOC (second-to-lowest scale value) as Collaboration was only mentioned eight times and only twice coded as a parent code. Google Docs was a child code for Collaboration but was only mentioned in the context of organization and level of learner experience with the technology. This lack of mentions by the interview participants explains why Collaboration had such a lower scale value for both instruments.

Exploring the connections between the social presence theme and the survey instruments utilized for this study is important as it sought to better understand the responses received. It was beneficial to analyze the codes created for the responses and the words of the interview participants themselves to establish a more comprehensive view of this collected information. Conclusions regarding the insights into the social presence theme and the data collected during this study will take place in Chapter 5 of this dissertation.

Instructor Presence

The role of the instructor factored into the codes developed from the transcripts of the semi-structured interviews conducted with the survey participants. In both set of codes, instructor
presence in online courses was in the top 10 instances of parent codes, appearing fourth for the first reviewer and sixth for the second coder. Three distinct angles were used to understand the beliefs held by the interview participants regarding the instructor's role in online courses. These approaches were the identification of codes during the code process, the use of related child codes, and the connection of this theme to the survey instruments used during this research study. Furthermore, the first two elements being discussed are presented through the voice of the interview participants to provide context.

In many ways, an instructor and their level of presence in an online course has an impact on not only the level of student presence in a course but also their level of satisfaction. In particular, participants described that the instructor in an online course affects the social presence by "setting expectations" for students and providing them "feedback," which increased satisfaction towards the course. One participant provided information by which to understand the positive impact that the instructor had on the course. This respondent felt that the role held by the instructor should be that of a leader who set the tone for the online interactions by devising or choreographing how this communication occurred online.

While it is clear that the participants believed that the instructor could positively affect the experience in an online course, the child codes from the initial review of the transcripts showed there were also some negative associations with their role in the course. Namely, these child codes highlighted such factors as "unfamiliarity with tools," "organization," "leadership skills," and "technology knowledge." Such beliefs affect the student response to an online course negatively, which could impact the level of student presence. An interview participant expanded upon the notion of "unfamiliarity with tools" with their explanation that this lack of technological
knowledge might stem from a refusal to "fully embrace they technology or [that] they are new to it," which means they might not "know how the interactions occur between different platforms."

Only 25 instances of the parent code “instructor” were coded during the initial coding process. However, there was a multitude of responses that dealt with instructor-related child codes. These child codes provide a method by which to understand the instructor's role in these activities, as well as emphasizing the participating interviewee's perspective on the role that the instructor should hold in online courses. For instance, there were numerous child codes that dealt with the "setting of standards" (Synchronous, Blogs, and Instructor), "organization" (Content, Course, and LMS), "feedback" (Satisfaction, Preference, and Synchronous), and "content" (Social Activities, Course Preference, and LMS) that appeared under multiple parent codes. These child codes highlight the innate responsibilities of the instructor that appear across the spectrum of parent codes, which means that the instructor has a role in most course-related activities. To add specific insight, an interview participant explained that the instructor has an active role in "establishing the gold standard of how things should be"—a relatively high-level perspective on the role to be held by the instructor. Another respondent felt that this active instructor role led to the development of interactions in a course through an approach of "finding different ways to access the information and presenting [of] the information." The conclusion of this response is that the result of the instructor and course design relationship is a learner experience that would be considered "multifaceted."

The connection of instructor presence to the survey instruments utilized within this study is through the apparent association with Organization, Feedback, and Pedagogy, or more specifically, the interfaces that are more closely related to the instructor. The parent code “instructor” contains several references to each of these interfaces directly through child codes as
"content/organization," "encouragement," and "lack of technology knowledge." While these child codes provided an opportunity to draw connections to the TBLE and MESPOC instruments, it would be a disservice to highlight these child codes as merely similar mentions/codes that appear throughout all of the parent codes.

The importance of this thought centers around the notion that the instructor plays an integral role in the creation of social presence in online courses. After all, they select the applicable interfaces for Organization, Feedback, and Pedagogy, which in turn influenced the choices relating to the more social-centered interfaces such as Reflection, Rapport, and Collaboration. To emphasize this point further, a respondent stated that the core responsibilities of an instructor are to organize and structure the online course in such a way that enhances their own abilities as instructors. This further highlights the importance of the instructor and determines the instructor’s level of activity in the course, which can also positively impact the student's level of social presence. As one student noted, "it is an instructor who weighs in, if he or she has the time, that has a lot to do with my desire to participate." This sentiment makes a lot of sense because it assists in the facilitation of information being conveyed from student to student but also the instructor who assists the shape of the knowledge being collectively created.

