EVALUATING THE EFFECTIVENESS OF A SYNCHRONOUS ONLINE ENVIRONMENT IN ESTABLISHING SOCIAL, COGNITIVE, AND TEACHING PRESENCE

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EVALUATING THE EFFECTIVENESS OF A SYNCHRONOUS ONLINE ENVIRONMENT IN ESTABLISHING SOCIAL, COGNITIVE, AND TEACHING PRESENCE (168 pp.)

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This mixed methods study examined student perceptions of social, cognitive, and teaching presence in a synchronous online environment based on participation in the environment, how the synchronous online environment affects social, cognitive, and teaching presence, and what aspects of teaching presence in an online synchronous environment support and enhance social and cognitive presence. Participants were students at a large, multi-campus community college enrolled in distance learning, blended learning, and web-enhanced courses. They attended either a live synchronous online session (n = 104) or viewed a recording of a live session (n = 65).

Independent sample t tests compared the groups studied followed by correlation analyses to examine teaching presence as a predictor of social and cognitive presence. The quantitative results showed that students who participated in the live online synchronous sessions exhibited more positive perceptions of social and cognitive presences than those who viewed a recording of the session. Open, axial, and selective coding of the qualitative data produced findings that uncovered the themes of connection, confidence and transference among the participants' experiences in both groups.

The study has implications for understanding the potential that online synchronous technologies have in establishing social, cognitive, and teaching presences for initiating a community of inquiry in the online environment.

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I would like to dedicate this work to my children, Samuel, Benjamin and Gabriel Connor who have watched me work on this for many years and it is my hope that you will persevere through life's challenges and conquests to achieve your dreams as well. I love you all so much.

Lastly, may this work serve in memory of my dear parents Rena and Norm Weissman. It is because of their love, encouragement, and support that I am who I am today.

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CHAPTER I

INTRODUCTION

> I was the kind of student who sometimes felt pressed to stand on top of my desk to confront my philosophical enemies. I can still see the contours of one foe's head and hear his slow, monotonous speech, even though it's been nearly 20 years since we met. Memories of my body in that room still fill me with the old readiness to pounce. How I must have appeared to people then—in my long hippie skirt and combat boots, hair wild as the night, a foot shorter than my foe. Climbing up on my desk was obviously about making myself appear larger, but it was also about literally getting above the impeding banter so I could be heard.
>
> I suspect that some of our peers didn't care for our contentious displays, and I can appreciate that now. But I believe that without that classroom, without being framed by the presence of one another, we could not have come to know all that we did. Words and ideas were the intangible, abstract stuff of our learning. But they were always moving through the matter of our bodies in time and space, looping, feeding in and around our fleshly selves. (Kelly, 2008, p. B20)

Taken from the article *The Sensuous Classroom: Focusing on the Embodiment of Learning,* the quote above always leaves me considering whether or not the experience of presence can be replicated in the online environment—that immediacy of response and emotion, and the physical proximity to the professor and classmates which may prompt reactions of all sorts. Kelly's thought provoking article also points out the power of body language, "a glance, a smile, a nod, and even the way a student holds a thought for a bit,

visibly considers it, and then speaks it out loud" (p. B20), as mechanisms by which we learn, grow, and expand our knowledge of the world. In the online environment, is it possible to be "framed by the presence of others?"

I have read *The Sensuous Classroom* article several times during my doctoral work and it always brings me back to my undergraduate days and the classes that I loved which have shaped me into the person I am today; my wonderfully motivating English adviser whose passion for literature was so effectively conveyed not only through her knowledge of the works, but her whole demeanor and expression as she taught; the bohemian-like professor that rushed into class seconds before it began with his steaming cup of tea (tea bag remaining in the cup the entire class period) whose poetry reading voice I can still hear today; or the incredibly interesting yet goofy professor who instilled the love of reading Dostoevsky into my repertoire while a piece of fabric softener poked out of his clothes. In addition to the auditory, visual, and expressive qualities of my professors, I too remember the classmates who shaped these experiences as well as the buildings and rooms in which the classes took place.

While considering the topic of this dissertation, social, cognitive, and teaching presence in the synchronous online environment, in the context of the Kelly article and my undergraduate college experiences, I wonder: would my beloved English professors have been as effective online? Would their enthusiasm and love of the subject matter been transmitted via online technologies to promote social and cognitive presence? That is a question that I cannot answer, but I feel blessed to have had the experience of learning from them in the classroom. But then I wonder also, what about online students

who will never experience the physical, auditory, and even odorous sensations of the classroom: Can their college and academic learning environments loop and feed around their fleshy selves in the online environment? I will not proclaim that it can, but I do believe that technologies and teaching styles exist to offer a more robust learning experience to include emotions and sensations not necessarily associated with the online learning environment.

The Synchronous Online Environment

I began using a virtual meeting space for instruction in the online environment roughly 10 years ago and ever since the first time I got on camera and shared my voice and computer screen with a group of students I felt something special going on. Almost magic. Not magic in the sense that *voila* the students now have knowledge. Not magic in the sense that *voila* I have taught and it was perfect. But, instead, magic in the sense that something is happening. There is a shift. Movement. Recognition. This innate sense that those on the other end are present and they are getting it. A sense they are happy, engaged, and take something away if not just the fact they participated in a community; in the educational sense, a community of learners. It's odd and rewarding. Rodgers and Raider-Roth (2006) wrote about presence in teaching which mirror my perceptions of the student experience:

> From the learner's point of view the moment is one of recognition, of feeling seen and understood, not just emotionally but cognitively, physically and even spiritually. It is a feeling of being safe, where one is drawn to risk because of the discoveries it might reveal; it is the excitement of discovering one's self in the

> context of the larger world, rather than the worry of losing one's self, in the process. (p. 267)

In relation to Ray Oldenburg's concept of "third place," which is defined as a public place which is neither home nor work, yet is a safe and comfortable place to connect with others and participate in social activities (Orsini, 2011; Soukup, 2006), the virtual classroom can afford students the opportunity to attend class in their own third place. Although Oldenburg rejects the notion of online "third places" (Orsini, 2011), the nature of third places is to provide "a context for sociability, spontaneity, community building and emotional expressiveness" (Soukup, 2006, p. 423), which has been demonstrated in the virtual instruction classes I teach. While Oldenburg chooses not to acknowledge the online environment as a third place, I challenge that and would like to propose that synchronous learning environments promote a safe and comfortable environment; a Third Place to learn that encourages engagement, promotes and supports the student in a way that asynchronous online learning methods cannot. Is this Third Place as fleshy as the physical classroom? Probably not, but I believe it can enhance the learning experience and ultimately promote student success and motivation.

Learning, as posited by Dewey, results from experiences, which are contextually based and socially situated (Swan, Garrison, & Richardson, 2009), while Hufford (2014) proposes presence invites cacophony—dialectical, intellectual, and even emotional—and it is cacophony, which opens challenges, questions, opposing views and dynamic interchanges. Can an online classroom providing the context and the social atmosphere for learning exist? Does the online environment offer opportunities for a teacher to

authentically present himself or herself risking exposure and allowing for unplanned intellectual adventures (Hufford, 2014)? According to Palloff and Pratt (2007), six essential elements critical to success in distance learning are: honesty, responsiveness, relevance, respect, openness, and empowerment. A synchronous online environment may serve as platform to build safety and trust, allowing interaction and mutual responsibility for the acquisition of knowledge in an engaging classroom atmosphere encouraging freedom to share and grow. A synchronous online environment may afford the opportunity for contextually based, socially situated learning.

Research Questions

Online education is clearly here to stay and certainly has many benefits as well as drawbacks. Moreover, technology can assist in providing a variety of opportunities to enhance the teaching, access, and learning process for online learners. This study was grounded in the Community of Inquiry theoretical framework and attempts to contribute to the framework by the investigation of the use of synchronous technology in the online environment as a means to promote and enhance social, cognitive, and teaching presence. The study sought to answer these primary questions:

1. What is the difference in the perception of social, cognitive, and teaching presence between students who participate in synchronous online learning environments and students who view recordings of synchronous online learning sessions?
2. How does the synchronous online learning environment affect social, cognitive, and teaching presence?

3. What aspects of teacher presence in an online synchronous environment support and enhance social and cognitive presence?

Conceptual/Theoretical Foundations of the Study

The theoretical conversation that this study contributes to lends to the phenomena of transactional distance as it occurs and manifests in the virtual online environment. Transactional distance occurs in any learning situation; that being there is always some distance between the instructor and the learner. In the virtual online environment the transactional distance takes place across the internet and while the actual miles between the instructor and learner may be many or few, the distance materializes through technology. Interconnected within the concept of transactional distances lays social presence theory which is concerned with the medium by which social presence is achieved. The medium in the case of this study was a virtual online learning environment, however, the medium could be a cell phone, fax machine, or television to name a few, each possessing different qualities of achieving social presence. Both transactional distance theory and social presence theory merge with the framework of this study, the Community of Inquiry, and are discussed in the following section.

Community of Inquiry

Built upon the core elements of cognitive presence, social presence, and teaching presence, the Community of Inquiry (CoI) framework (Garrison, Anderson & Archer, 2000b) posits that online learning is the engagement of a community in a course of inquiry. In this inquiry knowledge construction is a process implemented via cognitive,

social, and teaching presence. Social presence, cognitive presence, and teaching presence each hold distinct characteristics yet are interdependent on the others.

Cognitive presence is defined as the extent to which learners are able to construct and confirm meaning through course activities, sustained reflection, and discourse in online environments. It is presented as consisting of the four phases of practical inquiry (Garrison, Anderson, & Archer, 2000; adapted from Dewey, 1933), which begin with a triggering event (recognition of a problem, puzzlement) and extend through exploration (divergence, information exchange, suggestions, brainstorming) and integration (convergence, synthesis, solutions) to culminate in resolution (application, testing, defend; Garrison, 2011).

Social presence is the ability of learners to project their personal characteristics into the community of inquiry, thereby presenting themselves as "real people" (Anderson, Rourke, Garrison & Archer, 2001). Social presence consists of affective expression, open communication, and group cohesion. Indicators that are linked to social presence behaviors include: self-disclosure, use of humor, asking questions, referring to others, use of personal pronoun, in addition to learner content interaction, learner-to-learner interaction, socially constructed meaning, sharing and expressions of support (Garrison, 2011; Palloff & Pratt, 2007).

Teaching presence is defined as the design, facilitation, and direction of cognitive and social processes for the realization of personally meaningful and educationally worthwhile learning outcomes (Anderson et al., 2001). Indicators of design include setting curriculum, designing methods, establishing time parameters, utilizing the

medium effectively, establishing netiquette, and making course comments. Facilitating discourse includes identifying areas of agreement and disagreement, seeking to reach consensus or understanding, encouraging, acknowledging, or reinforcing student contributions, setting the climate for learning, drawing participants in and prompting discussion, and assessing the efficacy of the process. Presenting content and questions, guiding discussion as well as summarizing it, confirming understanding through assessment and feedback, injecting knowledge and responding to technical errors are indicators of direct instruction (Garrison, 2011).

As seen in Figure 1, the three presences of the Community of Inquiry are interdependent and converge to provide a positive, supportive, engaging, and socially constructive educational experience. Social presence and teaching presence drive the environment while an active social presence encourages discourse to establish cognitive presence. Direct facilitation and instruction provide the content to support cognitive presence.

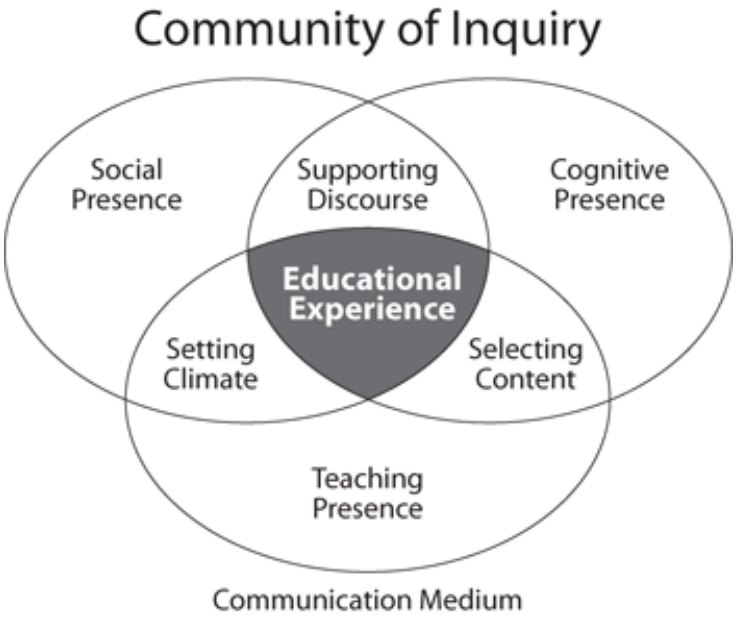


Figure 1. The Community of Inquiry Framework adapted from Garrison, Anderson, & Archer (2001). Used with permission.

Theory of Transactional Distance

Moore's Theory of Transactional Distance centers around "the effect geographic separation has on teaching and learning, especially on interaction between learners and teachers, on the design of the courses, and on the organization of human and technological resources" (Moore & Kearsley, 2012, p. 209). The theory is conceptually important in this study as it provides support for the use of synchronous technologies to support and enhance teacher-learner relationships in the online environment (Baker, 2010).

Social Presence Theory

Social presence, considered a novel theoretical approach as recently as 1976 (Short, Williams, & Christie, 1976), has been studied in a multitude of venues in which

the parties in communication are separated by distance. Short et al. defined social presence as the quality of the medium itself with communications media varying in their degree of social presence. It is assumed that users of any communications medium are aware of that medium's capacity for social presence and knowing the limitations, users will avoid using the medium for certain types of interaction. Short et al. hypothesized "that the suitability of any given communications medium for a specified type of interaction will depend upon two things: the degree of social presence of the medium, and the degree of social presence required by the task" (p. 75). Social presence is a working component of the Community of Inquiry and thus social presence theory is an inherent aspect of this study. What is interesting and important in regard to the theory as presented by Short et al. is the notion of the communications medium and the effect of social presence. This dissertation hypothesized that the online synchronous communication medium enhances the degree to which students in distance education may perceive social presence and allows for greater interaction within the online environment.

Purpose of Study

The 12th annual report on the state of online learning in U.S. higher education, *Grade Level—Tracking Online Education in the United States,* reports that while online education continues to grow at a greater rate than the overall growth of higher education enrollment, this growth rate has been on the decline for the past several years. With that said, 2014 marked an all-time high of 70.8% of higher education chief academic officers reporting that online education is critical to their institutions long-term strategy as well as reporting a continued increase in the perceived relative quality of online education versus

face-to-face classes. Courses blending both online and face-to-face components are receiving the most favorable opinion of the academic leaders (I. E. Allen & Seaman, 2015).

Noteworthy data points regarding the down side of online education in the 2014 *Grade Level–Tracking Online Education in the United States* report are the indication that faculty in higher education have consistently shown little acceptance of the worth of online education; the majority of academic leaders feel that students require more discipline to succeed in the online classes; and in 2014 the perception that retaining students in an online course as seen as a problem rose to an all-time high of 44.6% (I. E. Allen & Seaman, 2015). Furthermore, online education as seen as a "barrier to education" is high with a majority of leaders reporting an increase of effort needed to deliver online instruction effectively. The report states that despite new technologies, experienced online faculty, and the focus on expanded and improved instructional support, there has been no effect on reducing the problem (I. E. Allen & Seaman, 2015).

While the number of students taking online courses continues to rise, albeit at a much slower pace than in previous years, this latest report presents a foggy lens into the effectiveness and status of online education today. Based on academic leaders' perceptions of online education as a strategic measure for institutional goals, it seems clear this mode of education is here to stay. However, the need to improve upon the technologies and use of them by the faculty who teach online appears to be a necessity in order to create online courses and programs which retain students and lead to successful learning outcomes. This dissertation looked at the synchronous online environment and

how it affects social, cognitive, and teaching presence to support and enhance learning and student success.

The 2015 New Media Consortium (NMC) Horizon Report, Higher Education Edition lists *Increasing Use of Blending Learning* as a short-term trend for educational technology adoption in higher education for the next one to two years. Blended learning, as defined by the report, is the combination of online learning and face-to-face instruction (NMC, 2015). Pointing out the use of "cutting-edge" asynchronous and synchronous tools to advance online learning, the brief report cites that quality courses possess the following benchmarks: clarity, authenticity, unity, suspense, economy, depth, proportion, vividness, brilliance, sensitivity, emphasis, authority, flow, and precision. Blended learning instructors then need to use technology effectively in the online environment to satisfy these benchmarks, stimulate social activities and critical thinking, and engage all student learning styles (NMC, 2015, p. 16). This dissertation examined student perceptions of social, cognitive, and teaching presence in the synchronous online environment which when used effectively can encompass many if not all benchmarks and learning outcomes mentioned.

Faculty Perceptions of Teaching in the Online Environment

A review of the literature looking toward what faculty perceive as the benefits and downfalls of online learning supplies many lists of pros and cons. Those characteristics which repeatedly fall into the "not so good" category include: time commitments for faculty and students, increased workloads, increased cheating and plagiarism, decreased socialization, decreased active learning, feelings of isolation for the student, and

intellectual property issues, among others ("E-learning," 2007; Fish & Gill, 2009; Li & Akins, 2005; Tabata & Johnsrud, 2008). On the flip side, the benefits of online education are evident and in some instances completely contradict the pitfalls and may include: increased communication, increased student recruitment, convenience and flexibility, better utilization of classroom facilities, increased collaboration, online discussions promote critical thinking, and promotes risk taking among other positive factors (Gallini & Barron, 2001; Fish & Gill, 2009; "E-learning," 2007; Hew & Cheung, 2008).

A common theme concerning the quality of online education versus face-to-face instruction relates to connecting with the student. According to Fish and Gill (2009), comments suggesting face-to-face instruction is the best way to become intimate with the essence of the discipline while the cold stare of the monitor misses the nuances of content, or that the elimination of personal contact reduces the value in mentorship and learning to the definitive "teaching is a personal interaction . . . online is not teaching and is not appropriate to a university" (p. 5) have been made by faculty with no experience teaching online (Fish & Gill, 2009). In line with the reflection made about my English professor's passion for teaching is the identified weakness of online learning that can "curb a professor's ability to communicate passion for his or her subject" ("E-learning," 2007) and the difficulty professors may have conveying enthusiasm (Hurt, 2008). In addition to connecting and interacting with students, another often cited disadvantage to online learning is the perception of diminished or less than satisfactory communication and discussion between and among the students and instructor. An audience at a Technology Forum identified e-learning as a determent of peer-to-peer learning along

with the opportunities to socialize as a weakness ("E-learning," 2007). This study explored the aspects of teaching presence in the synchronous online environment which support and enhance student experience by promoting social and cognitive presences.