It is this aspect of the instructor presence theme that stood out most when investigating the parent and child codes—the role of the instructor being an active participant in the discourse occurring in either a synchronous or asynchronous context. Part of this active participation would assume the form of instructor responses to student interaction but it would also include the timeliness of conveying information that affects student social presence and satisfaction. One of the interview respondents stated that instructor feedback, regardless of its content would be beneficial for the creating social presence with his peers. Specifically, if an instructor did not
provide responses to the student's synchronous contributions (either chat or whiteboard activities) or there did not seem to be instructor acknowledgement to their asynchronous postings (or those of their student's peers), this would negatively influence the social presence. Another interview response highlighted that they felt that the timeliness of the instructor, whether it was "immediate or close to immediate responses" as opposed to delayed responses, would improve their satisfaction. Ultimately, responses such as these provide a connection between not only the themes of the instruments but they also demonstrate the role of the instructor in the cultivation of social presence in online courses. These concepts will be discussed further in the next chapter of this dissertation to further understand this theme and how this relationship could be examined further in future research.

Summary

This chapter examined all of the data that was collected from the 137 survey participants and data from semi-structured interviews with 14 participants. Specifically, this examination of data began with demographic information that detailed the individuals participating in this study, continued with the analysis of the date collected from the TBLE/MESPOC instruments, and concluded with a discussion of the findings from the semi-structured interviews. The remainder of this dissertation brings forth the themes present from the survey instrument results as well as the semi-structured interviews.
CHAPTER 5

DISCUSSION AND CONCLUSIONS

In this chapter, the themes identified from the data collected are discussed at length to identify current approaches for developing/facilitating social learning experiences online. These themes and the insights gleaned throughout the analysis of the data and discussion of overarching themes are used to answer this study's research questions. The remainder of this chapter will examine future research opportunities that may be borne from this study, as well as providing a conclusion for this particular research study.

Themes Present Within This Research

The participants in this research study were individuals who were taking an online course in one academic department in a north Texas university. Some of the participants had experience with the online method of delivering course content and others were relatively new to online education. Because of the common connection between the participants, all were exposed to the same technological interfaces. Most importantly, it ensured that each individual was receiving the same experience taking courses online with this academic department.

This shared academic experience diminished the relative inexperience with the medium that some of the students might have had, which allowed any of the participants to select their preference for a TBLE that was present in their course. Two themes were identified from the analyzed data: one was associated with social presence and the other dealt with instructor presence. These themes will be revisited to examine the participants’ desires to participate in an online course predicated on the principles found within each theme.

Social Presence
The main takeaway from both the survey instruments and the semi-structured interviews is the notion that there might be a preference for a specific interface or technology but it is not the sum of its parts. While not as highly rated in terms of student preference as Organization, it was difficult to ignore the discussion of social activities, technologies, and interfaces during both phases of this study and warranted inclusion as one of the emergent themes. Furthermore, due to the conceptual overlap of all of these social elements, it was would be a disservice to focus completely on just one element rather than attempting to construct a comprehensive theme that sought to discuss these findings.

Once the semi-structured interviews were completed, it was apparent from specific qualitative parent codes and the associated children codes, that social elements were important and valued by most of the participants who completed the interviews. For the most part, the participants found the synchronous sessions to be the most engaging element of what would become the social presence theme. The participants felt that synchronous sessions in an online course captured the immediacy and feedback they desired to be more engaged with their peers and, to a lesser extent, their instructors. This idea explained the interconnection between the social activities and technologies that establish the notion of social presence as a theme within this study.

There were interesting observations drawn from the data and theme of social presence. One was the response to the specific technologies associated with the interfaces listed in the TBLE. Specifically, Collaboration (Adobe Connect) was the second-to-last preferred interface on the TBLE. However, when collaboration was discussed in the semi-structured interviews, it was considered the most dynamic method for creating social presence in online courses if it was properly facilitated. Moreover, it was clear that the participants did not prefer or enjoy social
activities that are more reflective (blogs) since the feedback from peers and instructor was minimal, leading them to feel like these posts were never read. Observations like these assist in understanding the theme of social presence and how it relates to the preferences for the interfaces, along with the specific technologies used in an online course. These observations also assisted in understanding the relationship between the social presence theme and the second theme of instructor presence.