In a very enlightening article by Kreijns, Kirschner, and Jochems (2003), the authors pointed out two pitfalls that inhibit the effectiveness of e-learning as a means of promoting social interaction. The first pitfall presented is a result of the technology itself; where because the technological environment is a reality and being used as an educational tool or method of teaching it is presumed that social interaction will automatically take place. Whereas in the classroom, social interaction is fairly easy to establish and in most cases exists on its own; this taking for granted viewpoint can be a dangerous assumption on the part of an instructor teaching online. Despite the use of discussion forums, chat, or email as communication tools, an effective online instructor must actively organize social interaction, build a sense of community and relationships that work toward a common goal and, probably most importantly, do all that they can to establish a sense of trust among themselves, the students and among the students (Kreijns et al., 2003). Synchronous online environments support social interaction; however it may be that teacher presence is the driving force and identification of which aspects of teaching presence support building a Community of Inquiry; this study explored this possibility.

Social Interaction in the Online Environment

The second pitfall identified by Kreijns and others (2003) addresses how social interaction is prompted and utilized in the online environment with the "tendency to

restrict social interaction to educational interventions aimed at cognitive processes while social (psychological) interventions aimed at social-emotional processes are ignored, neglected or forgotten" (p. 336). Thinking about the sights, sounds, and smells of the physical classroom and the abundant variety of human personalities, peculiarities, mannerisms, and nuances that are found in a social context, this pitfall is indeed one to be considered. In my experience the "social (psychological) interventions aimed at socio-emotional processes" had a huge impact on what became meaningful learning in the classroom. Computer mediated communication does not allow for absorption into the physical surroundings and characteristics of the students as individuals or the class as a whole, deterring interpersonal impressions and has been "characterized as impersonal, unfriendly, task-oriented, anonymous, and has sometimes been accused of leading to disinhibited behavior" (Kreijns et al., 2003, p. 345).

However, despite the perceived and at times legitimate drawbacks of connectedness (or the lack thereof) in online learning, there is much that can be said regarding the validity of online learning as an effective venue for establishing sociocultural participation in which essentially we are what we participate in, or how we develop cognitively (Schneider & Evans, 2008). Using the work of Barbara Rogoff as a theoretical underpinning, Sandra Schneider and Michael Evans explored the impacts of understanding e-learning from this sociocultural understanding of participation. To promote this type of learning environment Schneider and Evans offered the following considerations:

> Instructors and facilitators should guide participants with learning being directed by the situation; activities must offer ample opportunities for improvisational, spontaneous meaning making via observance with each other in some way and involvement in hands-on activities; actions and interactions that are not intended to instruct frequently offer significant learning opportunities; and guidance may take any number of forms such as teaming, mentoring, spontaneous interaction, and informal access to local and field expertise. (Schneider & Evans, 2008, pp. 2-3)

Significance of Study

"*I grow in self-knowledge as I am present to other's presence*" (Hufford, 2014, p. 19).

Research on presence has been deemed difficult to study with little empirical research in existence (Rodgers & Raider-Roth, 2006). Research on presence in the online environment to date has primarily been conducted using data collected from asynchronous teaching methods, environments, and technologies. However, very little has been written regarding the use of synchronous technologies in distance education, and studies that inquire into instructional approaches that seek to provide sophisticated knowledge construction are needed (Shea & Bidjerano, 2009a; Shea, Li, & Pickett, 2006). Shea and Bidjerano (2009b) proposed a perspective of epistemic engagement that reflects a process of participatory practice—knowledge building through social interaction and negotiation of meaning—in online environments but these online environments are asynchronous.

Research to date has also tended to focus on single presences in the CoI rather than the framework as a whole with limited research available on synchronous technology and its potential enhancement on asynchronous communication and perceived connectedness with classmates (Drouin & Vartanian, 2010; Giesbers, Rienties, Tempelaar, & Gijselaers, 2014; Swan, Garrison, & Richardson, 2009); Garrison, Cleveland-Innes, and Fung (2010) suggested that a promising approach to understanding the mediating role between presences would be to explore the "dimensionality and dynamics within the presences" (p. 35). Baker (2010) recognized the movement from the effectiveness of online education in comparison to face-to-face learning and suggests future research move beyond the use of discussion forums as a tool for developing communities of inquiry in online learning and examine immediacy behaviors in online courses by examining how various online live media technologies convey verbal cues and instructional strategies which are most effective for online learning environments.

Considering the growth of distance education and its critical importance to higher education, institutionally speaking as well as the impact of student success, the medium of the communication technology is vital. Research has shown that much of student dissatisfaction with and attrition in online courses stems from feelings of isolation in the online environment, frustration and anxiety due to limited accessibility to materials, instructors and classmates, and poor online course design leading to lower levels of learning and permanency of learned information than in face-to-face courses (Drouin & Vartanian, 2010; Rovai, 2004; Traver, Volchok, Bidjerano, & Shea, 2014). Although, Traver et al. do reference instances of retention and completion in online courses based

on social, cognitive, and teaching presences. Lambert and Fisher (2013) stated that the inherent problem of retention and engagement warrant further investigation to explore synchronous technologies and the impact they have on engagement in online learning thus helping to increase learning potential.

Palloff and Pratt (2007) pointed out that interaction and feedback from classmates assist in the application of ideas and the accuracy of applications but rarely do students attend an online class at the same time to interact in a live fashion unless the communication is built into the online course design. Using online synchronous technologies students do have the opportunity to attend an online class virtually, at the same time. The impetus for this dissertation stems from my experience teaching virtual instruction using synchronous technology. End of session surveys given to students attending my virtual sessions have gleaned useful information as to perceptions of social, cognitive, and teaching presence in the synchronous classroom. Using the abbreviated, validated, CoI survey instrument, the average of 157 surveys yielded 4.51 on a 5 point Likert scale with a teaching presence average of 4.64; a social presence average of 4.51; and a cognitive presence average of 4.41. Allowing anonymous open ended responses on students' perceptions of social, cognitive, and teaching presence in synchronous sessions, the comments below serve to demonstrate the potential for social, cognitive, and teaching presence an online synchronous environment:

> *Everything was very informative, the instructor explained exactly where everything was and used examples that students in the class could use. I felt as if*

we were in a classroom because she kept us engaged and did not just ramble on the whole hour.

I liked being able to "chat" with the other students and read their questions. Some of their questions helped me out too!

This was really cool. I've never had the opportunity to use something like that, but it was easy to communicate and follow along. It was really cool. Having an online class doesn't really allow you to know what your online classmates are like, but since we are able to chat, it helps to resolve that issue.

Study Design

The purpose of this study was to explore the effectiveness of the online synchronous environment in establishing social, cognitive, and teaching presences. To answer the research questions, a convergent parallel mixed methods design (see Appendix G) was used in which qualitative and quantitative data were collected in parallel, analyzed separately, and then merged. In this study, survey data were used to measure the relationship between student perceptions of social, cognitive, and teaching presence in the synchronous online environment (live attendance) and a recording of a synchronous online session. The qualitative data consisting of select chat transcripts explored the presences as they occurred in real time. The reason for collecting both quantitative and qualitative data was to converge the two forms of data to bring greater insight into the Community of Inquiry theoretical framework in the synchronous online environment.

Summary

The more information a medium can transmit, the greater its immediacy (Short et al., 1976) with immediacy referring to a measure of psychological distance between parties engaged in communication. This may be referred to as "technological immediacy," "transactional immediacy," "learner immediacy," "teacher immediacy," and so forth. "Mediated Immediacy" as defined by Hunt, Lippert, and O'Sullivan (2004), "is communicative cues in mediated channels that can shape perceptions of psychological closeness between interactants" (p. 471) and plays an important role in student arousal, affect, motivation, and learning (Larose & Whitten, 2000). Immediacy in this research study contributed to social, cognitive, and teaching presences in regard to the communication medium, which was the use of synchronous online technology.

In *Silent Messages,* Albert Mehrabian (1971) wrote, "people are more aroused by and are more responsive to strange, novel, and changing things than they are to familiar and static entities" (p. 118). In the world of online education, asynchronous equates to static while synchronous teaching occurs live, in real time. While online teaching most certainly will rely on asynchronous methods for instruction, the addition of synchronous tools and opportunities to engage with this technology arouses the student and presents a novel way to participate socially and cognitively in the online environment. Creating a Community of Inquiry in a synchronous online environment supports and enhances opportunities to appreciate, explore, grow, discover, and react to an educational environment that promotes social, cognitive, and teaching presences.

CHAPTER II

REVIEW OF THE LITERATURE

The literature review for this study covers the following topics: transactional distance, the Community of Inquiry and the three presences which form it—social presence, teaching presence and cognitive presence, the interactions among the presences, areas to consider for future research on the Community of Inquiry, and technology and the Community of Inquiry—namely asynchronous versus synchronous, synchronous online environments, and media richness using online synchronous technologies. All of these topics build a strong and supportive case for and view of the importance of creating an effective learning environment for students studying online.

Transactional Distance

The theory of transactional distance, one of the first theories to be applied to distance education, combining organizational theory with the interactive relationship to the learner (M. G. Moore & Kearsley, 2012), states "distance education is not simply a geographic separation of learners and teachers, but, more importantly, is a pedagogical concept describing the universe of teacher-learner relationships that exist when learners and instructors are separated by space and/or by time" (M. Moore, 1993, p. 22). In an address to the ICDE conference in 1973, Michael Moore spoke to the need for theory looking at teaching conducted apart from the learning:

> As we continue to develop various nontraditional methods of reaching the growing numbers of people who cannot or will not, attend conventional institutions but who choose to learn apart from their teachers, we should direct

> some of our resources to the macro-factors: describing and defining the field; discriminating between the various forms of teaching and learning; building a theoretical framework which will embrace this whole area of education. (M. G. Moore & Kearsley, 2012, p. 207)

Michael G. Moore's theory of transactional distance looks at the psychological and communications space which may create the potential for misunderstandings between the inputs of instructor and learner in an online environment. Moore stressed that transactional distance is a pedagogic concept occurring on a continuous basis with a great many variables contributing to the learning environment (M. G. Moore, 1993). M. G. Moore and Kearsley (2012) presented the following elements of teaching in the online environment highlighting some of the differences to be considered between teaching via distance education versus teaching in the classroom:

- Not knowing how the students react, unless there is some feedback mechanism;
- Teaching conducted through technology;
- Distance students are generally more defensive but unlikely to express anxiety;
- Instructor needs to provide motivational support;
- Instructors must guide students into being actively involved in the learning process, which can be counterintuitive to students used to being passive in a classroom environment. (pp. 126-127)

The technology used, the content being taught and studied, and the effectiveness of the instructor weigh heavily on the characteristics of online learning mentioned above.

Reflecting upon these elements under the transactional distance theory which takes into account the interactive relationship with the learner, it is important to consider that transactional distance is continuous and instances of distance education are not "either or distant," but "more or less distant" (M. G. Moore & Kearsley, 2012). All teaching transactions have some aspect of distance but the question to consider is when the distance becomes greater can the transactions remain as relevant, useful and good. Can the transactions, through teaching and technology, be less distant?

M. G. Moore and Kearsley (2012) stated, "effective teaching at a distance depends on a deep understanding of the nature of interaction and how to facilitate interaction through technologically transmitted communication" (p. 132). The Community of Inquiry (CoI), framework is a theoretical framework originally conceived to guide online research and practice based on collaborative-constructivist approaches to education. Randy Garrison, instrumental in the establishment of the CoI theory, has posed the question of whether or not there exists a potential to include and/or combine the theory of transactional distance within the CoI framework (R. Garrison, 2009). Distance education has shifted from self-regulated and independent long distance learning to online learning which seeks to bring students together to interact and engage in the learning process through new and emerging communication technology (R. Garrison, 2009; Simonson, Schlosser, & Hanson, 1999). Therefore the theory of transactional distance remains a relevant concept of study when considering the nature of interaction in the online environment and how that interaction may minimize the perceived distance in the educational transaction.

Community of Inquiry

A Community of Inquiry (CoI), as defined by Garrison, Anderson, and Archer (2000b), is comprised of a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding within an educational setting. The CoI theoretical framework consists of social, cognitive, and teaching presences, which are interdependent elements working together in creating a deep and meaningful (collaborative-constructivist) learning experience. In a constructivist learning environment knowledge is built by the individual through interactions with the environment; however the CoI framework adds to constructivism by evoking knowledge created by the community through collaboration. Interactions including others in the environment and interactions within the environment contribute to the active process of learning and maturation of the student (Rovai, 2004). Hufford (2014) echoed the intent of CoI stating, "it is a sense of mutual presence—an intellectual/emotional connecting of teacher and students—that allows a classroom of individuals connecting to become an inclusive learning community" (p. 14).

Although a newer educational model, CoI has been associated with effective online instruction built upon a collaborative environment comprising a total educational experience (Miller, Hahs-Vaughn, & Zygouris-Coe, 2014). The foundation of a CoI is the online community of learners who rely on and share characteristics such as membership identity, influence, integration and fulfillment of needs, and shared emotional connection (Wighting, Liu, & Rovai, 2008). How one enters or engages in the community varies as do the personal attributes of individuals such as the ability to

express oneself effectively without body language or the skill of projecting personality into online communication (Miller et al., 2014). Common goals and values that seek to provide a mutual yet personal model of community that emphasizes the "spark of friendship that becomes the Spirit of Sense of Community" (Wighting et al., 2008) lies at the heart of the CoI framework.

An effective Community of Inquiry will establish an online environment that supports and nourishes teaching, social and cognitive presence to facilitate learning and foster a positive sense of community online (Miller et al., 2014). Variables which contribute to the effectiveness of an online learning environment as well as a CoI include the sense of community experienced by the students and the degree of motivation to learn in the environment (Wighting et al., 2008); the nature of student-instructor interactions (Jaggers, 2014); resilience to navigate the varying levels of engagement associated with studying online (Ross, Gallagher, & MacLeod, 2013); and perceptions of the presences based on students' prior experience with online learning, as well as the discipline that is the focus of the online course (Garrison et al., 2010; Traver et al., 2014). This study focused on perceptions of social, cognitive, and teaching presences, explored and addressed a wider range of variables that contribute to effective online instruction.

Social Presence

Social presence, despite being a concept of study longer than teaching or cognitive presence, is a relatively young theoretical approach considered "novel" in 1976 (Short et al., 1976). Miller and colleagues place the origin of social presence in the 1970's telecommunications research performed to "determine the degree to which one is

able to project one's personality into an experience and to interact with others' personalities in audio and visual media like facsimile machines, voice mail, and audio teleconferencing" (2014, p. 2). Anderson et al. (2001) defined social presence as the ability of learners to project their personal characteristics into the community of inquiry, thereby presenting themselves as 'real people.'

Vygotsky lends to the concept of social presence as it fits into a community of inquiry with the proposition that learning is fostered through social and cultural experiences where external social interactions act as the basis for internal thought processes (Miller et al., 2014). This concept is exhibited in Garrison's (2011) modified definition of social presence which includes the ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by projecting their individual personalities. Rodgers and Raider-Roth (2006) looked at "presence" as engagement adding to the concept of social presence through bringing together the individual and the group via a state of alert awareness. The state of alert awareness contributes to receptivity and connects to the mental, emotional and tangible aspects of the learning environment. This connection fosters compassion and consideration for the learning process.

Social presence can be considered as both an individual and group action in a community of inquiry. Projecting oneself into an online environment in an effort to present as a real person lends to group cohesion and a sense of group presence. In a face-to-face classroom one can project himself or herself into the environment by

contributing to the activity of the classroom through discussions. However, the mere physical presence of a person in a classroom offers insight into a personality, a real person, a part of a larger group. The larger group forms its own unique social presence. This too happens in an online classroom and this dissertation seeks to explore the likelihood of a more robust social presence in the synchronous online environment.

The concept of "sense of community" parallels social presence in the Community of Inquiry as a collaborative experience dependent on the interaction of members with shared goals, as well as respect for and support of efforts made toward meaningful learning. McMillan and Chavis (1986) presented a theoretical framework for Sense of Community consisting of four elements: membership, influence, reinforcement, and emotional connection. While McMillan and Chavis posited their proposed definition of a sense of community on community in a neighborhood/environmental sense, the tenets of the framework correspond to those associated with CoI as a relational quality. Membership constitutes a sense of belonging and has the attribute of personal investment; influence is associated with making a difference to and for the group; reinforcement deals with the concept of integration and fulfillment of needs whereby the members feel their needs are met by the group membership and resources provided; and an emotional connection exists as members experience a shared history, place, time and common experiences (McMillan & Chavis, 1986).

A sense of community (SOC) is defined by Sadera, Robertson, Song, and Midon (2009) as a group of participants, relationships, interactions, and their social presence within a given learning environment and not the collection of technologies used to

manage and communicate within the environment. Drouin and Vartanian (2010) commented that instructors should create learning environments with SOC in mind to promote learning, satisfaction, and retention. Promoting a social constructivist online learning environment that features active group construction of knowledge (Rovai & Wighting, 2005) can build a sense of community. Studies have found positive relationships between students' sense of community, connectedness and active participation and learning success and higher self-reported learning, as well as significant correlations between teaching presence and social presence with student self-efficacy (Sadera et al., 2009; Shea & Bidjerano, 2010).

Whether the concept of social presence is labeled as a psychological sense of community, nearness, or simply social presence, descriptions of the concept encompass feelings of belonging and connection among members of a group. These feelings occur in a trusting environment that allows for individual expression and projections of personalities. Such aspects of individual expressions include respect, sharing of personal stories, humor and information. Taken in part or together, these expressions allow and encourage expressions of emotions, feelings, beliefs, and values (Garrison et al., 2010; Lambert & Fisher, 2013; Ross et al., 2013; Rovai & Wighting, 2005; Sung & Mayer, 2012), and may encourage and foster the projection of personality or one's real self into the learning environment.

On the other hand, some research has suggested that students do not always want a sense of community. Drouin and Vartanian (2010) found fewer than half of students in traditional face-to-face classes, and less than a third of students in online courses

expressed a desire for SOC in their courses, which the researchers thought "astonishingly" low. However, the same study did find that students both in face-to-face and online courses who worked more hours outside the home than hours spent in the classroom desired SOC and felt more connected to classmates. This finding is important to consider when the non-traditional student may enter into the academic environment. Part time students or those students returning to academics after time spent in the work force make up a portion of non-traditional students who may choose to take online courses. Ross et al. (2013) discussed the need for online educators to alleviate alienation and distance by creating openings to achieve nearness for students at a distance as a means to find their way for personal engagement in an online community.