**Instructor Presence**

If social activities, technologies, and associated interfaces are considered a theme that facilitated the method by which students interact and convey information online, then instructor presence is the underpinning that determines how this interaction will occur. The instructor presence theme was built upon the interfaces of *Organization, Feedback,* and *Pedagogy,* which were the top three preferred interfaces for the students participating in this study. The semi-structured interviews offered an opportunity to describe why these interfaces and their associated technologies were preferred and how these technologies affected their experience in online learning environments. In addition, these explanations offered an opportunity to better understand the connections that dealt with the role of the instructor in online courses with regard to the social presence interfaces.

Participant comments about instructor presence in the semi-structured interviews were relatively few. Responses dealing with the instructor were only mentioned 24 times. These 24 mentions were enough to be the fourth most referenced parent code during the initial phase of interview coding. The number of mentions for instructor was impressive but fewer in terms of mentions when compared to the 85 mentions of synchronous sessions. In addition, references to the instructor-centered interfaces permeated the other parent codes. This observation led to the
creation of the instructor theme and the participants who participated in the semi-structured interviews highlighted the importance of instructor presence. One participant noted that "instructor engagement" was very important to them as it lead to greater feedback, which was the method by which information was conveyed and even mitigated a negative reaction if there was a breakdown with the technology. Another respondent supported this notion by explaining that instructor presence was integral for the creation of organic discussion because it demonstrated that these activities are an investment for the instructor as well the class members since they were also active participants.

These responses emphasized how important the role of the instructor was to student satisfaction and social presence by giving active feedback and participating in the same activities in which their students participated. Instructor presence, as a theme, extended past the instructor as a participant in social activities since the participants also placed importance on the instructor's role in the organization of course content and the pedagogy employed in these courses. One respondent explained that if a class was not well organized, it could lead to a decrease in a student's satisfaction if they found it difficult to navigate the course's learning management system. The relationship between the organizational properties and the systems themselves is that a negative association between these aspects could carry over into the courses if this association followed an experience arising from a complex organizational structure. Most importantly, there was a firm belief that the instructor who was familiar with the tools used in an online course was paramount to setting the example by which the participating students follow. According to one participant, if the instructor did not know the technology on a rather intimate level, it could complicate how that technology was utilized to facilitate interaction between stakeholders. It is positions like this that highlight the relationship between the instructor...
presence theme and the interfaces presented in the TBLE. The ideas surrounding this relationship are a consideration for future research and is discussed later in this chapter.

Research Questions and Their Answers

This research study centered around four research questions. These research questions will assist in drawing conclusions from the analysis of the data collected from the administration of the TBLE/MESPOC instruments, the semi-structured interviews, and the codes constructed from the interview transcripts.

Research Question 1. What was the learner’s preference for technology-based learning environments?

The first research question dealt with the preference of the participating learner’s preference for the TBLEs listed on the TBLE instrument, as well the MESPOC. The participants were presented with six TBLE interfaces: Collaboration, Feedback, Organization, Rapport, Reflection, and Pedagogy. The data from the joint administration of the two surveys were collected and later analyzed through a variable rank sums analysis, which in turn provided a high-level answer to this research question. The conclusion obtained from the rank sums analysis was a unidimensional scale that detailed the participants preferred TBLE, as well as other insights into the statistical significance of these preferences.

Essentially, there are two answers to this research question, the first is the preference for the TBLEs and the other deals with specific technologies associated with these technology-based learning environments. The preferred TBLE according to this analysis was Organization, followed by Feedback and then Pedagogy, the same results were revealed in the analysis of the MESPOC instrument. The high-level observation of these results is that the participants prefer an online learning environment that is properly organized and that makes information available in
such a way that is easily accessible to the learner. The second aspect that would determine influence the learner's preference for technology-based learning environments would be the instructor's participation in the social technologies utilized in those courses. While instructor participation was not listed as one of the specific technologies, the instructor plays a significant role in the selection of social technologies and the facilitation of social activities. During the semi-structured interviews, one of the participants explained their preference for more instructor interaction. This interaction could range from the setting of expectations, to answering questions, or any other form of direct communication between the instructor and students. Thus, the preference for TBLEs is built around the structuring of the course, as well as how engaged/interactive the instructor is with their students in online courses.