Wei, Chen, and Kinshuk's study (2012), which found that social presence has a high impact on learning interaction, asserts that the perception of social presence is essential and that learners feel comfortable in learning interactions only once social presence is achieved. In order for online instructors to support the development of perceived social presence in their online classrooms "social affordances" (as Allmendinger, 2010, quotes Kirschner & Kreijns, 2005), must be created to structure interaction and support motivation. Online instructors or facilitators may provide social affordances to encourage social presence with "communication media accompanied by awareness information that help users to feel present in a virtual environment with other users" (Allmendinger, 2010, p. 42).

Building on the aspect of social presence as an essential foundation to learning in the online environment, Shea and Bidjerano (2012) maintained that an absence of social

presence and interaction results in more limited cognitive presence. They concluded perceptions of the online environment as a poor medium for interaction lead to a need for distance learners to "compensate in the absence of effective interaction through better self-regulation" (p. 324). Students who perceived high social presence in a study of online discussions conducted by Swan and Shih (2005) expressed a belief they learned more than those students perceiving low social presence, crediting the interactions with classmates. The same study by Swan and Shih (2005) revealed that those students perceiving the greatest presence were more socially present and established presence in specific ways; "by sharing something of themselves with their classmates, by viewing their class as a community, and by acknowledging and building on the responses of their peers" (p. 124).

Wei et al. (2012) and Sung and Mayer (2012) conducted studies to identify factors that contributed to learners' sense of online social presence and developed models for measuring social presence. Sung and Mayer's study results are presented as a framework which might contribute to the successful design of technological, instructional and communication strategies with the intent to improve feelings of social presence in the online classroom. Through multiple statistical analyses, Sung and Mayer (2012) determined five factors of online social presence as: social respect, social sharing, open mind, social identity, and intimacy. Wei and others (2012) found the five main constructs that contribute to learners' online experience with social presence to be user interface, social cues, social presence (broken down as co-presence, intimacy and immediacy), learning interactions, and learning performance.

An active learning environment in which students are socially engaged in the learning process makes the material more relevant and significant according to a study by Offir, Lev, and Bezalel (2008). The study found that students remembered the material better, understood it and ultimately improved in their performance. It would then be for instructors to create opportunities for the development of online social presence in an effort to increase interaction between instructors and learners and between learners and learners. Wei et al. (2012) cited Bolliger (2004) stating that learning interactions between students are more likely when the learners perceive directness and intensity with others. When social presence is encouraged a creative dialectic of disagreement, and divergent voices is welcomed with the disagreements themselves serving as learning opportunities (Hufford, 2014). Close, connected, and bonded relationships with others in the online classroom should be the goal.

Before moving on to the concept of teaching presence, it is important to point out that a teacher or instructor in an online environment also needs to assume social presence behaviors as well in order to not only contribute to the sense of community, but also to lend to the impact of teaching presence. Those in the teaching profession who are used to "efficient, orderly, [and] carefully planned dispensing of officially ordained knowledge" (Hufford, 2014, p. 12) may find it challenging to open up and expose their individual identity to contribute to the overall sense of presence. However, in doing so, in exposing their social self, the real person, a teacher may build a stronger community of inquiry and achieve the goal of student success. Swan and Shih (2005), in a mixed method study, found strong relationships between perceived social presence of peers and that of

instructors and "an extremely strong relationship between the social presence of instructors and satisfaction with them . . . indicating how important the social aspects of teaching presence may be to students" (p. 129). Kozan and Richardson (2014a) found similar results that suggest the positive association between increases in teaching presence and increases in social presence.

Teaching Presence

In the Community of Inquiry theoretical framework, teaching presence is defined as designing, facilitating, and directing cognitive and social processes for realizing personally meaningful and educationally worthwhile learning outcomes (Anderson et al., 2001). Teaching presence encompasses developing curriculum, content, learning activities and assessments which support fixed or flexible pedagogical models to accommodate student needs, monitor and manage purposeful collaboration and reflection, and assure timely and appropriate dialog, information, and direction in a manner that establishes learner autonomy on both the individual and group level (Falloon, 2011; Garrison et al., 2010).

Garrison and Anderson (2003) identified three elements that give rise to teaching presence in online courses: design and organization, facilitating discourse, and direct instruction. Each element is comprised of a variety of behaviors teachers employ to construct learning environments and foster social and cognitive presence. Design and organization indicators include setting curriculum, designing methods, establishing time parameters, and utilizing the medium effectively. Indicators that represent facilitating discourse are identifying areas of agreement and disagreement, seeking to reach

consensus and understanding, encouraging, acknowledging or reinforcing contributions from students, setting the climate for learning, drawing in participants to promote discussion and assessing the efficacy of the process. The indicators that are associated with direct instruction include presenting content and questions, focusing and summarizing the discussion, confirm understanding through assessment and explanatory feedback, working through misconceptions, injecting knowledge and responding to technical inquiries and concerns (Garrison, 2011).

Within the category of "facilitating discourse" as an aspect of teaching presence, Anderson et al. (2001) conceptualized facilitating discourse as the means by which students are engaged in interacting and building upon the information provided in the course's instructional materials. Methods used by the instructor may include sharing meaning, identifying areas of agreement and disagreement, and seeking to reach consensus and understanding. Therefore, facilitating discourse requires the instructor to review and remark upon student comments, raise questions and make observations to move discussions in a desired direction, keeping discussion moving efficiently, drawing out inactive students, and limiting the activity of dominating students who may become detrimental to the learning of the group (Anderson et al., 2001). Lambert and Fisher (2013) asserted that in order for teaching presence to be effective in the management of facilitating discourse, explicit directions for course assignments and discourse expectations must be given to encourage direct involvement. Direct involvement in discourse promotes metacognitive awareness which affords students opportunities to be aware of the shifts in thinking, as well as growth in learning.

Questioning and collaboration are noted as effective measures to motivate students and promote communication skills and help to construct meaning (Lambert & Fisher, 2013; Offir et al., 2008; Rovai, 2004). Offir and others (2008) elaborated on the impact of questioning as a means to concentrate attention, reveal deep processing of information, and as a mechanism by which the student may estimate the extent of their mastery of the learned material. Questioning provides opportunities to review the material, which may improve understanding and enable self-regulation. Offir et al. (2008) cited Yopp's (1988) claims that questioning is an effective tool to encourage learning and serves as a building block to the beginning of thinking because questions motivate students, concentrate their attention, and reveal deep processing of information thus enabling them to evaluate and take control of their learning. Deep learning processes increase with teacher-student interaction as questions and answers support and encourage higher levels of thinking. Offir and colleagues' (2008) study found that high-level questions have a significant impact on a student's ability to evaluate information (deep learning processing), but not at the superficial level of knowing material. In line with questioning, coaching and feedback to online students supports the development of the CoI and serves to guide students along with complementing course activities (Stein, Wanstreet, Slagle, Trinko, & Lutz, 2013).

Attributed to Mehrabian, the concept of "communication immediacy" provides a theoretical framework for instructor immediacy as a form of interaction (Baker, 2010). This interaction increases the attractiveness of the sources and bridges the distance between student and teacher through a set of behaviors that create a perception of

physical or psychological closeness and fosters affiliation (M. Allen, Witt, & Wheeless, 2006; O'Sullivan et al., 2004). These behaviors can be physical or verbal (Baker, 2010) and, according to Moore's transactional distance theory (which asserts that the use of verbal interaction adapted into the distance learning environment can decrease the transactional distance as the increased use of dialog takes place), leads to an increase in learning success (Offir et al., 2008).

Verbally immediate behaviors effective in creating teacher immediacy include: "initiating discussions, asking questions, using self-disclosure, addressing students by name, using inclusive personal pronouns (we, us), repeating contacts with students over time, responding frequently to students, offering praise, and communicating attentiveness" (Baker 2010, p. 5). O'Sullivan et al. (2004) added approachability to this list, which is meant to convey to the learner that the teacher can be approached and is based on the physical as well as verbally related assumptions that individuals who smile are expressive, appear relaxed, address participants by name, ask questions, and self-disclose through personal anecdotes would be considered positive. Other verbal and physical techniques include:

- Using humor (sharing jokes or playful interactions)
- Expressiveness (using vocal inflection, punctuation, or colors)
- Accessibility (indicating availability, providing contact information, setting aside time)
- Informality (relaxed postures and/or use of slang, colloquialisms)

- Similarity (revealing interests, experiences, opinions, backgrounds, etc. that match those of the audience)
- Familiarity (frequent interactions)
- Attractiveness (presenting an attractive appearance or displaying appealing personality)
- Expertise (demonstrating knowledge)
- Self-disclosure (referring to experiences outside official role). (O'Sullivan et al., 2004, p. 473)

Regard or respect toward the learner combined with approachability provides a range of options for teacher immediacy to shape perceptions of closeness. These, in turn, can influence desired student outcomes, such as learning (M. Allen et al., 2006; O'Sullivan et al., 2004). Nonverbal cues also play a part in reducing physical distance and include "displaying relaxed postures and movements, using gestures, smiling, using vocal variety, and engaging in eye contact during interactions" (O'Sullivan et al., 2004, p. 469). Elements of immediacy that O'Sullivan et al. termed as "regard" (i.e., intimating that the teacher is approaching the learner in the online environment) are:

- Personalness (using synchronous, richer channels, remembering and using names, and incorporating knowledge of a person in interactions)
- Engagement (returning correspondence, attending carefully to messages, and inviting future interaction)
- Helpfulness (clear design of course). (p. 474)

Offir and others (2008) added politeness or considering word choices and practicing common courtesies in interactions. O'Sullivan and colleagues (2004) further suggested that linguistic cues "appear to be far more effective at generating positive evaluations of the message source, while presentational cues shape motivation for the course" (p. 484).

In much of the literature, teaching presence appears to be the catalyst that establishes a successful community of inquiry in the online learning environment. M. Allen et al. (2006) claimed a teacher's ability to improve an educational environment based on communication behaviors supports a major shift in perspective for studying classroom communication. Ke's (2010) quantitative study of teaching presence indicates that adult students will adapt their cognitive and social presence behaviors to the design, facilitation, and instructional features of an online course. The features of online discussion produce quantitatively significant, self-reported perceptions of cognitive and social presence (Ke, 2010). Kozan and Richardson (2014a) claimed teaching presence to be the factor bringing a community of inquiry together in such a way that it concurs with learning outcomes, learner needs, and learner abilities (Garrison, 2011).

When considering the importance of teaching presence, the student perception of quality online educational experiences needs to be recognized. Jaggers (2014) found students consistently described online education as a process of "teach[ing] themselves" the content. Jaggers' study also found that students had an aversion to taking online courses deemed as "important" to academic majors or "interesting" subjects because of weaker student-instructor interaction in the online environment. Students stated a preference for taking such courses in the face-to-face environment. R. Moore (2014)

found frustration experienced by students, as they perceived less learning due to more learning being done on their own. Rovai and Wighting (2005) supported this finding by stating that the "limited skills of some online faculty in presenting courses at a distance can erode affiliation and increase alienation among students" (p. 98). Similar observations are made by Jaggers (2014), whose research found that students did not want to risk missing the richer experience of the face-to-face classroom when taking a difficult course and felt that immediate question-and-answer context was necessary for success.

Establishing and maintaining a community of inquiry requires thoughtful, focused, and attentive teaching presence (Garrison et al., 2010). Greater efficacy of instruction in online environments to increase demonstrated learning requires certain behaviors from the teacher (M. Allen et al., 2006), as well as designing a stimulating course and challenging tasks to harness a student's intrinsic motivation (Wighting et al., 2008). Wighting et al. pointed out that optimizing course design should occur at every possible opportunity in order for students to increase motivation, and thus enhance their learning. Akyol, Vaughan, and Garrison (2011) found higher levels of direct instruction associated with higher levels of course integration. Ke's (2010) study, which supports the previous comments regarding the social presence of teachers, found that adult students experienced greater learning satisfaction from instructors who had a high online presence that included self-disclosure (social presence).

Ni and Aust (2008) used quantitative measures to examine the effects of teacher verbal immediacy and classroom community on students' perceived level of learning,

course satisfaction, and online discussion frequency. In the study, verbal immediacy behavior, which is defined as "text based computer mediated communication behaviors contributing to psychological closeness between teacher and student" (p. 481), and the sense of classroom community were studied under the guiding theories of Transactional Distance and Guided Didactic Conversation. Holmberg's Guided Didactic Conversation theory as it fits into online education stresses the need to capture the essence of "real conversation" (conversations in real time) with "simulated conversation" (internalized conversation by study of a text and the conversation style of the author; Keegan, 1993) to achieve an atmosphere of friendly conversations and a sense of belonging that will enhance learning motivation (Ni & Aust, 2008). What the researchers found of importance is that sense of classroom community is a significant factor in explaining the variability of satisfaction and perceived learning. Teacher verbal immediacy was the only significant predictor of online discussion posting frequency. The study also found students in person-oriented versus task-oriented courses perceived a higher degree of teacher verbal immediacy and sense of classroom community.

Examples of studies reinforcing positive aspects of teaching presence include examining the nature of online teaching, examining immediacy cues, and looking towards predictors of student success based on instructor-to-learner interaction, learner-to-learner interaction and the attendant learner sense of community in the online classroom based on teacher presence (Ke, 2010; Kuo, Walker, Belland, Schroder, & Kuo, 2014; O'Sullivan et al., 2004; Shea et al., 2006). Research conducted on teaching presence has pointed to a continuing and significant role in student satisfaction, perceived

learning, sense of community, student affective learning, cognition, and motivation (Garrison et al., 2010; Offir et al., 2008). Studies of perceived immediacy and student perceptions of teaching presence have shown immediacy to enhance students' approach behaviors, increase enthusiasm or commitment to a learning task, as well as influence perceptions of social and cognitive presences (M. Allen et al., 2006; Garrison et al., 2010). Findings such as these support positive correlations between instructor immediacy and student learning, as well as instructor immediacy and student cognition (Baker, 2010). Various authors have identified a wide range of specific teaching behaviors that affect immediacy, and in essence teaching presence, which contribute to student learning.

Teaching presence, which includes teacher immediacy behaviors, connects students to their academic environment. As perceived by the student, a teacher who establishes immediacy generates involvement in the course, develops positive relationships with students, supports positive learning outcomes, and increases and motivates the student's desire to perform in the classroom (M. Allen et al., 2006; O'Sullivan et al., 2004). This dissertation explored perceived effects of teaching presence in the synchronous online environment as it relates to social presence, cognitive presence and student satisfaction and presents evidence for a model for optimal online learning interactions based on tenets of teaching presence, which is needed and worthwhile for online educators (Miller et al., 2014).

Cognitive Presence

In the CoI framework, cognitive presence is defined as the extent to which learners are able to construct and confirm meaning through course activities, sustained reflection, and discourse in online environments. It is presented as consisting of the four phases of practical inquiry (Garrison, Anderson, & Archer, 2000b, adapted from Dewey, 1933), which begin with a triggering event and extend through exploration and integration to culminate in resolution. A triggering event is evocative and can exist in the form of an issue, problem, or dilemma that needs resolution. The triggering event gives rise to exploration, the inquisitive search for relevant information that can provide insight into the challenge at hand. Exploration may be accompanied with divergence or differing opinions, information exchange, suggestions, brainstorming, or intuitive leaps (Garrison, 2011). As ideas crystallize, there is a move into the third and tentative phase of integration, in which connections are made among ideas and there is a search for a viable explanation. Convergence, synthesis, and solutions may accompany integration. The deductive phase of resolution applies, defends, and/or tests the most viable solution. Practical inquiry is an educational experience relying on public and private thought and action as a social event and is a product of a process of reflection and discussion to construct meaning and confirm knowledge (Swan et al., 2009).

While cognitive presence requires the learner to be cognitively active, seeking solutions to learning problems (Kozan & Richardson, 2014a), a qualitative dimension shaped by purposeful and systemic discourse is necessary for cognitive outcomes (Garrison & Cleveland-Innes, 2005). Following the Practical Inquiry Model, cognitive

presence equates to learning as a function of an activity or activities that are shaped by discourse, shared interactions, and private thought and reflection (see Figure 2). Wei et al. (2012) verified a positive effect of learning interaction on learning performance, stating, "appropriate learning interaction can facilitate experience sharing, knowledge transfer, and relationship building among the participants in an online class" (p. 539).

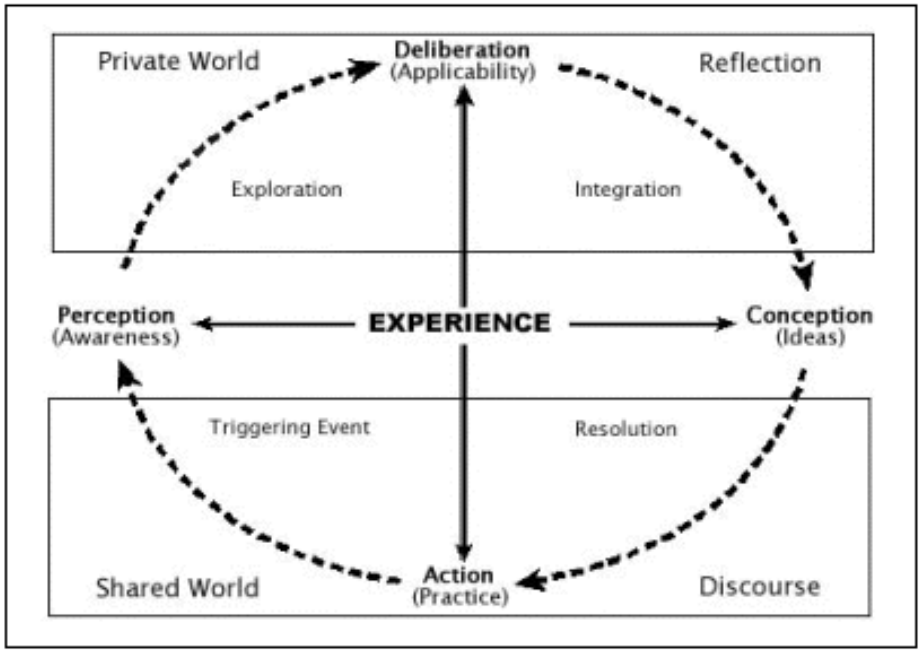


Figure 2. Practical Inquiry Model (Anderson et al., 2001) © 2000, D. R. Garrison. Used with permission.

In the CoI framework, cognitive presence takes into account social interactions that influence cognition and may be most effective where there is a strong sense of community (Rovai & Wighting, 2005). Studies have found positive relationships

between students' sense of community, connectedness, active participation, learning success and higher self-reported learning, as well as significant correlations between teaching presence and social presence with student self-efficacy (Sadera et al., 2009; Shea & Bidjerano, 2010). Kuo et al. (2014) found that student satisfaction is strongly related to cognitive learning outcomes.