Research Question 2. What influenced the student's level of Social Presence in these online courses?

The second research question builds from the rank sums analysis discussed through the examination of the semi-structured interview transcripts. Specifically, this analysis investigated the originations of a participant's level of social presence in the online courses they were taking within the defined academic department at the time of data collection or in courses they have taken in the past. The examination of the transcripts of the semi-structured interviews revealed that the answer to this specific question would be highly subjective The responses are not generalizable since the responses were based on the emotions, as well as the preferences of the respondent. Ostensibly, there could have been 13 different responses for this research question based on the interview results. A discussion regarding some of the explanations of influences for social presence given by the participating interviewees occurs later in this chapter.
One of the influencers of social presence for the interview participants was the activities themselves and the perception of value associated with the activity. For instance, several of the interviewees mentioned that they placed extensive value on "immediate feedback," as opposed to "waiting for somebody to answer." The implication of this statement is that an individual would not find as much value in activities where the interaction was delayed rather than immediate in nature. Of course, “immediate,” as another respondent mentioned earlier, could refer to a day or two or a length of time under a week and a shorter response time would increase their desire (value) to complete these activities.

Another influence of social presence was the role of the instructor within the course, whether it was the previously mentioned immediacy of instructor feedback or the design aspect of an online course. The latter aspect was discussed during the semi-structured interview section with one respondent feeling that satisfaction was determined more by the "overall design of the course than it is the tools that are used.” As was examined in the instructor presence theme section of this study, this sentiment is logical since the design of a course will dictate the types of tools that will be utilized for a course. Since the selection of tools and their use are parts of the design of a course, social tools will not hide flawed course design. Thus, it becomes apparent that from the perspective of the students, attention should be given to the structure and organization of an online course first and then this design should be supplemented with technologies that cultivate social interaction among both the students and their instructors.

Research Question 3. How does the student's perception or preference for online interaction affect their level of social presence in their online course?

Much like the preceding research question, the answer to this question can be found within the answers provided during the semi-structured interview portion of the study. These
responses yielded insights that were very subjective in nature. The subjective composition of the 13 interview participant's responses were interesting in that it was possible to isolate those who might have been considered more introverted and those participants who could be considered extroverted easily. This is a relatively simplistic answer to this research question since does not address the specific cause for this sentiment towards social presence activities in online courses that the participants were currently taking or had taken in the past.

Investigation into the specific thoughts on this research question revealed that one of the foremost aspects that increased the participant's perception or preference for online interaction begins with their conception of value for the activities in these courses. In particular, several of the interview respondents enjoyed synchronous social interaction. One participant mentioned that synchronous activities allowed him "to participate and to share my views," while another enjoyed the presence of another individual with which to "exchange ideas." It is evident by these quotes from the interviewees that they find value in the interaction with their peers as it provides them another outlet by which to learn. Conversely, other interviewees felt that social activities, especially synchronous sessions, "tend to drag on." Another respondent shared that they did not find value in this type of activity because they did not desire to "make relationships and network" with their peers. The impression that was taken from individuals with negative perceptions such as these was that the individuals perceived the social activities as a hindrance to their primary objective, successful completion of the course.

In the end, it is difficult to answer this question definitively; perceptions tend to center around value and a sense of value is established by the expectations put forth by the instructor in course. For instance, it is not difficult to see why the discussion about blogs resulted in negative sentiment about the specific technology as none of the participants believed that their posts were
read by anyone. Thus, it is not completely surprising that an individual viewed this activity as "pointless," since no one (according to the participant's perspective), neither the instructor nor their peers, ever read these posts. Moreover, these perceptions about social activities tend to cause a participant to begin considering courses with multiple social technologies as a "negative" and find the technologies as more of a "hindrance," rather than a tool to cultivate social presence virtually. It is this notion that reinforces the importance of the second theme from this study — Instructor Presence—and offers an opportunity for future research on this subject.

Research Question 4. What is the relationship between student's responses with regard to TBLE and their desire for courses utilizing one or more social presence technologies?

The responses from the TBLE and MESPOC revealed that the 137 survey participants preferred the interface known as Organization and the specific technology associated with organization, the learning management system. The role of course organization was also an undercurrent throughout the responses received during the semi-structured interviews and comprised a major part of the instructor presence theme discussed in Chapter 4. It is clear that there is a relationship between the TBLE results and the responses obtained during the semi-structured interviews, as evidenced by the Instructor Presence theme. However, the importance or strength of this relationship was unclear for the participants of online courses in the academic department surveyed. One way to assess this relationship would be to conduct another set of semi-structured interviews with the participants using questions relating specifically to the findings obtained after coding the first set of interviews. Additional data from post-coded interviews would help to better understand this relationship and others, such as the importance of feedback from either the instructor or the learner's peers. This recommendation is discussed, along with other observations from this study, in the next section of this chapter.
Avenues for Future Research

There are numerous opportunities for future research associated with this study. The most apparent area for advancing this research would be to refine the structure of the MESPOC survey to remove the association with the TBLE interfaces. Specifically, this would result in the participant being required to select their preferences for specific technologies without influence from the TBLE instrument itself. This change would allow for better clarity into participant preferences and firmly establish that the selections were based on the attitudes towards the technologies themselves, rather than any influence from the TBLE. Data obtained from administering a revised MESPOC would likely result in differences in the scale values and the rankings of the elements on the unidimensional scale.

Another aspect for future research would be further investigation into improving the online student experience. In particular, the semi-structured interviews provided insights that reflected positive attitudes toward course organization, feedback, and pedagogical elements. Thus, it might be beneficial to investigate these elements further in order to obtain more information for improving online course offerings through enhanced structures that use more activities that include the identified elements. One approach would be to create a secondary instrument to couple with the TBLE that provides a more granular investigation of these elements than the one-interface-to-one-technology approach of this study. Namely, this approach would take the three elements with the highest scale values and associate multiple aspects for each element to better understand a participant's sentiment towards courses with these elements or improving those without them.

Another area to pursue in the future would be to add a second round of semi-structured interviews with the individuals who participated in the first set of interviews. The purpose of this
second round of semi-structured interviews would be to use responses related to the observations from the first round and obtain further insights into these concepts. As mentioned in the previous section, once the coding process was completed, it was possible to make connections between the survey instruments and the responses of the participants. Once these initial connections were made in this study, it was noted that a relationship existed between the TBLE, the coded responses, and instructor presence theme but it was not possible ascertain the depth of this relationship. The addition of a second round of semi-structured interviews could be limited to the individuals that highlighted the relationship between the aforementioned concepts in their responses. These responses would then be coded and analyzed to determine the strength of the relationship between these concepts, as well as definitively answering the fourth research question.

Another avenue for future research that might be considered is an investigation into the relationship between the personality type of the individual and their preferences towards the technology-based learning interfaces in online courses. The premise for this idea for future research was taken from responses provided during the semi-structured interviews. Several respondents referred to preferences being affected or influenced by the individual's self-described introversion and that this introversion influenced their satisfaction. One of the methods by which to gain deeper insights into personality types is to include questions about personality type to the previously mentioned second round of semi-structured interviews. This new line of questioning would be added to the questions pertaining to the relationship between the instructor presence theme and the instruments responses and coded transcripts. The purpose of the addition of these questions would be to understand how personality types might have influenced their preferences for the online courses that have taken or are currently progressing through.
A final avenue for future research would be to expand the selected participant pool to include instructors teaching online courses within the same academic department as the students participating in the study. The structure of the study would assume the same form for the instructors using the TBLE and MESPOC instruments but the instruments would be rephrased to highlight the interface/technology that an instructor prefers to use in their online courses. Much like the student participants, requests would be made to engage the instructors in semi-structured interviews to obtain a comprehensive and in-depth understanding of their preferred method of online instruction. Moreover, the semi-structured interviews with the instructors would be useful for understanding the experience of the students depending on the resulting scale values for the TBLE and MESPOC instruments. The addition of instructor data could result in a more comprehensive view of this selected academic department's approach to online instruction and learning. Ultimately, this approach and the resulting preferences could provide considerable value for improving online learning within this department using the insights gleaned from such a study.

Conclusions

Distance between instructors and learners in online course environments, both geographical and transactional, requires a heavy social component to minimize the impact that distance creates in these courses. Aragon (2010) explains the benefits of social presence as "[the ability to] create a level of comfort and ease around students and instructors" to minimize the sentiment towards an environment that might be perceived as "impersonal" (p. 60). Social presence was one of two main themes discovered from the data analysis of the administration of the TBLE and MESPOC instruments and the semi-structured interviews. Furthermore, there was a desire to understand how to achieve the desired result of an online learning experience that is
considered "engaging, memorable, and impactful" for the student (Dunlap & Lowenthal, 2014, p. 1). This relationship between the geographical/transactional distance and the utilization of social presence to overcome this deficiency inherent in online courses was the theoretical basis for this dissertation.