Interactions Among the Presences

The CoI framework focuses on the learning processes rather than a learning outcomes framework (Kozan & Richardson, 2014a), and provides the basis for identifying and evaluating the interconnected and interpersonal behaviors in online education settings (Arbaugh et al., 2008; Miller et al., 2014). Each type of presence—teaching, social, and cognitive—in the CoI framework plays an integral part in the whole, and the impact of each presence can change based on a wide array of variables which may come into play in the educational process. As seen in Figure 3, learning occurs at the intersection of the presences, therefore understanding how the presences relate to each other is important (Kozan & Richardson, 2014a).

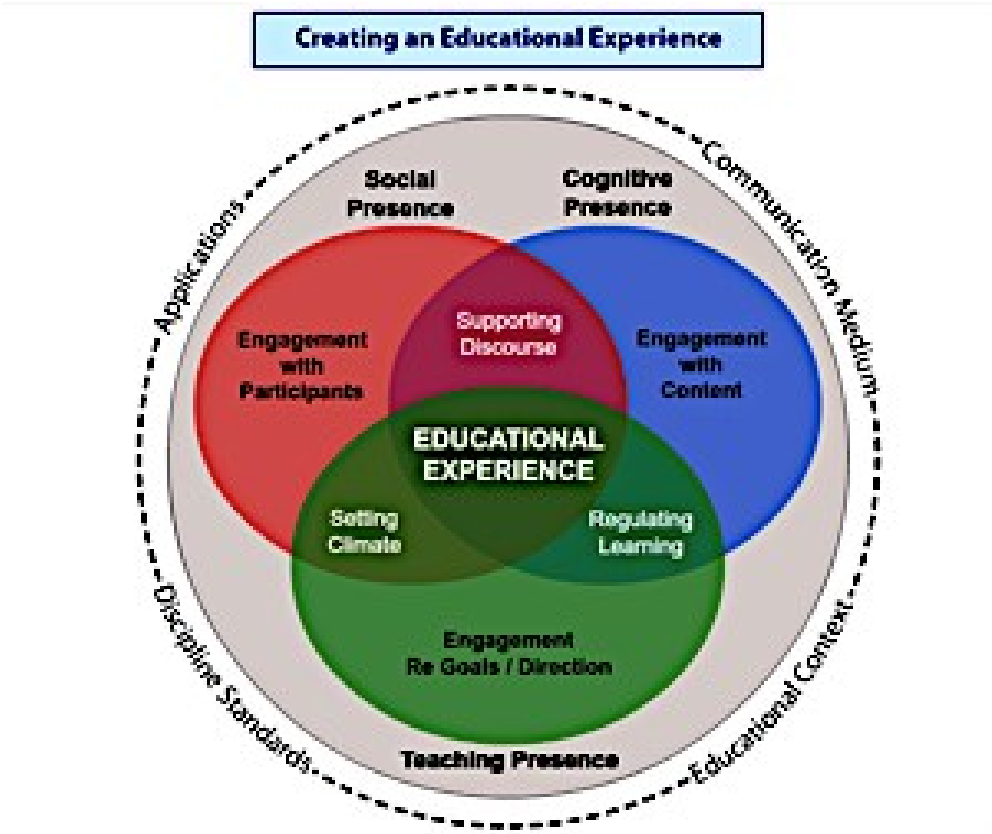


Figure 3. Community of Inquiry adapted interactive flash animation from Community of Inquiry website: https://coi.athabascau.ca/. Used with permission.

In much of the literature, the facilitative guidance of teaching presence stands as the primary presence in initiating social presence which acts as mediator in establishing the context between teaching presence and cognitive presence as well as the context in which cognitive presence can prosper (Kozan & Richardson, 2014b). Shea and Bidjerano (2008) supported this assertion in a structural equation model based on data from over 5,000 online learners "confirming that variance in student judgments of their own cognitive presence can be modeled from ratings of instructor teaching presence mediated by their assessment of social presence in their online courses" (p. 1722). Lambert and

Fisher (2013) conducted a mixed methods study which examined students' perceptions of social, cognitive, and teaching presence in an online learning community and found that teaching presence affects social and cognitive presence and that social presence significantly predicts perceptions of cognitive presence. The result is that social presence is the mediating variable and teaching presence the driving force creating and sustaining social and cognitive presence in online learning environments.

Baker (2010) found a statistically significant correlation between instructor immediacy (a concept directly related to instructor social presence) and social presence. Garrison et al. (2010) supported this notion of the integration between teaching presence and social presence with the statement:

> Establishing causal relationships among the presences supports the hypothesized mechanism that teaching presence is essential in establishing a sense of social presence by engendering an atmosphere of trust, open communication and group cohesion. (2010, p. 35).

Kozan and Richardson (2014a) asserted high levels of teaching presence are closely related to high levels of cognitive presence. This assertion coupled with the preceding quote point out that an increase in teaching presence in relation to an increase in social presence can have a direct effect on cognitive presence, highlighting the fact cognitive, teaching, and social presence all feed off of the other. Lee's (2014) results found the higher the social presence the greater the quality of cognitive presence with social presence supporting cognitive presence "through the ability to instigate, sustain, and support critical thinking in a community of learners" (p. 42).

While Kozan and Richardson's (2014a) study suggests that teaching presence has a limited effect on the cognitive presence-social presence relationship, other findings indicate that the multi-dimensionality of the Community of Inquiry promotes significant inter-relationships among the various presences—with teaching presence and social presence forming a strong interaction, as well as providing a conduit to cognitive presence. To build upon the effects of the presences Offir et al. (2008) "conjecture that effective teaching presence and positive social presence should serve as sources of social persuasion and positive affect supportive of self-efficacy" (p. 1724).

In M. Allen et al.'s study, teacher immediacy behaviors are found to be rewarding and may serve as "reinforcement for the attentive behavior, feedback, and interaction from the student that increase affective, cognitive and behavioral learning" (2006, p. 22). Instructor presence and immediacy have been shown to enhance motivation and cognition, which in turn enhances the affective and behavioral goals of education by including activities or questions, encouraging dialog, and providing scaffolds for example (M. Allen et al., 2006; Baker, 2010; Lambert & Fisher, 2013; Offir et al., 2008). Rovai and Wighting wrote of the importance of a strong sense of community, which promotes a "common knowledge pool," and a "community spirit" which is "fostered through social interactions facilitated by a skilled instructor" (2005, p. 100).

According to Rovai and Wighting (2005), intimacy in the online classroom is developed when individuals set aside the focus on their own identity and voice, and "invite the voices of others" and it is the online faculty who serve in the key role of promoting this strong sense of community via their caring relationships with students and

a strong teaching style (pp. 107, 108). Sung and Mayer (2012) mentioned several times that the sharing of personal information, stories, and experiences between the online instructors and the students in an open and hospitable atmosphere in which feedback and constructive opinion are encouraged leads to an awareness of identities. Hospitality, as presented by Palmer (1993), encompasses the notion of receiving each other and creating a community in which truth can form and reworking from the truth is borne. The concept of "intellectual hospitality," identified by Dewey and discussed by Hufford (2014) nicely ties together the interdependencies of the presences:

> Intellectual hospitality is a disposition available to both teacher and student. It is a prerequisite for—and makes possible—"a pedagogy of presence." It allows both the individual "I" and the communal "we" to exist simultaneously. When shared intellectual hospitality is achieved in the classroom, a "we" is birthed into existence, but the "I" also remains "alive and well." (p. 17)

The review of the literature makes very apparent social presence and teaching presence have a strong tie to each other with teaching presence perhaps being the driving force for social presence. However, the interaction of social and cognitive presence is under-researched with a lack of studies on the topic of the nature of interrelationships between the presences (Kozan & Richardson, 2014a; Swan et al., 2009). Swan and Shih (2005) suggested that further investigation into perceived presences effect on learning as they relate to real learning is in order as well.

Areas to Consider for Future Research on CoI

The literature suggests that an area of research in need of further attention is the identification of online instructional strategies which are collaborative and facilitative and foster a sense of community, while promoting academic achievement and retention among culturally diverse students (Rovai & Wighting, 2005). An area of emerging significance in the research on online teaching presence is "virtual 'visibility' of the instructor as perceived by the learner" (Baker, 2010, p. 5). Most notable to this researcher and dissertation is the importance of understanding the role of the presences in online education, notably teaching presence, and how synchronous technology may be pivotal in establishing the presences. Summed up by Swan and others (2009) as they discussed asynchronous online discussion as a venue to: "intervene directly to correct misconceptions, provide relevant information, summarize the discussion and/or provide some metacognitive awareness" (p. 13), the intent of this research was to examine the synchronous online environment as a worthy, relevant and useful educational tool to establish teaching, social and cognitive presence.

Technology and CoI

> Effectiveness is a product not of a particular online learning environment or piece of courseware but rather of a system of variables including the way in which that online product is used, the context of use, and the nature of the learner. (Means, Bakia, & Murphy, 2014, p. 183)

In order to effectively create and sustain social, cognitive, and teaching presence in the online environment many factors come into consideration: the technological tools

used to teach and those available to the learner; the content provided to the learner; the training and experience of the teacher in the online environment; the experience and comfort of the learner in the online environment; the motivation and self-regulation of the learner; as well as the willingness of teachers to extend themselves to ensure teaching presence and teaching immediacy are embedded into the culture of the online classroom. With the absence of the familiar conventions of student to teacher as well as student to student contact and immediacy of the face-to-face classroom, emphasis must be placed on the need for online students to possess and engage in self-regulated learning behaviors to be successful in online courses as well as the instructor to possess the skills and behaviors needed to successfully teach in the online environment. Whereas this study did not focus on self-regulated learning behaviors, it may be hypothesized at some point in future research that building a virtual community of learners in a synchronous environment may promote better self-regulation for online learners.

Communication between the learner and the instructor transforms common knowledge into personally relevant or meaningful knowledge. Communication may be verbal as well as nonverbal. Nonverbal communication such as signals to support discussion flow and turn taking are important for an instructor to master. Gesturing can provide "cognitive support" as an aid to conveying information and other forms of nonverbal communication (such as smiling, frowning, raising eyebrows, laughing, etc.) can express emotions and attitudes that shape the learning environment (Allmendinger, 2010). The medium in which the communication is employed, described by Short et al. (1976) as "the system of constraints on the physical signals available in any particular

situation" (p. 43), and how well the medium is used matters greatly in the acquisition of knowledge in the distance learning environment (M. G. Moore & Kearsley, 2012). This study examined in part how verbal and nonverbal communication exhibited by the instructor in the synchronous environment affected teaching, social and cognitive presences as well as promoted student satisfaction in the online classroom.

Asynchronous Versus Synchronous

The online environment in which social, cognitive, and teaching presences are fostered may be synchronous or asynchronous. M. G. Moore and Kearsley (2012) noted the value of individual dialog inherent to the asynchronous environment, which exists between student and instructors as a one to one process, personal to the student and useful in the application of new knowledge. While asynchronous online learning can establish a positive sense of community online, interaction has been noted to be more "distant," less "personal," less "immediate," less "detailed," or less "solid" online according to students in a study conducted by Jaggers (2014) who stated that they felt as though they were "teaching themselves." Tucker and Neely's (2010) study found that student success in an online, self-directed environment could be difficult for students to achieve when they lack any real life experience with the concepts being studied, as some students had trouble placing theory into a meaningful context. Swan et al. (2009) noted that in the practical inquiry cycle, asynchronous discussion rarely moves beyond exploration. Additionally, the spontaneity and occasional excitement found in a face-to-face classroom are not typically present in an asynchronous classroom (M. G. Moore & Kearsley, 2012).

The flexible environment of an online course may be a preferable classroom for the intrinsically motivated student (Wighting et al., 2008). However this learning environment, which separates the student and instructor in time and space, can perhaps result in feelings of isolation. Feelings of isolation adversely impact perceptions of learning and the actual learning (R. Moore, 2014). It has been posited (Rovai & Wighting, 2005) that the learning experience can be structured in ways to dispel feelings of isolation and promote feelings of connection to a valuable and worthwhile shared experience within the virtual classroom. Rovai and Wighting stated, "the issue is not whether producing self-directed learners is an appropriate goal, but rather how to best achieve this goal in terms of course design and pedagogy without eroding affiliation and increasing social isolation" (p. 106).

Shea and Bidjerano, in their study of self-regulated learning in blended versus online environments, found "help seeking behavior [to] appear more prevalent when students are afforded opportunities for face-to-face interaction" (2012, p. 323). Baker (2010) indicated a weakness in the online environment for instructors to convey and students to interpret verbal immediacy behaviors as well as they could in a face-to-face learning environment. However, M. Allen and others (2006) asserted the greater the immediacy in the online environment, the more likely there is an increase in the desire of the student to perform the roles customary for the student in the classroom.

Teacher immediacy in the online environment can influence student's perceptions of closeness, improve student learning outcomes and increase motivation by the use of cues used in the face-to-face environment (M. Allen et al., 2006; O'Sullivan et al., 2004).

The use of multiple cues that are verbally rich (words), along with non-verbal cues such as facial expressions, gestures, light, volume, tones and signs (Wei et al., 2012), enhance teacher presence and promote learner interaction. Ke's (2010) study found through interviewing adult students that effective and desirable course facilitation methods by online instructors were social presence (demonstrated through self-disclosure) and fair attention to individual student's discussion postings. Therefore, teacher presence in the online environment is in part established by mediated immediacies, communication cues used to shape perceptions of psychological closeness, that "convey affiliation and foster relationships via communication technologies" (O'Sullivan et al., 2004, p. 468).

According to Sung and Mayer (2012) intimacy and immediacy are the components of online social presence, which are affected by the characteristics of the medium and the user's perception of them. Baker (2010), who looked at both synchronous and asynchronous course types, found evidence that incorporating synchronous activities into the online learning environments supports positive relationships between immediacy, presence, student affective learning, cognition, and motivation. In a comparative research study which examined language learning between four types of synchronous computer mediated communication, Yamada (2009) found synchronous communication utilizing both image and voice, had an effect on the perceived consciousness of natural communication. The findings suggest that an enhanced perception of presence found in the use of image and voice contributes to problem solving communication similar to the face-to-face environment.

Synchronous Online Environments

This research focused on the use of synchronous technology as a means of promoting and establishing social, cognitive, and teaching presence in the online classroom with the intent of increasing and enhancing student learning, success, and satisfaction. Synchronous technology offers a live alternative to interacting with the content of a course and may use a variety of channels to do so such as chat communication, video, audio, shared screens, and interactive whiteboards. This availability of multichannel communication to deliver relevant information allows for improvement of transmitting and detecting stimuli that may be readily apparent in a classroom environment (Short et al., 1976). The use of virtual technology tools may enable the opportunity to establish open and unstructured dialog thus lowering the extent of Transactional Distance (M. G. Moore & Kearsley, 2012). Studies focusing on the use of synchronous communication demonstrate these tools can help break down a sense of isolation, encourage and assist in collaborative practice and interaction, and increase personal and cognitive participation (Falloon, 2011).

Schullo, Hilbelink, Venable, and Barron (2007) claimed using synchronous technology can enhance a sense of contribution, motivation, and engagement, as well as support group identity and community formation. Additionally, Schullo et al. contended synchronous tools allow instructors to assess students' level of knowledge and thereby allow for the tailoring of course material. By polling faculty the Schullo study presents the following desired pedagogical goals of synchronous technology:

- Providing clearer instruction on difficult topics;

- Allowing students time to practice concepts while the instructor is immediately available for feedback;
- Pushing content from websites for immediate discussion and problem solving;
- Allowing small groups to interact in real time to solve problems and work on projects;
- Focusing students on the content and guiding them through it in an efficient manner;
- Growing a learning community;
- Encouraging debate and discussion in a natural manner with voice rather than reading text, and;
- Assessing the status of students' content knowledge and understanding through questions and inflection of voice. (Schullo et al., 2007, p. 336)

Synchronous tools allow instantaneous feedback as instructors provide timely assistance for students in structuring learning and identifying priorities (Falloon, 2011). This idea of timely feedback supports Stein et al.'s (2013) study, which looked at continuous coaching and feedback as an aspect of teaching presence and social presence among group members and found that these increased the frequency of higher-order cognitive presence. Schullo, as quoted by Falloon, referred to feedback as an instructional method that can be effectively facilitated using synchronous technologies to assess levels of knowledge and understanding with "just in time clarification and information" (Falloon, 2011, p. 189).

Using feedback in the synchronous online classroom is a facet of teaching presence that fits within direct instruction and as a source of interaction between teacher and learner. Guidance at points of content application and work evaluation, along with immediate feedback, is the desired learner-instructor interaction for most learners (Kuo et al., 2014). Stein et al.'s (2013) research on feedback provides evidence pointing towards the effectiveness of feedback as a strategy for interaction. Immediate feedback maintains motivation by keeping learners engaged and encouraged and can also provide instruction at the point of need, such as correcting errors. Feedback can also enhance and facilitate student performance by helping develop effective task strategies. Ke (2010) found evidence of learners missing instructor feedback while viewing online lectures in a PowerPoint format. As expressed by a student, "if you got a question on the materials, there was nobody responding right away" (Ke, 2010, p. 814). Díaz, Swan, Ice, and Kupczynski (2010) found that feedback is perceived as theoretically important, but not implemented in direct instruction, as students desired and suggested instructors place a higher priority on timely feedback. Stein et al. (2013) found similar results of feedback as a means to help in the evaluation of content understanding and its actual presence in the course, as well as immediate feedback helping learners meet their expectations and providing motivation to learn.

The value of synchronous access to online learning is supported by Shea and Bidjerano's (2010) claim that networked interaction per se is insufficient to develop a community of active, self-regulated, and reflective learners. While technology itself does not equate to educational improvement, the quality of instruction is not necessarily

hindered by technological constraints (Larreamendy-Joerns & Leinhardt, 2006). Larreamendy-Joerns and Leinhardt pointed out that student engagement, visioning of needs and wants of the students, and the subject matter expert can override media limitations. Additionally, Kuo et al. (2014) found learners to be moderately satisfied with online synchronous sessions, with the combination of learner-instructor and learner-learner interactions being significant predictors of student satisfaction pointing out that internet self-efficacy may not be a driving force for student success in the online learning environment. Synchronous tools may enhance social, teaching and cognitive presence while alleviating the need to be solely dependent on online skills necessary for success in the asynchronous environment.

Short and colleagues (1976) hypothesized users can sense a medium's technology capabilities and will avoid certain a technological medium depending on the level of interactivity an interaction requires. Considering online synchronous learning, Wei et al. (2012) and Sung and Mayer (2012) supported the notion of the characteristics of social presence occurring in the computer-mediated environment with participants feeling, perceiving, and reacting intellectually. Giesbers et al. (2014) asserted synchronous communication may enhance social presence in the online environment as it provides direct personal social interactions, feedback, and monitoring of activity thus creating the possibilities for the sense of competency and autonomy for the learner. In Yamada's (2009) study virtual learning environments were revealed to promote social presence affectively by enhancing the learning experience and having an effective result on reflective learning.

Synchronous technology tools have many advantages which may help an online student achieve comfort and alleviate a student's sense of alienation in the asynchronous environment by providing real time communication, immediate response, decrease in travel time, and by providing access to campus based learning support services (Kuo et al., 2014; Rovai & Wighting, 2005). The more comfortable a student feels in a virtual learning space, the more successful a student can be diminishing perceptions of distance and increasing learner autonomy and quality dialog (Falloon, 2011; R. L. Moore, 2014).

Tucker and Neely's (2010) paper examines the effectiveness of Adobe Connect as a synchronous tool to support the Socratic Method of teaching in an online environment. Findings from the study indicated that students accessed the virtual classroom quickly and with little technical trouble and that the tool was effective and easy to master within a short period of time. In addition, the use of polls proved to be an effective real-time assessment tool for faculty to monitor student comprehension, and the sessions themselves were an effective alternative to engage in the Socratic Method in an online environment. Giesbers et al.'s (2014) research on students' use of asynchronous and synchronous communication points out positive effects on student motivation in asynchronous communication via participation in synchronous communication and web-conferencing. The synchronous platform served to enlarge personal dynamics, which spilled over into increased engagement in asynchronous communication.

In considering the use of technology in online learning, the following quote highlights what is necessary for success in the classroom and what this researcher deems vital in the realm of online education:

> When teachers' knowledge of themselves, their students and their professional skills do not align with the contexts in which they work, there is little energy or psychic space left for being present to the learner and his learning. Both teacher and students are then deprived of creative exchange and connection between themselves, subject matter and context. (Rodgers & Raider-Roth, 2006, p. 273)

This dissertation attempted to study, in part, how synchronous technologies can best be used to develop community and ultimately online learning success, which as Sadera et al. (2009) pointed out, is a need; "however, a need exists to study how sense of community is related to students' online learning success. Further analysis between these variables and the technologies that could be best used to develop this community are needed" (p. 282).

Media Richness—Using Synchronous Technologies

Mehrabian's (1971) writings on immediacy support the importance of a media rich environment with the use of communication channels as the means to convey thoughts and feelings among participants in a given space. Daft and Lengel's (1986) definition of media richness, as quoted by Wei et al. (2012), stated, "the measure of media richness include the medium's capacity for immediate feedback, the number of cues and channels available, language variety, and the degree to which intent is focused on the recipient" (p. 533). Media-rich interactive and synchronous technologies may assist in breaking down isolation barriers, which in turn improve the learning experience (Falloon, 2011). For example, the use of streaming video in the synchronous environment allows for participants to view the instructor's (or fellow student's) physical

appearance, a cue which may prove useful in establishing comfort in online interactions where participants are strangers, or not familiar with each other (Short et al., 1976).

Larreamendy-Joerns and Leinhardt (2006) pointed out the usefulness of synchronous technologies as a means to imitate the vividness of classroom experiences "punctuated by gestural language and have a voice and a temperament . . . that allow[s] personalization of what otherwise would be pure content" (p. 585). However, the potential that resides in online learning is not a matter of the technology itself, as even the most dynamic and robust technology-mediated experiences are meaningless in the absence of capable instruction; instead, the potential resides in the overall practices that are brought with it to prompt the educational experience (Larreamendy-Joerns & Leinhardt, 2006; Shea & Bidjerano, 2009b). Representing a qualitative and transformative shift in how teaching and learning are approached, this sentiment reinforces the Community of Inquiry in the online environment as an interconnection of social, cognitive, and teaching presences "integrated in a coherent and purposeful manner that initiates critical discourse and which purposefully moves toward meaning and understanding" (Garrison, 2009, p. 98).

CHAPTER III

METHODS

This study consisted of three areas that examined the effectiveness of the online synchronous environment: (a) in establishing social, cognitive, and teaching presences; (b) what students' perceptions of the presences are in the online synchronous learning environment; and (c) what aspects of teacher presence support and enhance social and cognitive presence. This study was grounded in the Community of Inquiry theoretical framework and contributes to the framework by investigating the use of synchronous technology in the online environment as a means to promote and enhance social, cognitive, and teaching presence. This chapter describes the study design including the quantitative measures used as well as the qualitative measures and the importance of both as they pertain to this study, details of the sample of participants and the instruments used for the collection of data, an account of the procedures, and the intended analysis of the collected data.

The study answers these primary research questions:

1. What is the difference in the perception of social, cognitive, and teaching presence between students who participate in synchronous online learning environments and students who view recordings of synchronous online learning sessions?
2. How does the synchronous online learning environment affect social, cognitive, and teaching presence?

3. What aspects of teacher presence in an online synchronous environment support and enhance social and cognitive presence?

Research Design

To answer the research questions, the researcher utilized a mixed method research study. Combining research strategies in the study expanded parameters measured to promote a more complete picture of the overall scope of the research (Tashakkori & Teddlie, 2003). This study used the convergent parallel design as a mixed methods design. In a convergent parallel design study, qualitative and quantitative data are collected during the same phase of the research process and then the two sets are merged into an overall interpretation. Purposes of this design method include "illustrating quantitative results with qualitative findings, synthesizing complementary quantitative and qualitative results to develop a more complete understanding of a phenomenon, and comparing multiple levels within a system" (Creswell & Plano Clark, 2011, p. 77). The use of both quantitative and qualitative data provided meaningful results to answer the research questions as well as provoked thoughts on the concepts in which the study is grounded.

Quantitative measures were employed to examine the first research question, which determined if there were the differences in perception of social, cognitive, and teaching presence between students who participated in synchronous online learning environments and students who viewed recordings of synchronous online learning sessions. Qualitative measures were used in the second research question, which examined how participation in synchronous online learning environments affects social,

cognitive, and teaching presence. The third question, which examined aspects of teacher presence that support and enhance social and cognitive presence, used quantitative measures to examine the phenomenon. As this study design examined the concepts of social, cognitive, and teaching presences in the online synchronous environment both qualitatively and quantitatively, the researcher used parallel questions for data collection (Creswell & Plano Clark, 2011).

Quantitative Design

This study incorporated a reduced form of the original Community of Inquiry Survey (see Appendix D), a Likert scale survey composed of 21 questions. Nine questions addressed facets relating to teaching presence. Five questions probed social presence and 7 questions regarded cognitive presence. Each of those categories is broken down by the presence indicators, which are as follows:

Teaching presence: design and organization (3 questions); facilitation (4 questions); direct instruction (2 questions);

Social presence: affective expression (2 questions); open communication (1 question); group cohesion (2 questions);

Cognitive presence: triggering event (2 questions); exploration (2 questions); integration (1 question); resolution (2 questions).

The survey began with a statement of intent to measure the three presences of the Community of Inquiry model based upon the participant's experience with the synchronous online session. A definition of the Community of Inquiry theoretical framework and an explanation of each presence were included. The survey was available

online using the Qualtrics online survey tool. At the conclusion of the online synchronous session the survey was pushed to the participants (opened in a browser on the participants' computers) as well as presented to the participants by means of a web link. Additionally, the researcher provided the class instructor with the web link to the survey to share with participants who then viewed the recording of the synchronous online session. The survey included a required question of how the participation in the session occurred: attended live or watched the recording of the session.

The CoI survey as a measurement tool has been validated through many studies including Arbaugh et al. (2008), who used principle component analysis to support the construct validity of the three presences; Bangert (2009) used both exploratory and confirmatory factor analysis finding a fit between the three factor model and the three factor population model; Díaz et al. (2010) implemented principle component analysis of multiplicative scores by using course ratings scores and survey data; and Swan et al. (2008) statistically validated the instrument using factor analysis to support the construct validity of teaching, social, and cognitive presence and the interdependent nature of the presences as set forth in the foundation of the Community of Inquiry theoretical framework.

Qualitative Design

The qualitative portion of this study included three points at which qualitative data were collected. The first point of collection was embedded within the Community of Inquiry survey, where the researcher incorporated a total of four open-ended questions. The open-ended questions were placed at the conclusion of the teaching presence section,

the social presence section, the cognitive presence section, and at the conclusion of the survey. The open-ended questions were presented as "what are your impressions or comments" in reflection to the explanation of the presence. For example, the open-ended question for teaching presence was: "What are your impressions or comments on ways in which the librarian conducted this session to promote engagement, a sense of community and learning opportunities?" The open-ended question at the end of the survey allowed the participants to add further comments and feedback on the overall experience.

A second source of qualitative data was an analysis of the chat transcripts of approximately 5 to 10 synchronous online sessions using the Community of Inquiry Coding Template (see Appendix E). While reviewing the recordings of the synchronous sessions, the researcher entered indicators of the presences into the coding template and noted what the responses were in reference to what was occurring in the session at the time the chat was entered. For example, in the chat transcript a series of numbers may have occurred in response to a question posed by the librarian (researcher) conducting the session. These numbers would have been placed in the category of "integration" under the element of cognitive presence as a reflection of the students integrating how to interpret an aspect of search results.

The third qualitative data source for this study was participant feedback. Feedback may have come from students who participated in the live session or viewed the recorded session and provided feedback on the experience (live or recorded) to their instructor or to the researcher. Feedback provided was in the form of discussion forum postings, emails to the instructor, or emails sent directly to the researcher. Based upon

prior experience of receiving participant feedback, the researcher expected to receive roughly 25 instances of feedback. A limitation of the feedback may have been that it was from individual students in a single session; however, the feedback provided valuable personal reflections of the synchronous online experience from students who participated in the live session as well as those who viewed the recording of the session.

Population/Sample

Participants in this study were students from a large, multi-campus community college in Northeast Ohio. At this community college the average age of the students was 29 years old with students ranging in age from 15 to over 75 years old. At this college sixty-one percent of the students were women, 39% of the students were from minority ethnic groups, and 65% of the students studied part time. The participants in this study were enrolled in an online, blended, or web enhanced course and accessed either a live synchronous online library research session (n = 104) or viewed a recorded synchronous online library research session (n = 65). The synchronous online library research sessions were conducted by a faculty librarian (i.e., the researcher) and served to supplement their asynchronous online, blended learning, or web-enhanced course with instruction on library resources. The courses in which students were enrolled included but were not limited to: English composition or themed English (such as British Literature), Psychology, Business Administration, Economics, History, Women's Studies, Dental Hygiene, Dietetic Technology, or Nursing.

In order to obtain suitable data collection for meaningful results, an anticipated sample size for this study was at least 75 participants for the quantitative survey data. In

order to obtain at least 75 participants to complete the survey for this study, the researcher requested participation from instructors teaching online, blending learning, or web enhanced courses to recruit students. This was achieved via an email request one week prior to the beginning of the Spring 2016 semester with a follow-up email one week into the semester. Emails were sent to approximately 75 instructors encouraging participation in a synchronous online library session. Instructors choosing to have their students attend an online synchronous library session were provided with instructions for accessing the virtual classroom.

All students were required to provide consent to participate in the online synchronous library session as chat transcripts were analyzed. Prior to entering into the live session students were presented with a screen of information regarding the study along with assurance that no names would be used in the analysis and no participant would be linked to any identifying information. Students 18 years and older who agreed to participate entered the live session. Those who did not agree to participate logged out of the session. The librarian (i.e., researcher) had the ability to log off anyone that chose not to participate. Once all consent was given, the live session began and the recording device was turned on. At this point the librarian (i.e., researcher) blocked entry to the session therefore controlling for participants who may have tried to enter the session after the consent screen had been removed.

Upon completion of the online synchronous session a link was provided to a recording of the session and to the survey. An online consent form provided participants information on the intent of the study, the time it would take to complete the survey, as

well as assurances that all information collected would be anonymous. Consent to participate in the study included the following statement to comply with no minors participating: "If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the 'I Agree' button to begin the survey" (see Appendix C). The recording and survey link were sent to the class instructor to share with students. Students who did not attend the live instruction were able to view the recorded session and complete the survey on their own time.

While some instructors may have chosen to offer extra credit to students who participated live or viewed the recorded session, the online synchronous sessions provided support and guidance on projects, papers, and assignments that comprised a large percentage of student grades. Participation in the sessions and completion of the survey were presented by the instructor of the course and the librarian conducting the sessions (i.e., the researcher) to the students as important, worthy, and very useful.

Procedures

To obtain participants for the study the researcher sent instructors teaching distance, blended learning, or web-enhanced courses email notifications offering a virtual library instruction session prior to the beginning of the semester and a follow-up email one week into the semester. Instructors teaching the distance, blended, or web-enhanced courses were identified through the Spring semester course catalog. Those teaching English, History, Psychology, Business Administration, Women's Studies, Dental Hygiene, Dietetic Technology, and Nursing were targeted. Additional disciplines were welcome to take advantage of the synchronous online library sessions and may have been

solicited by word of mouth or referral. An example of an email invitation to participate in a synchronous online library session is provided in Appendix C.

Once an instructor agreed to have his or her course(s) participate in a synchronous online library session, a date and time were scheduled for the session and a virtual classroom was created in the Adobe Connect online virtual meeting space. A link to the virtual classroom along with brief instructions on the procedures to enter the environment and what to expect in the virtual session were sent to the instructor to share with students. The brief instructions also included information pertaining to the session being a part of a research study and that consent to participate would be necessary. A few days prior to the scheduled session, the researcher sent the instructor a reminder of the upcoming virtual session and requested any materials needed to conduct a successful and meaningful session, which may have included assignments, projects, or the level of researching needed (see Appendix B for complete lesson plan). Each session was recorded, and immediately following the session, the link to the recording was provided on Adobe Connect. The instructor of the course was emailed the link to the recording as well. Students who viewed the recorded session received access to the survey link from their instructor.

Data collection took place throughout the Spring semester of 2016 beginning in February and ran to mid-April. Statistical measures were employed one to two weeks following the last online synchronous session taught. This allowed for those students who could not attend the live online synchronous sessions time to view the recordings and participate in the survey. Coding of the chat transcripts occurred throughout the

semester as sessions were taught. The open-ended feedback was gathered and analyzed throughout the semester as well and served to enhance the findings of both the coding and the quantitative measures. Figure 4 presents a visual representation of the study procedures.

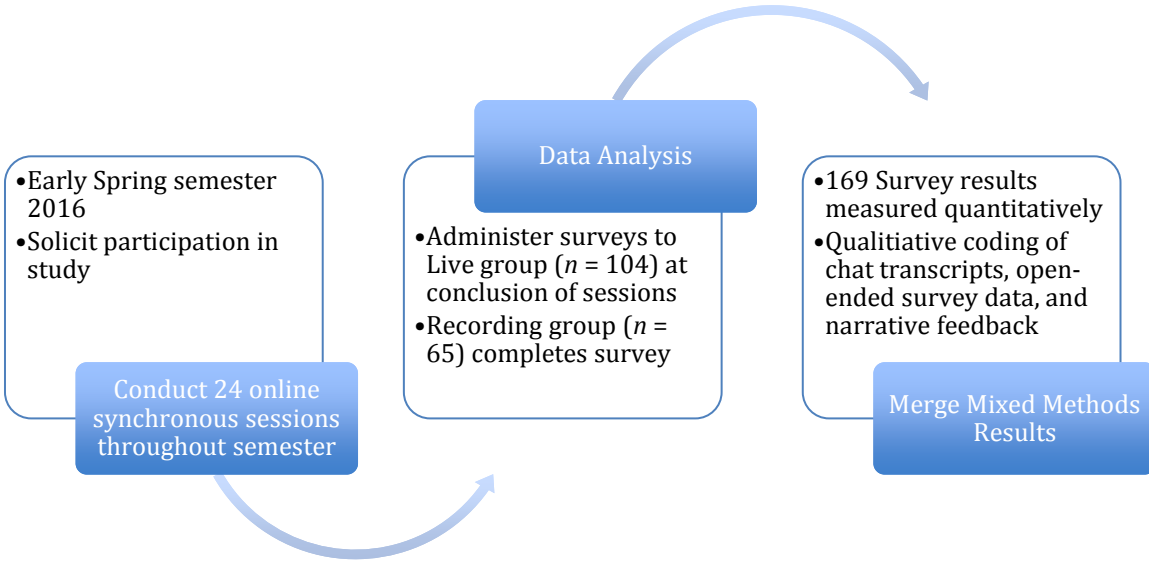


Figure 4. Procedures of the study

Data Analysis

"The doing of analysis is fluid and generative" (Corbin & Strauss, 2008, p. 160).

In a convergent parallel design the data is collected concurrently, analyzed separately, and then merged for an overall interpretation. The survey data consisted of both quantitative and qualitative responses to the synchronous online session whether the study participants attended live or viewed the recording of the session. The qualitative analyses of chat transcripts were drawn from participants who only attended the live

sessions. The qualitative analyses of narrative feedback came from participants that both attended live as well as viewed the recording. The researcher attempted to get as equal a sample size as possible, but had no control over participants selecting to participate live or asynchronously by viewing the recording of the session.

Quantitative Analysis

Quantitative data for the first question of the study were collected using the CoI survey via an electronic survey method using Qualtrics online survey data tool. The first research question, what is the difference in the perception of social, cognitive, and teaching presence between students who participate in synchronous online learning environments and students who view recordings of synchronous online learning sessions, was examined using a series of Independent samples *t*-tests. The third research question, what aspects of teacher presence in an online synchronous environment support and enhance social and cognitive presence, was examined using quantitative measures. A series of correlation analyses were run on the Community of Inquiry Survey data from all of the participants in the study who attended live online synchronous sessions as well as those who viewed the recording of the session. Multiple linear regression analyses was to be used to examine the relationship between the predictor variables associated with teaching presence and the outcome variables of social presence and cognitive presence.

Qualitative Analysis

Qualitative data were used to answer the second research question: how does the synchronous online learning environments affect social, cognitive, and teaching presence? Chat transcripts from participants in the live sessions, open-ended survey

responses from both groups of participants, and narrative feedback gathered from study participants were used for the qualitative analysis.

The use of the Community of Inquiry coding template (see Appendix E) was the first step in the process to code the open-ended feedback, chat transcripts, and narrative feedback addressed in this research question. This template allowed for an initial examination of the data by considering the presences and the subscales of each presence. Looking for indicators (words and phrases) that contributed to the meaning and observation of each subscale within the data invoked an intimacy with the language and with the context of the data allowing for greater insight into the coding process. Considering the subscales of each presence was a useful guideline in building a bigger picture of the presences and helped to secure a better idea of how the data fit with the presences. Triggering event, exploration, integration, and resolution served as the subscales of cognitive presence; emotional expression, open communication, and group cohesion were the subscales of social presence; and the subscales for teaching presence were instructional management/design and organization, building understanding/facilitation, and direct instruction.