The instructor theme, gleaned from the data analysis, revealed preferences as they relate to the ideal online instructor. The conclusions drawn from the rank sums analysis, circular triad analysis, and coding of the semi-structured interviews resulted in insights regarding the aspects that comprise an ideal online instructor. Based on the information obtained during the interviews with the 13 participants, three traits described their perceptions about the type of instructor that they would want to teach online. The first trait centers around the role of the instructor in structure/organizing online courses that are not only easily accessible by their students but also that the information can be understandable by them. The second trait valued the feedback offered by the instructor in a set timeframe to ensure that the participants feel like they belong to a group. The final trait identified from the interview transcripts was the idea that the instructor should understand the technology employed in the courses they teach, both practically and conceptually, to assist students.

The level of interaction with the interface, content, and their peers impacted the student's level of engagement in a course that takes place online. It was this notion that assisted in the identification of an academic program for participation in this study—one that contained many online course offerings that used various interfaces. The results provided insights into the participants’ preferences for these types of interfaces, and by extension, the online courses that utilize them. The results obtained from the TBLE and MESPOC survey instruments showed that social interfaces were not the preferred interfaces presented in an online course but rather those
pertaining more to the instructor and their role within online courses. These findings were surprising since they disagreed with the perspectives discussed in the literature review and reinforced by scholars such as Aragon and Dunlap/Lowenthal that emphasize the importance of social elements in online courses.

Yet, these findings do not diminish the notion that social technologies or activities are essential to creating a social learning environment; it merely highlights that social learning is not the by-product of one interface or technology. Rather, social learning is borne out of several interfaces working in conjunction with one another towards an online learning environment that reduces the negative aspects resulting from students and instructors possibly being located in different parts of the globe. After all, Collaboration, Feedback, and Organization embody the notion that a "perfect" online course begins with "rich resources, relevant activities, and authentic/real projects" but also includes a relationship between instructor and learner (Dunlap & Lowenthal, 2014, p. 1). In many ways, this interplay reflects the conclusions based on the resulting themes from the semi-structured interviews that demonstrated that the role of instructor is present throughout all of the qualitative codes associated with the social interfaces in the TBLE. The importance of these findings was not only a better understanding of a student's preference for social learning and the associated interfaces but also provided a holistic perspective into how students prefer to learn in an online context.
APPENDIX A

IRB APPROVAL FORM
July 28, 2015

Supervising Investigator: Dr. Tandm Tyler-Wood
Student Investigator: Michael Murom
Department of Learning Technologies
University of North Texas

Re: Human Subjects Application No. 15300

Dear Dr. Tyler-Wood:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled “Student Preferences of UILE Interfaces as Defined by Social Presence.” The risks inherent in this research are minimal, and the potential benefits to the subject outweigh these risks. The submitted protocol is hereby approved for the use of human subjects in this study. Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, July 28, 2015 to July 27, 2016.

Enclosed is the consent document with stamped IRB approval. Please copy and use this form only for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications. If continuing review is not granted before July 27, 2016, IRB approval of this research expires on that date.

Please contact Shefla Bourn, Research Compliance Analyst at extension 4643 if you wish to make changes or need additional information.

Sincerely,

[Signature]

Chad R. Tucson, Ph.D.
Professor
Department of Criminal Justice
Chair, Institutional Review Board

UNIVERSITY OF NORTH TEXAS
1153 Union Circle #110979 Texas, Texas 76125-3333
940.365.4443 940.365.7440 fax  www.research.unt.edu
APPENDIX B

INFORMED CONSENT FORM
Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:**  Student Preferences of TBLE Interfaces as Defined by Social Presence

**Student Investigators:** Michael Marmon, University of North Texas (UNT)
Department of Learning Technologies.

**Supervising Investigator:** Dr. Tandra Tyler-Wood.

**Purpose of the Study:** This study will obtain the feelings of online students towards the types of social activities used to teach students in online courses. You are being asked to rank your preferences towards an online learning environment and also specific technologies that are found in online courses. The purpose of the study will provide insight into the preferences of a typical online student.