The initial open coding using the CoI template was followed with a simplified coding template that served as an organizational tool to categorize comments and language under the appropriate presence heading of either teaching presence, social presence, or cognitive presence. Data at this point may have been moved from one presence category to another or duplicated among presences. A coding template was completed for each set of data (feedback, transcripts and narrative) and then all were

merged into one large template with the headings of teaching presence, social presence and cognitive presence.

Chat Transcripts

A total of 24 synchronous online sessions were conducted during the course of the data collection. Of the 24 sessions, 12 of the session chat transcripts were coded and analyzed. Sessions having attendance greater than 12 students and those having attendance lower than 3 students were eliminated from the analysis in an effort to keep the data collection to similar group sizes. In 6 of the sessions the course instructor attended (n = 48) and the other 6 sessions did not have the course instructor attend (n = 33). Upon examination of the session transcripts, the analysis between courses in which the course instructor attended and those that did not have a course instructor presence showed very little differences in chat content. The course disciplines of the sessions analyzed were Chemistry, English, Biology, Psychology, and Business Administration. Several of the sessions included participation from either multiple sections of the same course or multiple courses taught by the same instructor.

Transcribing chat transcripts of recorded sessions was one method to collect data for the qualitative portion of the study. The researcher used the CoI Coding Template (see Appendix E) to record indicators for each category of the presences. The coding template presents a format to record indicators for the categories of each presence based on the chat transcript. The researcher watched the recorded session and inserted chat transcript data as an indicator for a specific category of a presence based on what was happening in the session at the time the text (transcript data) was entered in the chat box.

As an example, cognitive presence has the categories triggering event, exploration, integration and resolution; at a point in the session the instructor (i.e., the researcher) executed a search for information and asked the participants something about the search results, such as "how many results are there for this search?" to which participants replied with a numeric answer via the chat. The researcher then entered answers under the category integration as an example of students connecting ideas and processes of information retrieval. Each session had roughly 1 hour of coded content that provided rich contributions to the study.

Survey Responses

The second source of qualitative data findings was the open-ended survey responses generated from the CoI survey. In the CoI survey a required, open-ended response concerning each of the presences was placed immediately following the survey items regarding the specific presence. A required open-ended question asking for further feedback was placed at the conclusion of the survey. The four open-ended questions analyzed were completed by all 169 participants in both the live (n = 104) and the recorded (n = 65) sessions.

Narrative Feedback

Narrative feedback consisted of student reflections of both the live online session and the recorded session. This feedback was provided to the researcher from the course instructor. There were two instances in which feedback was provided, both being from English courses. One set of narratives came from a course's online discussion forum and the other set of narratives were essays submitted by students. Both narrative sets may

have been required activities for the class (19 online discussion postings) or extra credit opportunities (3 session summaries/reflections).

Open Coding

The process of coding the chat transcripts was threefold. The first step was to print out the chat transcript of a session and watch the recording in order to place the researcher's questions, prompts, and commentary into the appropriate place within the transcript. This was a necessary task, as the researcher did not use text based chat during instruction as she was on camera and using a microphone. Placing the researcher's comments into the appropriate place in the chat transcript allowed for the context in which the text was presented to become a part of the analysis. For instance, a series of numbers presented by the session participants in the chat transcript means nothing without knowing why the participants typed in the number. By reviewing the recorded session the researcher was able to indicate what was said to prompt the text.

The next step in the open coding process of the chat transcripts consisted of placing every comment, question, and/or prompt made by the researcher into the appropriate presence column within the coding template followed by any response made by a student or instructor. All chat and researcher comments were color coded in the template; researcher was coded blue, the students' responses were coded red, instructor comments and questions were coded green, and any explanatory information was coded in purple. Explanatory information could be an indication of what may have been going on in the session at a particular point such as a student commenting on an action or process taking place on the screen: *Student: Would it be "bad" to leave the long site?*

Purple comment: In reference to the citations generated by EasyBib—I explain. Student: Thank you.

To accomplish the open coding for the 169 participants that completed the survey every open-ended question response was entered in the coding template under the appropriate presence. In this case, for all the open-ended responses for the teaching presence survey question, the responses were entered under the column teaching presence but may have been entered under social presence or cognitive presence as well if pertinent. This process was the same for the social presence and cognitive presence questions. The open-ended feedback questions were placed accordingly. The narrative feedback was examined in much the same way as the survey responses were but sentences were broken down and placed under the appropriates presence heading or headings if needed.

Coding, according to Corbin and Strauss (1990), is a fundamental analytic process with the basic types of coding being open, axial, and selective. Open coding is an interpretive process in which data is compared for similarities and differences and labeled conceptually, and grouped into categories and possible subcategories (Corbin & Strauss, 1990). As categories currently exist in the Community of Inquiry Coding Template, the conceptualization of data to determine labels was not necessary. However, the act of coding data into the appropriate categories established validity of the higher-level concepts (existing categories) as well as allowed lower-level concepts to emerge (Corbin & Strauss, 2008).

The researcher coded sessions individually then combined all the coded transcripts using the open, axial, and selective processes to look for emerging and new themes. Axial coding, defined as "crosscutting or relating concepts to each other" (Corbin & Strauss, 2008, p. 195), goes hand in hand with open coding. Corbin and Strauss (1990) stressed that "data should be scrutinized to determine the conditions that gave rise to the work, the context it was carried out, the actions and interactions through which it occurred, and its consequences" (p. 13). Context, which always includes the physical setting, the participants, and their relationship to one another as well as the activities in which they are involved (Hatch, 2002), identifies the conditions by which the participants respond to the interaction or action. Having the transcript data along with the context and conditions in which it occurred established subcategories and themes as well as supplied direct quotes and contextual examples to further validate the phenomenon studied.

Deductive research analysis took shape during the initial construction of the coding process. In the axial coding stage verification of relationships emerged with repeated indication of the data over and over again (Corbin & Strauss, 1990). However, Corbin and Strauss pointed out that differing conditions may suggest variations to original hypotheses, "which can then be revised to include various new, provisional, conditional relationships . . . mak[ing] the theory conceptually denser, and mak[ing] the conceptual linkages more specific" (p. 14). Conditions that provided opportunities to reveal variations in the data included the size of the class, the active participation of the students, movement or enthusiasm displayed by the faculty librarian (i.e., researcher)

during a given session, or technical difficulties experienced while the session was being conducted.

Selective coding, "the process by which all categories are unified around a 'core' category, and categories that need further explication are filled-in with descriptive detail" (Corbin & Strauss, 1990, p. 14), occurred in later phases and looked toward what was representative of the central phenomenon of the study. Questions to be considered at this point of analysis concerned the main analytical ideas presented, conceptualization of the findings, and explanation of actions and interactions observed, as well as variation between and among categories (Corbin & Strauss, 1990).

In addition to coding the chat transcripts of the recorded sessions, the researcher had open-ended responses from the CoI survey to code and analyze as well as feedback directly from student participants. Even though this data did not come directly from the content of the recorded sessions, it was coded in the template and helped to build the discussion providing evidence for themes, categories, and subthemes that emerged from all of the data. Direct quotes provided by participants on their experience in the live session or their experience with the recorded session served to thread interconnections together and supported the phenomena the research examined.

In the qualitative data collection the themes that emerged from coding the chat transcripts leant credibility to the authenticity of the survey results and provided a deeper and richer picture of the student experience in the synchronous online environment. "Open coding and the use it makes of questioning and constant comparisons enables investigators to break through subjectivity and bias" (Corbin & Strauss, 1990, p. 13).

Triangulation of the data drawn from the survey results, coding from the chat transcripts, open-ended questions, and feedback built a more comprehensive picture of the results than could have been done by quantitative or qualitative measures alone (Tashakkori & Teddlie, 2003) lending to the validity of the study as themes were presented. See Appendix F for a flowchart of the qualitative coding procedures.

Trustworthiness

An essential issue of this and any research study that uses qualitative measures is trustworthiness; the basic issue of persuading the readers of the research study that the findings from the data are worthy of attention (Lincoln & Guba, 1985). Establishing trustworthiness, according to Lincoln and Guba, involves establishing credibility, transferability, dependability, and confirmability. This section details the concepts of trustworthiness as they relate to this study. The assessment of dependability calls upon an external audit, or inquiry audit, performed by a person outside of the study to examine the process and the product of the study. Dependability was not addressed as a technique to establish trustworthiness due to the level of expertise and immersiveness the researcher had with the technology, content delivery, and intimate knowledge of the resources being examined in the online synchronous sessions. An external auditor would not have the level of expertise necessary to understand the research and may have led to different understandings of the data.

Credibility. In order achieve credibility, or "confidence in the 'truth' of the findings," Lincoln and Guba (1985) proposed a series of techniques of which three of the techniques encourage the production of credible findings and interpretations of the data

as it pertains to this study. These techniques, or activities, are prolonged engagement, persistent observation, and triangulation. Prolonged engagement occurred as the researcher spent sufficient time in the research setting to understand the culture of the participants, social setting, or phenomenon of interest. Prolonged engagement leads to a fuller understanding and appreciation of the context in which the research is taking place, a keener ability to detect distortions in the data, build trust, and go beyond any preconceived notions regarding the study (Cohen & Crabtree, 2006). This researcher conducted approximately 25 online synchronous sessions to at least 400 students over the course of roughly three months. Each session lasted between 45 and 60 minutes. The duration of the time spent in the online synchronous environment, the number of sessions taught, and the amount of students reached in the sessions allowed the researcher sufficient time to understand the culture of the participants, the social setting, and the phenomenon of the study.

Lincoln and Guba (1985) suggested "the purpose of persistent observation is to identify those characteristics and elements in the situation that are most relevant to the problem or issue being pursued and focusing on them in detail" (p. 304). Persistent observation provided depth to the research while prolonged engagement provided the scope. The researcher engaged in persistent observation in the research study by conducting approximately 25 online synchronous sessions for approximately 400 students (noted above) allowing for the identification of characteristics and elements most relevant to the research to surface and be examined in detail. Coding chat transcripts of 12 sessions required the researcher to focus on every detail of the sessions

from the participant's voice (in text) to classmates and to the librarian (i.e., researcher), to reactions to the technology and the environment, as well as gauging understanding of content by participant responses to questions posed. Although the course subject matter that the librarian (i.e., researcher) taught varied, characteristics of the participants as they responded to the synchronous online session and elements that moved the sessions along arouse allowing the researcher detail and insight into the phenomenon of the study.

The technique of triangulation as a method to achieve credibility has already been mentioned as an aspect of trustworthiness in this study, and is further validated by Lincoln and Guba (1985) who indicated triangulation improves the probability of findings and interpretations as credible. Triangulation can occur using multiple and different sources, methods, investigators, or theories. As this research study is a mixed methods study, triangulation was achieved by investigation of a variety of both quantitative and qualitative data sources and how they interacted for a robust interpretation of the data and the phenomenon being studied. As mentioned previously, trustworthiness persuades the reader that the research is worthy. Atkinson (1990) stated that the "persuasive force" of the qualitative research "is sustained by the repeated interplay of concrete exemplification and discursive commentary" (p. 103), thereby linking the data to the argument, guiding the reader to plausibility of the questions posed, measures taken, and findings discovered. This concept of linking the data to the argument and to the participants' perspectives are strategies of reflexivity, or a marriage of the process of the research and the written account of the research findings and is a product of triangulation.

Transferability. Transferability, a method equated to external validity (Lincoln & Guba, 1985), can be established using thick description as a necessary means in establishing transfer to others interested in the study. Thick description occurs when a phenomenon is described in such detail that "conclusions drawn are transferable to other times, settings, situations and people" (Cohen & Crabtree, 2006). Thick description is necessary and was achieved in this study with detailed accounts of the researcher's experiences as well as the "explicit the patterns of cultural and social relationships" in the context of the study (Cohen & Crabtree, 2006). The researcher collected enough data through chat transcripts, open-ended responses, and participant feedback to provide a basis for transferable judgments.

Confirmability. To establish confirmability or neutrality, defined by Cohen and Crabtree (2006), is "a degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest." Four proposed methods to achieve confirmability are confirmability audit, audit trail, triangulation, and reflexivity. In this research the audit trail is inherent in the Methods chapter, which lays out the research direction, the research design, and proposed analysis providing clear descriptions of decisions made throughout the research process. Chapter 4 reports the results and completes the audit trail in providing the data analysis. Triangulation as discussed under the heading of trustworthiness and achieving credibility is another technique for establishing confirmability. Reflexivity (see Figure 5) is the "attitude of attending systematically to the context of knowledge construction, especially

to the effect of the researcher, at every step of the research process" (Cohen & Crabtree, 2006) and is interwoven throughout the entire study.

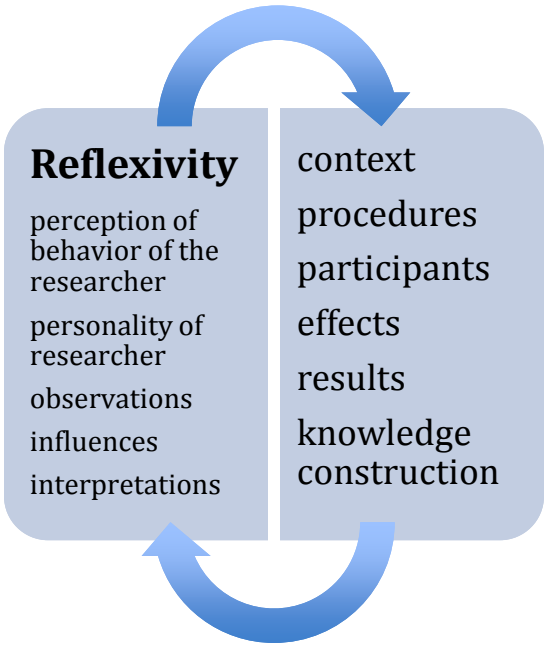


Figure 5. Reflexivity flow throughout study.

Summary

The convergent parallel mixed methods research design suited this research study very well in exploring the Community of Inquiry theoretical framework in the synchronous online environment. Understanding the perceptions of social, cognitive, and teaching presences in the synchronous environment using survey data alone may not have captured the phenomenon of what the technology offers to the theoretical framework. Adding a qualitative feature to the study not only complemented the survey data but presented an opportunity to explore how student participation affect social, cognitive, and teaching presence as well as how teaching presence supports and enhances social and cognitive presence.

CHAPTER IV

RESULTS

Overview

The purpose of this mixed methods study was to examine students' perceptions of social, cognitive, and teaching presences in the online learning environment; how the synchronous online learning environment affects them; and what aspects of teacher presence support and enhance social and cognitive presence. The two groups studied were students participating in live online synchronous library sessions and students who watched recordings of the live sessions. In this chapter, the study data, which were collected through surveys, chat transcripts, open-ended feedback, and student narratives, are reported. The findings for the qualitative research and the quantitative results are presented under each respective research question.

Demographic variables gathered from the survey included distance learning experience and age range. Table 1 presents the age ranges of the participants in frequencies and percentages. In both the Live group and in the Recording group, the age range of 18–22 shows the highest frequency. The age ranges of 18–22, 23–27, 38–42, and 43–47 all had higher percentages in the Recording group, whereas the age ranges of 28–32, 33–37, 48–52, 53–57, and 58 or older all had higher percentages in the Live group. Notable, as well, is the 10 Live participants in the 53–57 age range which points to the diverse nature of the community college population.

Table 1

Demographic Variable Age for all Participants

Age Range (years)	*n*	%
18–22		
Live	27	26
Recording	24	37
23–27		
Live	14	13.5
Recording	12	18.5
28–32		
Live	18	17.3
Recording	7	10.8
33–37		
Live	15	14.4
Recording	8	12.3
38–42		
Live	7	6.7
Recording	6	9.2
43–47		
Live	5	4.8
Recording	6	9.2
48–52		
Live	7	6.7
Recording	1	1.5
53–57		
Live	10	9.6
Recording	1	1.5
58 or older		
Live	1	0.9
Recording	0	0.0

For both the Live group and the Recording group, those taking both online and face-to-face classes were represented by the largest number of participants as seen in Table 2. In each category of Distance Learning Experience there was participation. The

lowest percentage of participation recorded is 9% for participants in the live session experiencing their first online class. While perceptions of teaching, social, and cognitive presences based on the demographics in both Tables 1 and 2 may prove useful and insightful for further study, they were not explicitly addressed in this study's research questions.

Table 2

Percentages and Frequencies for Distance Learning Experience

Distance Learning Experience	*n*	%
I take only online classes		
Live	28	27%
Recording	13	20%
I take both online and face to face classes		
Live	67	64 %
Recording	39	60%
This is my first online class		
Live	9	9.0%
Recording	13	20%

A reduced version of the Community of Inquiry Survey (see Appendix D), a Likert scale survey composed of 21 questions was used to collect data. Nine questions addressed facets relating to the dependent variable teaching presence; 5 questions probed the dependent variable social presence; and 7 questions regarded the dependent variable cognitive presence. To further validate the reliability of the survey and ensure internal consistency of the questions, a Cronbach's alpha was run on the set of questions for each dependent variable. A Cronbach's alpha is a measure of reliability that determines how

well a set of variables, in this case the survey items, measures a construct, and in this case there are three constructs; teaching presence, social presence, and cognitive presence. Cronbach's alpha for the 9 teacher presence items, 5 social presence items, and 7 cognitive presence items were .94, .90, and .90, respectively, indicating high internal consistency with the survey items. Similar high levels of internal consistency of the survey items are found in the research (Yu & Richardson, 2015; Arbaugh, Bangert, & Cleveland-Innes, 2010; Arbaugh, 2013, 2014; Swan et al., 2008). In addition to how well the survey items measure the unidimensional nature of the constructs, previous researchers have used factor analysis (Arbaugh et al., 2008; Bangert, 2009; Díaz et al., 2010; Swan et al., 2008) to verify the framework of the Community of Inquiry model's three factor approach. These previous studies, however, are based the examination of reliability and validity of the instrument on asynchronous online learning environments. The results of this study do call into question the validity of the CoI instrument in the synchronous online learning environment.

Research Question 1

To address research question number one, what is the difference in the perception of social, cognitive, and teaching presence between students who participate in synchronous online learning environments and students who view recordings of synchronous online learning sessions, a series of Independent samples *t*-tests were conducted to examine if the independent variable (group) had an effect on the dependent variables associated with teaching presence, social presence and cognitive presence. *T*-tests are used to compare the means of two unrelated groups and the results are used to

determine if the means differ enough to conclude, with a high degree of confidence, that the population means are different. The independent variable in this study is group and has two levels: students who attended a live online session (Live) and students who viewed a recording of a live session (Recording). The mean for each dependent variable is based on a series of questions from the survey on a five point Likert scale (1 being *strongly disagree* to 5 being *strongly agree*).

Assumptions

The assumptions associated with the independent samples *t*-test include the assumption of independence. The assumption of independence determines whether or not there is any influence between data and is met in this study as all students randomly attended the live session or watched the recording of the session. All quantitative data collected from the random sampling is measured at an interval level, a 5 point Likert scale, which meets the assumption of independence. The intervals from 1 to 5 are: 1 is *strongly disagree*, 2 is *disagree*, 3 is *neutral*, 4 is *agree* and 5 is *strongly agree*.

The assumption of an equal variance existing between the groups is determined using the Levene's Test for Equality of Variances. Homogeneity of variance occurs when there is decreased variability in the spread of scores whereas heterogeneity indicates an increase in variability. This assumption of equality in variances was met for teaching presence, $F(1, 167) = .49$, $p = .48$ and for social presence $F(1, 167) = .77$, $p = .38$. Cognitive presence did not meet the assumption $F(1, 167) = 5.18$, $p = .02$ so an adjustment was applied to the *t* statistic for this independent variable utilizing the equal variances not assumed results and the assumption was met at $F(1, 165) = 5.18$, $p = .03$.

To test for normality of the distributed set of scores a Kolmogorov-Smirnov and Shapiro-Wilk test indicates that the distribution of all scores for each dependent variable significantly differs from a normal distribution, with $p < .001$ on each score and on both tests. The non-normality of the distribution of scores is caused by the fact that students generally responded at the higher intervals on the survey questions. In general, the majority of the survey responses were at the 4 and 5 level of the interval scale with students agreeing or strongly agreeing to the content of the question.

Results

On average, participants who attended the Live sessions indicated a larger perception of teaching presence, social presence, and cognitive presence than those who viewed a recording of the session, as seen in Table 3. Results from the Independent Samples *t*-tests indicate statistically significantly differences between the means comparing groups on the dependent variables social presence and cognitive presence. The difference in means between the groups on teaching presence was not significant.

Table 3

Results of Independent Samples t-Tests and Descriptive Statistics for Presences by Instructional Method

	Group						
	Attended Live		Watched Recording				
Variable	M	SD	M	SD	*p*	t	df
Teaching	4.57	0.72	4.43	0.45	.157	1.42	167
Social	4.39	0.77	3.92	0.62	.000**	4.12	167
Cognitive	4.21	0.78	3.99	0.54	.027*	2.24	165

*$p < .05$ **$p < .01$

To further investigate the data, Tables 4–6 present the descriptive statistics for each survey item, which clearly indicate the high scoring of the survey items with the most scores being entered as *Agree* (4) and *Strongly Agree* (5). In examining the statistics for the teaching presence survey items, Table 4 question 3 (The instructor clearly communicated important due dates/time frames for learning activities) and question 9 (The instructor provided timely feedback that helped me understand my strengths and weaknesses) both show more frequencies of *Neutral* (3). Table 5 presents the descriptive statistics for the social presence survey items and question number 4, which asks the participants if their point of view was acknowledged, has the greatest distinction between the means of the groups out of all the surveys questions. Cognitive presence scores, like social presence, show distinct variability in the means between the participants in the Live and Recording groups as seen in Table 6. The first four survey

Table 4

Descriptive Statistics for Teaching Presence Survey Responses

Group	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	M	SD
1—clear communication of goals & topics							
Live	3	0	0	14	87	4.75	0.73
Recording	1	1	0	19	45	4.66	0.57
2—clear instructions							
Live	3	0	0	18	83	4.71	0.75
Recording	0	1	0	19	45	4.62	0.52
3—communicated due dates/time frames							
Live	4	0	21	21	58	4.24	1.03
Recording	0	0	9	29	27	4.28	0.70
4—identification of areas of agreement/disagreement							
Live	3	0	11	26	64	4.42	0.90
Recording	0	0	7	25	33	4.40	0.68
5—engagement and participation in production dialogue							
Live	3	0	0	13	88	4.76	0.73
Recording	0	0	3	22	40	4.57	0.59
6—encouraged exploration in new topics and concepts							
Live	3	0	1	21	79	4.66	0.77
Recording	0	0	1	27	37	4.55	0.53
7—actions reinforced a sense of community							
Live	3	0	1	22	78	4.65	0.77
Recording	0	0	5	30	30	4.38	0.63
8—focused discussion on relevant issues							
Live	3	0	0	22	79	4.67	0.76
Recording	0	1	6	26	32	4.37	0.72
9—provided timely feedback							
Live	3	1	21	23	56	4.23	1.00
Recording	0	1	20	22	22	4.00	0.85

Note. Questions in their entirety are in Appendix D. Live (n = 104), Recording (n = 65).

Table 5

Descriptive Statistics for Social Presence Survey Responses

Group	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	M	SD
1—sense of belonging							
Live	3	2	16	29	54	4.24	.099
Recording	1	3	16	29	16	3.86	0.90
2—excellent medium for social interaction							
Live	3	1	10	36	54	4.32	0.91
Recording	1	1	7	40	16	4.06	0.75
3—felt comfortable participating							
Live	3	0	1	27	73	4.61	0.78
Recording	0	1	20	26	18	3.94	0.81
4—point of view acknowledged							
Live	3	1	9	24	67	4.45	0.91
Recording	0	0	26	29	10	3.75	0.71
5—help develop a sense of collaboration							
Live	3	0	12	35	54	4.32	0.90
Recording	0	4	12	30	19	3.98	0.86

Note. Questions in their entirety are in the Appendix D. Live (n = 104), Recording (n = 65).

Table 6

Descriptive Statistics for Cognitive Presence Survey Responses

Group	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	M	SD
1—problems posed increased interest							
Live	8	2	29	29	36	3.80	1.17
Recording	1	0	26	28	10	3.71	0.79
2—activities piqued my curiosity							
Live	3	1	12	30	58	4.34	0.93
Recording	1	0	11	37	16	4.03	0.75
3—discussion helped appreciate different perspectives							
Live	3	3	24	27	47	4.08	1.03
Recording	0	1	18	33	13	3.89	0.73
4—utilized a variety of resources to explored problems posed							
Live	3	1	30	29	41	4.00	1.01
Recording	1	1	23	28	12	3.75	0.83
5—combining new information helped answer questions							
Live	3	0	8	33	60	4.41	0.87
Recording	1	1	10	33	20	4.08	0.82
6—can describe ways to test and apply knowledge							
Live	3	0	8	40	53	4.35	0.86
Recording	0	0	7	42	16	4.14	0.58
7—can apply knowledge to work or other non-class activities							
Live	3	0	4	30	67	4.52	0.82
Recording	0	0	5	35	25	4.31	0.61

Note. Questions in their entirety are in the Appendix D. Q1 = Live (n = 104), Recording (n = 65).

items for cognitive presence show larger numbers in the *Neutral* (3) scale item. Another aspect of the survey's results to point out is the fact that every single item for the Live group has at least 3 responses in the *Strongly Disagree* (1) column, which may indicate a misinterpretation of the Likert scale, a rush through the survey, or sincere dissatisfaction with the Live session.

Research Question 2

Research question 2, "How does the synchronous online learning environment affect social, cognitive, and teaching presence?" was examined qualitatively through analysis of data collected from chat transcripts, open-ended survey responses, and narrative feedback. As described in the Methods chapter, the use of the CoI coding template was foundation for achieving an intimacy with the language and concepts of the study, which moved on to a simplified chart categorizing the qualitative data into the three presences.

Open Coding—Emergent Language

With 53 pages of data coded into the categories of teaching presence, social presence, and cognitive presence, description of the phenomenon being studied began to concretize through the identification, naming, categorizing, and describing the data. Repetitive terms, phrases, and concepts such as gratitudes, reference to technology, ease, information, engagement, "ask questions," and so forth, were underlined, color coded, and/or notated across all categories. The process of open coding was iterative and served to conceptualize emerging themes.

The theme yielding the greatest number of instances throughout the open coding process was "action" which included the concepts of engagement, questions, explaining, and demonstrating. "Technology" was another theme that emerged in the open coding process that was referenced in each presence category. The theme of "process" as students reacted to the teaching action and overall experience emerged as did "awareness." Awareness surfaced in the data as commentary on the realization of informational resources, information presented, and the help that the session provided. "Gratitude" was noted many times throughout the data and serves as a binding element seen in establishing the core themes, which ultimately present as the grounding themes of the study.

Although Table 7 presents examples of the emergent themes of the qualitative data, these examples were presented in the survey responses and narrative feedback. This data came from participants who attended the sessions live as well as those who watched the recording of the sessions. What is striking is the context of the interactions in the synchronous online environment that invoked all the commentary seen in the data. For this reason, presented in Table 8 are examples taken directly from the chat transcripts that provide evidence of the context and causal conditions leading to the phenomenon of teaching presence, social presence, and cognitive presence and support the emerging themes of the coding process. Technology is not a category in Table 8 as the technology is the context for the experience.

Table 7

Highlighted Language Representing Emerging Themes

	Teaching Presence	Social Presence	Cognitive Presence
Action (question/ explain/ demonstrate/ engage)	*She would help us stay involved by asking for our response to the questions she was asking. Our answers were also used as topics of discussion during the session. I liked that and it helped me stay engaged.*	*I felt that the other participants and I all got to respond to the instructor's questions. It was easy to respond, and I enjoyed reading others' comments while the teacher was speaking.*	*The session was very helpful and clearly explained everything in detail. I would definitely use this to look for articles for research.*
Technology	*Seeing Nancy's screen made it easy to understand and follow along. Visual aids help me best learn and I really liked this approach.*	*Being able to directly talk to other classmates and the instructor first hand really makes you feel like this is a class with other people that might have the same questions/viewpoints as you.*	*Seeing step by step how to use the library was very helpful, and I will definitely be using it for my research paper.*
Process (student reaction to teaching action)	*The instructor explained things very well. She slowly showed us on to do things step by step. I like that she didn't rush through the session and she made sure everyone had a clear understanding of things.*	*I felt like I had someone guide me and my classmates through the library's resources. With online classes sometimes it feels like you are going it on your own and this presentation helped me not feel that way.*	*I have tried to use the library site at home before for my classes and was unsuccessful. Watching her show us where to go and how to utilize the links and information was very helpful.*
Awareness	*As she was going through the Tri-C website I found a lot of stuff that I didn't even know was on the website. For starters, I never even realized that there was such a thing as an "online library"*	*I did not realize how large and detailed the library website was. I have never really used it, and I am excited to use it for research.*	*I had no idea all of this information was readily available to me and in so many different styles and formats. It truly blew my mind just how much we have available.*

Table 8

Emerging Themes—Language From Chat Transcripts

	Teaching Presence	Social Presence	Cognitive Presence
Action (question/explain/ demonstrate/ engage)	**Researcher:** Any questions on Academic Search Complete? **Participants:** no None for me more you practice the better you get	**Researcher:** How is the assignment going so far? **Explanatory:** (this question was asked to the students in just about every class with over 86 responses) Selection of responses **Participants:** It's pretty easy so far It's fun to learn about Having a lot of trouble finding info Difficult finding stuff though Interesting actually Having a little trouble never done research or reports I agree. Fun but a little difficult It has been okay, nervous for the paper	**Participants:** Are those books available in our library? **Explanatory:** Looking at books from a reference list in a database, Opposing Viewpoints. This is asked as I explore this resource. I then do a search for a particular title and ask **Researcher:** Is this book available in our library? **Participants:** Yes Thanks
Process (student reaction to teaching action)	**Researcher:** Are we good with Academic Search Complete? **Participants:** Yes I learned so much it's awesome we need more practice		**Researcher:** Have you ever experienced writer's block **Explanatory:** (13+ students answer this question posed) I then proceed to discuss how to use prompts provided in the resources as a writing tool **Participants:** Using discussion topics for writers block, great idea Awesome tip for writers block Another good one, thank you for sharing – having a place to start writing I think it's a great idea to use this information

(*table continues*)

Table 8 (continued)

Emerging Themes—Language From Chat Transcripts

	Teaching Presence	Social Presence	Cognitive Presence
Awareness	**Explanatory:** Introduction of Subject Guides - **Researcher:** I added some resources to the guide for this class today **Participants:** Thank you This looks really neat!! We be super helpful! **Researcher:** I'm glad	**Participants:** Where has that button been my whole life ^ honestly **Participants:** wait i blinked!!! **Explanatory:** Response to export to EasyBib download This might be the best thing I've learned in college so far yes...rewind 1 minute to where you clicked to open word yes I like that very nice thanks! This is life changing	**Participants:** This is so amazingly helpful! I had no idea this existed **Explanatory:** (exploring resource) **Participants:** very nice

In addition to the chat transcript examples in Table 8 one of the most compelling aspects of the online synchronous environment in establishing teaching, social, and cognitive presences is the synchronicity. Questions posed by the researcher kept the participants engaged in the session and prompted an understanding of the nature of the session's intent to not only provide awareness of resources available, but to teach the participants how to use the resources effectively. For instance, throughout the data there are over 100 instances of participants responding to the question posed by the researcher "how many results" in reference to a particular research query executed. In many of these cases the search results are broken down further to delve into specifications of a search. As an example, the following brief exchange took place during a session with

Biology students. In this short section of a chat transcript the researcher is demonstrating how to search for an article and the process to narrow down the results to a useful and meaningful result list.

> **Researcher:** What subjects have been studied this semester? **Explanation of request:** (need examples to conduct a search)
> **Participants:** lipids
> fats
>
> **Researcher:** What does a lipid do?
> **Participants:** it is a fat
> fats
>
> **Researcher:** How many results did I get? Explanation of request: (Search conducted using the term lipid)
> **Participants:** over 36,000
> 36767
> too many lol
> 36767
>
> **Researcher:** In what context can we look at lipids?
> **Participant:** People, nutrition
>
> **Researcher:** With these terms added how many results?
> **Participants:** 7137
> 7137
> better than the first
> 7137
>
> **Explanation of action** (Added more terms) – **Researcher:** how many results?
> **Participants:** 680
> 680
> 680
> 680
> 600
> 680
>
> **Researcher:** How can I make results even better – what terms?
> **Participants:** people...cells, energy
> **Researcher:** I like that!

> **Researcher:** does this make sense? **Explanation of request:** - explaining the detailed record
> **Participants:** yes
> yes...understand better
> yes this helps me understand the website better. I was really confused when I had to use this for a research paper

In the above example, 12 students attended the live session and as seen in the brief excerpt of the chat transcript there was a lot of participation from the students. The question and response is fluid between the researcher and the students and contains instances of attention to the content, humor, and excitement for what is being presented both visually and verbally by the researcher.

Axial Coding—Emergent Language/Themes

The question of "how does the synchronous online learning environment affect social, cognitive, and teaching presence?" shifted toward a phenomenon with distinct causal conditions, context, and variables as axial coding ensued. Investigation of the emergent themes of technology, gratitude, action, awareness, and process were noted as established across all three presences and are in essence all intertwined.

Technology. Technology as a theme surfaced in language associated with seeing, viewing, using the chat feature, and the act of demonstration provided by the researcher. Technology was also referenced as a nuisance for some who could not hear clearly, anxiety over using the tool, and old software as well as some minor complaints of the screens freezing. However, technology was also seen in the context of providing engagement, interaction, and providing a classroom feel. In this respect, technology provides a bridge or connection for social presence as evidenced by the following snippets: "seeing other's comments," "having the same questions," "everyone one the

same page . . . made me feel," "viewing comments," "felt as I was thinking certain questions they were asked by fellow students," and "enjoyed reading others comments."

Gratitude. Gratitude was presented as twofold within the qualitative data; that as gratitude for the experience as well as compliments toward the researcher. The amount of "thank yous" was tremendous and speaks to the appreciation the students had for the experience, the content provided, and the time given to the session. In addition to the simple "thank you," there were many instances of "enjoyed," "grateful," "loved," "liked," "pleased," "happy," and so forth. Compliments directed toward the researcher included the following: approachable, inviting and open, charismatic, assuring, active, passionate, and engaging. Several instances pointed out the researcher engaging and encouraging students. Expressions of gratitude also included instances of feeling welcome, at ease, and glad to have an email address if further questions arose. Expressions of gratitude were filtered throughout all of the qualitative data and while certainly surface as a repetitive theme, gratitude as a concept wraps around all of the data enhancing all themes and the core of the research results.

Action. Action as an emerging theme constituted language that conveyed questions, explanations, demonstrations, and engagement. As seen in the chat transcript examples posted above and in Table 8, the researcher continually asked questions throughout the sessions. The data clearly pointed out that the participants acknowledged this method of asking questions and the ability to ask questions of the researcher. The terms engage, engaging, and engagement were noted over 45 times. Action, like

gratitude, was found abundantly in survey responses and narrative data as a reflection of the experience as well as embedded within the chat transcripts.

Awareness. The theme of awareness presented often and across all three categories of teaching, social, and cognitive presence. The phrase "was not aware" occurred many times throughout the data as did "I didn't know," "had no idea (of existence)," "never familiar with," and "I didn't realize." In addition to such expressions of awareness the sessions provided an opportunity to learn and find an interest in something new and beneficial as evidenced by language such as "found that/it interesting," "wish I had know about . . .," "I like," "so may options," "I took a lot of new information," and "help with future assignments." A resource that proved to be an exceptional discovery was EasyBib, a citation management tool. Comments on EasyBib were positive and prevalent and often students expressed that they wished they had known about the resource prior to the virtual library session.

Process. Process as a theme relates to action and presented in language expressing how students reacted to the action of the sessions. For example, there were many indications of the "step-by-step" process that made the instruction "easy to understand," "easy to follow," "clear," and "straight forward." The positive confirmation of the process incited statements speaking toward the nature of the experience as "fun to learn," "convenient," and as leaving one "confident" in their abilities to use the tools presented.

Selective Coding—Core Themes

While each of these factors of technology, process, awareness, action, and gratitude were demonstrated in specific language and as reflective reactions to the online synchronous instruction, they all relied on the whole experience, and culminated as a response to each other and the context in which the data were created. During selective coding, discrete categories were examined to identify the nature and relationships of the data. Open and axial coding provided the groundwork needed for the core concepts of connection, confidence, and transference that emerged in the selective coding process.

Connection. Technology as the mechanism to create process shaped the core concept of connection. The synchronous nature of the online virtual session provoked feelings of being a part of, and connected to the class, the process and the virtual environment. Comments indicating a "real classroom feel" showed up numerous times in the survey responses as did the phenomenon of thinking the same questions as others: "it was nice to see other people asking the same questions as me. It made me feel like everyone was on the same page." Comments of this nature were presented by participants in both the Live and Recording groups: "I attended the recorded session, but felt as I was thinking certain questions were asked by fellow classmates as well as answered. This helped me feel on the same page as everyone, and understanding the session properly."