**Study Procedures:** Participants within this study will be obtain through a recruitment email that will be delivered through a department electronic mailing list. This study will contain two components, a survey and a voluntary interview, both of which will occur online.

You are being asked to complete two short survey instruments. The survey instruments should take less than fifteen minutes to complete and will take place in an online survey platform known as Qualtrics.

In addition, semi-structured interviews regarding your experience will also take place online within Skype, Adobe Connect or another platform preferred by you, the participant. Participation in this portion of the study is completely voluntary and you can indicate whether or not that you would be willing to participate in an interview that would last less than thirty minutes. These interviews will also be recorded to create transcripts that will be analyzed once all of the data has been completed.

**Foreseeable Risks:** No foreseeable risks are involved in this study. Your participation in this online survey involves risks to confidentiality similar to a person's everyday use of the Internet.

**Benefits to the Subjects or Others:** This study is not expected to be of any direct benefit to you, but we hope to learn more about the process for creating online courses within specific online environments and use this information to create more engaging online courses.
Compensation for Participants: None.

Procedures for Maintaining Confidentiality of Research Records: The confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

Questions about the Study: If you have any questions about the study, you may contact Michael Marmon at [email address] or Dr. Tandra Tyler-Wood at [email address].

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at [telephone number] with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Michael Marmon has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

By clicking the "next" on this page, your consent is implied and acknowledges your desire to participate in this study.
APPENDIX C

TABLE BREAKDOWN
<table>
<thead>
<tr>
<th>Item</th>
<th>Total Rank</th>
<th>Scale Value</th>
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<td>1-Collaboration</td>
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<td>2-Feedback</td>
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<td>4-Rapport</td>
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*Note. Rank totals and scale scores for TBLE rank sums analysis (n = 137)*
APPENDIX D

MESPOC BREAKDOWN
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<td>6-Combination Of Multiple Social</td>
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<td>Technologies/Pedagogy</td>
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<tr>
<td>Maximum</td>
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</tr>
</tbody>
</table>

*Note.* Rank totals and scale scores for MESPOC Rank sums analysis (n = 137)
APPENDIX E

SEMI-STRUCTURED INTERVIEW REQUEST EMAIL
Afternoon! I am emailing you because you indicated that you were willing to participate in a semi-structured interview to discuss your responses to my survey questions.

The semi-structured interview should last roughly fifteen minutes and will include five questions. This interview can occur within your preferred method of technology (Phone, Skype etc.) and at a time that works best for you.

If still interested, what time works best for you?

Thanks!

Mike
APPENDIX F

SEMI-STRUCTURED INTERVIEW QUESTIONS
These are the interview questions used during the semi-structured interviews conducted with thirteen of the initial one hundred and thirty-seven survey participants.

Demographic questions:

What has your experience been with online classes? Do you find online classes to be enjoyable? And just kind of a rough estimate of how many classes you’ve taken on line.

Question 1:

A. Do you think that social technologies play a role with your expected level of interaction with your peers or instructors?

B. Specifically that saying you know you have synchronous sessions does that kind of dictate the level of social interaction that you have at any given time in a course?

Question 2:

A. Do you think that social activities in online courses kind of effect your satisfaction in those courses?

B. Do you feel that social activities are necessary for creating a feeling of belonging amongst your peers in an online course?
Question 3:

Do you feel that the technologies themselves are necessary or required in those courses that facilitate that or do you feel that really the student can dictate where they need to go in terms of the technology to facilitate it?

Question 4:

A. Do you prefer online environments that contain synchronous elements or do you prefer an online experience that’s more asynchronous?

B. What is your preference for the social technologies present in the courses that you’ve taken?

Question 5:

A. Do you think that these or how these technologies are used influence your level of not only social presence but your satisfaction of those courses or are they beneficial to making sure you have a satisfying learning experience or you find them to be a hindrance?

B. Do you think that using various technologies in the courses creates or enhances your own level of social presence in a course or you just feel like it’s just another item on the list?
REFERENCES


Sheridan, K., & Kelly, M. A. (2010). The indicators of instructor presence that are important to students in online courses. MERLOT Journal of Online Learning and Teaching, 6(4), 767-779.


Smith, L. (2005). Promoting Learner-to-Learner Interaction in Online Distance Education. In Levine, J (Eds). Making Distance Education Work: Understanding Learning and Learners at a Distance. (pp. 99-112). Okemos, MI: Learner Associates LLC.