Confidence. Confidence emerged as a core concept as a result of action. Questioning, demonstrating, and explanation by the researcher enhanced understanding and aroused a sense of confidence among the participants. Instances of participants

expressing a newfound understanding include "it helped me to better understand how to research and where in the library I could locate and identify articles," and "I now understand the library services available to me and understand how to do my assignment." Expressions of confidence gained from the instruction include "after seeing this I have confidence that I can use the library's resources," and "I am able to complete my assignment now that I have watched this session."

Transference. Transference, the ability to use the new learning in future and different situations, as a core concept surfaced via process, awareness, and action. There were many instances in the data that directly stated the information provided would be useful for the present and in the future: "It was a great experience and I learned a lot. I will be able to use this information now and in the future;" "I felt this experience was helpful in my college degree. The information that was provided helps in all my classes;" and "I feel like I learned a lot and it will serve me in my college career and beyond."

One particular statement encapsulates the three core concepts of connection, confidence, and transference, and provides a culminating expression of the experience and highlights the constructs of teaching, social, and cognitive presence: "I felt connected to my peers and instructor. The information was perfect and easily adaptable. It expanded my intellect beyond basic and provided me with confidence about my assignment."

Research Question 3

The third research question, what aspects of teacher presence in an online synchronous environment support and enhance social and cognitive presence, was

examined using quantitative measures. A series of correlation analyses were run on the Community of Inquiry Survey data from all of the participants in the study who attended the live online synchronous session as well as those who viewed the recording, with the intent of performing multiple regression analyses as a measurement of the relationship of teaching presence to social and cognitive presence. A series of multiple linear regression analyses were conducted using the three predictor variables teaching presence—design and organization; teaching presence—facilitation; and teaching presence—direct instruction. These three predictor variables were included to examine the relationship between teacher presence and the outcome variables of social presence and cognitive presence.

The non-statistical assumptions were met as observations from each subject were made on every variable with the predictor variables being teacher presence—design and organization, teacher presence—facilitation, teacher presence—direct instruction, and the outcome variables being social presence and cognitive presence. The predictor and the outcome variables are measured on an interval level. All variables are continuous.

The assumption of linearity was met; however the assumptions of homoscedasticity and normality were both violated. Tabachnick and Fidell (2007) pointed out that heteroscedasticity, or the failure of homoscedasticity, which can be caused by a relation between variables' transformations of each other, may be not detrimental to analysis of ungrouped data. When homoscedasticity is not met but accounted for, the analysis is valid. The biggest reason for the violations of homoscedasticity and normality was due to the fact that each of the predictor variables in

the separate analyses were themselves not normally distributed. The 5-point Likert scale items used for measurement of the variables tended to skew high, leading to the distributions not being normal.

Tables 9 and 10 present the Pearson correlations between each subscale of teacher presence, and the variables of social presence and cognitive presence respectively reveal a strong correlation among the variables, which, as mentioned above, makes sense because each predictor variable is a measure of teacher presence.

Table 9

Pearson Correlation for Each Subscale of Teacher Presence and Social Presence

	Social Presence	Teaching Presence Design & Organization	Teaching Presence: Facilitation	Teaching Presence: Direct Instruction
Social Presence	--	.86*	.86*	.83*
Teaching Presence: Design & Organization	--	--	.93*	.86*
Teaching Presence: Facilitation	--	--	--	.88*
Teaching Presence: Direct Instruction	--	--	--	--

$p < .000$

Table 10

Pearson Correlation for Each Subscale of Teacher Presence and Cognitive Presence

	Cognitive Presence	Teaching Presence Design & Organization	Teaching Presence: Facilitation	Teaching Presence: Direct Instruction
Cognitive Presence	--	.79*	.81*	.78*
Teaching Presence: Design & Organization	--	--	.93*	.86*
Teaching Presence: Facilitation	--	--	--	.88*
Teaching Presence: Direct Instruction	--	--	--	--

$p < .000$

To further investigate the relationships between the constructs in establishing a more thorough picture of the data, additional correlations were run. Tables 11 and 12 provide the correlations between teaching presence, social presence, and cognitive presence for the participants who attended Live ($n = 104$, Table 11), and for the participants that viewed the recording ($n = 65$, Table 12). It was found in Tables 11 and 12 that the constructs remained highly correlated, although the correlations were lower than the correlations results in Tables 9 and 10. Additionally, there were lower correlations between the presences in the Recording group. However, in light of the high correlations and the violated assumptions, regression analyses were not run.

Table 11

Pearson Correlation for Teacher Presence, Social Presence, and Cognitive Presence for Live Group (N = 104)

	Teaching Presence	Social Presence	Cognitive Presence
Teaching Presence	1	.89**	.83**
Social Presence	--	1	.81**
Cognitive Presence	--	--	1

**p <.01 (2-tailed)

Table 12

Pearson Correlation for Teacher Presence, Social Presence, and Cognitive Presence for Recorded Groups (N = 65)

	Teaching Presence	Social Presence	Cognitive Presence
Teaching Presence	1	.60**	.71**
Social Presence	--	1	.62**
Cognitive Presence	--	--	1

**p < .01 (2-tailed)

CHAPTER V

DISCUSSION

Summary

This study, grounded in the Community of Inquiry framework, sought to answer the overarching question of the synchronous online environment having an effect on teaching, social and cognitive presence. The Community of Inquiry framework is built upon the presences working interdependently to create a deep and meaningful learning experience. Teaching presence involves the design and facilitation of the educational experience guiding social and cognitive presence. Social presence, as defined by Anderson et al. (2001), is the ability of learners to project their personal characteristics into the Community of Inquiry, thereby presenting themselves as "real people." Cognitive presence is the extent to which learners are able to construct and confirm meaning through course activities, sustained reflection, and discourse in the online environment. Knowledge is formed by interactions within the environment and collaboration among the community.

The three questions examined in this study looked at the difference in perception of the presences for those participants who attended a live online synchronous session and those who watched a recording of a session; how the synchronous environment affects teaching, social, and cognitive presence; and whether or not teaching presence supports and enhances social and cognitive presence. In this chapter I present a summary of the findings, implications, limitations, and considerations for future research. I examine each research question in terms of what both the statistics provided as well as

what the narrative of the qualitative data have uncovered, taking what has been examined in the mixed methods study and using the information to merge the interrelated concepts to look toward a meaningful view of the phenomenon.

Perceptions of Presences

The first research question explored the perceptions of teaching, social, and cognitive presences in synchronous online sessions between participants who attended live online sessions and those who watched the recordings of the sessions. The synchronous online sessions were library instruction sessions presented by the researcher to students from a variety of courses taught online or as a blended learning course at a large multi campus community college. Each session was a stand-alone lesson on accessing and using online library research resources and the research process. A statistically significant difference was revealed between the two groups' perceptions of the presences with those attending the live sessions indicating greater perception of social and cognitive presence than those who viewed the recordings of the session. There was no significant difference in perception of teaching presence between those who attended live and those who watched the recording which may speak to a number of variables that contribute to the overall findings of the study; variables include the technology employed and the social presence exhibited by myself as I conducted the sessions. These are discussed later in this chapter.

While teaching presence showed no significant difference between the groups studied, social and cognitive presence both showed higher perceptions of the constructs for the Live group then the Recording group. This may be because those watching the

recording could not actively participate in the session. As reflected in Kozan and Richardson's (2014a) commentary on the CoI, the focus of the framework is on the learning process rather than on outcomes; those who had the opportunity to experience the sessions live were more closely associated with the learning environment and the processes occurring at the moment. Those who watched the recording witnessed the outcome of the live experience without the opportunity to interact in the process. Additionally, these results of higher perceptions of social and cognitive presence in the Live group provide support for the notion that synchronous environment technological capabilities allow characteristics of social and cognitive presence to occur with participants feeling, perceiving, and reacting intellectually (Sung & Mayer, 2012; Wei et al., 2012) and is apparent in the qualitative data.

The results of this study suggest that the live online virtual synchronous library sessions offer opportunities for teaching presence to transcend the learning process into an asynchronous environment as well as promote the effectiveness of establishing social and cognitive presence. Prior research cited throughout this study suggests that synchronous technologies promote perceptions of teaching, social, and cognitive presences although no literature was found directly comparing recorded sessions to live sessions. Baker's (2010) study on the impact of instructor immediacy and presence on student affective learning, cognition, and motivation looked in part at course type (synchronous or asynchronous). Baker's study showed that the perception of instructor immediacy and presence is enhanced in synchronous courses although the author of the study does not indicate what constituted the synchronous activities.

Swaggerty and Broemmel (2017) conducted a qualitative research study on the experiences and preferences of online learners using both synchronous and asynchronous technologies in a graduate program. In the small scale study, the synchronous sessions were recorded, but the results did not address differences in preferences of those who participated live or those who watched the recording. The study did find that the synchronous environment was beneficial for many reasons including the ability to see, hear, and ask questions of guest speakers, the course instructor, and other students. Additionally, Swaggerty and Broemmel's study mirrors student comments found in this study regarding student connectedness with the instructor, content, and each other. "It was nice to be able to see you and for us all to be right there and ask questions. A lot of times other people have a question that was also mine and somebody else would ask it" (p. 82). Vu and Fadde's (2013) study of verbal and text interaction in synchronous environments present similar comments indicating students liked to engage in chat as the instructor presented a lecture without actually interrupting. Additionally, the researchers maintain that recordings of live sessions result in a "more lively" (p. 49) delivery method of course lectures for those students unable to attend the live sessions.

Effects of Online Synchronous Environment

Examining the qualitative data to answer the second research question of how the synchronous environment affects social, cognitive, and teaching presence resulted in the emergence of the core themes of connection, confidence, and transference. These themes are beautifully interconnected within the constructs of teaching presence and social presence and follow the Practical Inquiry Model. The Practical Inquiry Model shapes

cognitive presence and equates learning as a function of an activity or activities that are shaped by discourse, shared interactions, and private thought and reflection. As referenced in the literature review, Wei et al. (2012) verified a positive effect of learning interaction on learning performance where "appropriate learning interaction can facilitate experience sharing, knowledge transfer, and relationship building among the participants in an online class" (p. 539), essentially connection, confidence, and transference. The data for this research question consisted of chat transcripts of those participants who attended the live sessions, the open ended survey questions from all participants in both the live and recorded sessions, and narrative feedback of student reactions to the experience provided by two course instructors. Open, axial, and selective coding techniques were employed to analyze the data.

Connection. A sense of connection was noted throughout the open-ended survey responses from the participants attending live and those who watched the recording. An interesting finding among many of the survey responses from those who watched the recording was comments on feeling a sense of connection and a classroom feel. "*I attended the recorded session, but felt as I was thinking certain questions as they were asked by fellow classmates as well as answered. This helped me feel on the same page as everyone, and understanding the session properly.*" This sense of connectedness in relation to thinking the same questions as other participants was provoked by teaching presence, which enhanced social presence. "*All responses were acknowledged by the Instructor which gave a 'real' classroom feel"* and *"we all got to ask questions and help one another. Sometimes I had the same questions as someone else who asked.*"

Presenting the virtual instruction session live allowed presentation of spontaneous questions to students probing the action occurring on the screen in an effort to provide an awareness and understanding of the research process. Questions to the students promoted engagement not only with the content but also with the technology and the social context of the virtual classroom. Feedback as a mechanism of efficient teaching presence increased the frequency of cognitive presence, provided guidance at points of content application, and was a useful strategy for interaction and motivation to keep learners engaged and encouraged (Kuo et al., 2014; Stein et al., 2013). This engagement provoked by questioning and feedback reached both the live and the recorded participants. The use of feedback and questioning connected the students to the content, to the instructor and to each other.

Confidence. The intent of the virtual library sessions ultimately was to provide students with an awareness of research resources available to them for success in their coursework generally or in many instances to complete a course specific assignment, as well as a presentation of lifelong learning skills associated with accessing, evaluating and effectively using information. Tied together by teaching presence and cognitive presence, confidence emerged as a core theme of this study:

> I have tried to use the library site at home before for my classes and was unsuccessful. Watching her show us where to go and how to utilize the links and information was very helpful. I am confident I will be able to use the site now. As well as I am more encouraged to try again knowing I can email her as well for help.

Teaching presence as exhibited by providing step by step instructions, good organization, thorough explanations, and persistent questions to promote engagement lend to the core theme of confidence which merges right into the goal of cognitive presence in which learners are able to construct and confirm meaning. The sense of confidence is echoed by Giesbers et al. (2014) who asserted synchronous technologies' potential to provide direct personal social interactions, feedback, and monitoring of activities to create a sense of competency and autonomy for the learner.

Transference. Transference, the ability to use the information and skills learned and gained in the virtual library session to future and different situations, is in essence the goal of the virtual library sessions. The sessions are stand-alone lessons and can be equated to a guest speaker or a virtual field trip provided to give students exposure to the library and its vast resources. The library in higher education serves many purposes, yet a librarian's ability to teach students how to effectively use the resources available to them for success in their courses is contingent on whether or not a course instructor builds the library into the curriculum or if a student takes the initiative to seek out assistance on his or her own. When instruction does take place, even if it is to fulfill an assignment specific requirement, the act of locating, evaluating, and effectively using a research tool is a transferable skill—a lifelong learning skill. Indication of the effectiveness of the virtual session stimulating a need and desire to continue using the information presented in the sessions highlight how teaching presence stimulates cognitive presence was evidenced throughout the qualitative data.

In addition to transference as a sense of using the information and resources in the future, there were many references made by the students in both the survey results and within the chat transcripts expressing a desire to have had exposure to the instruction and resources earlier in their courses or academic ventures: "*I wish this information was being shared at the beginning of the course instead of near the end of the course. It would have been helpful through the whole semester,*" and "*I only wished I knew about the information at the beginning of the semester. This information is very useful*" were two examples from survey results. "*That's awesome! Wish I would have known that,*" and "*wish I would have known that was available 10 papers ago!*" were reactions from students during a live session. While not directly related to this study, the fact that many students expressed a need and desire to have had this type of instruction earlier in their courses or experiences in college is important and lends to the effectiveness of the technology and instruction.

Teaching Presence

The third research question looked for evidence of teaching presence having an effect on social and cognitive presence. Using the quantitative results from the survey for participants in the live sessions initial correlations were run using the subscales of teaching presence (design and organization, facilitation and direct instruction) with social and cognitive presence. The results showed high correlations among the presences along with violated assumptions of normality and homoscedasticity, putting a halt to the statistical investigation. The subscales of teaching presence were so highly correlated that in this study there appears to be no differentiation between those subscales. This

result is similar to research by Arbaugh and Hwang (2006) who hypothesized that the three subscales of teaching presence were empirically distinct dimensions of teaching presence. Their study did find the subscales distinct, yet highly correlated with the suggestion that the "degree of high correlation implies that the online learning environment is a demanding one where the instructor has to fulfill all three dimensions of teaching presence well" (p. 17).

Additional correlations run between the presences as single constructs, not by subscales, were found to be lower in tests run with the group of participants that viewed the recording than those who attended the sessions live. Those who watched the recording perceived the presences as more distinct entities than those who attended live. This phenomenon may in part be due to the nature of the synchronous environment. Those actively participating in synchronicity and action of the online session may have found the presences so intertwined that they were indistinguishable whereas participation in the recorded session called only for attention to the material, not an engagement with it.

In a review of prior research that supports the construct validity of the presences through factor analysis (Arbaugh & Hwang, 2006; Garrison, Cleveland-Innes, & Fung, 2004) and Principle Component Analysis (Arbaugh et al., 2008) the presences stood true to their intended roles in the CoI framework. However, in another review article of the Community of Inquiry framework, Garrison and Arbaugh (2007) cited a 2006 study by Shea et al. in which a factor analysis concluded that the teaching presence subscales of design and "directed facilitation" were the most interpretable to the construct of teaching

presence. Teaching presence, as discussed in Garrison and Arbaugh's review article, has had several interpretations as a construct and that "a clear understanding of the multidimensional structure of teaching presence has practical implications for a community of inquiry and supporting social and cognitive presence" (p. 165) including early support and structure of interaction and engagement as well as the recognition of the inquiry process.

While providing interesting and important reflections on the importance of recognizing the nature of teaching presence, the references to research presented above examine the CoI framework in an asynchronous online learning environment, not the synchronous environment on which this study was based. In this study teaching presence proved to show little evidence for possessing distinct subscales as perceived by the participants. Perhaps in the synchronous environment facilitation and direct instruction are essentially the same action whereas in the asynchronous environment these actions are distinct components that make up the delivery of instruction. Thus the higher correlations in the synchronous sessions as seen in the Live group as opposed to the lower correlations in the Recorded group may provide more support for the framework's validity in the asynchronous environment.

The assumptions of normality were violated for the quantitative measures in questions one and three. The violation of the assumption of normality is clear by a review of the survey responses. Responses scoring 4 or 5 (*agree* or *strongly agree*) dominated across all presences. Despite these violations and results that did not provide a robust analysis for teaching presence (RQ 3), this study's examination of qualitative

data in conjunction with the quantitative results uncovers an understanding of the presences in the synchronous environment that is interesting and compelling. Coupled with the emergent themes of connection, confidence, and transference, the violation of assumption of normality in this study supports the outcome of teaching, social, and cognitive presence having positive effect in the synchronous environment; despite statistical violations, participants indicated positive experiences and expressed satisfaction with language in chat and survey responses.

General Discussion

I began this study with the belief that technologies and teaching styles exist that can offer distance learning students a more robust learning experience to include emotions and sensations not necessarily associated with the online learning environment. These emotions and sensations in the virtual online environment may lend to an awareness of others in a classroom or course; students engaging with students, students engaging with instructors and students engaging with content: emotions and sensations that promote excitement generated by something new and interesting and others' reactions to the action; an arousal of interest, humor, or maybe empathy for another. I began this study with a deep-seated sense that as I teach in the synchronous online learning environment those on the other end, the participants, the students, are present and they are getting it. The "it" the students are getting may range from newly formed knowledge regarding a step in the research process, or to take away from the session something they did not know before. The "present" that the students are reflects a community capturing a sense of presence that evokes insight into personalities, and

acceptance, as well as an attention to the teaching process that encourages engagement and belonging.

One of the theoretical foundations of this study is Moore's Theory of Transactional Distance (M. G. Moore, 1993), which focuses on the psychological and communications space between the instructor and learner that occur in all learning environments. However, in the online learning environment (versus face to face), distinct attributes exist that may be impacted more by the transactional distance between the instructor and learner including feedback mechanisms, the technology used, and the ability of the instructor to be actively involved in motivating the student in the learning process. The use of the technology in this study, with the instructor on camera and microphone and using screen sharing capabilities, established an environment which prompted questions, provided feedback and motivated learning.

The fact that teaching presence consistently had the highest number of *agree* and *strongly agree* responses in the survey data for both the Live and Recording group is an exciting and important finding. The context of the teaching was not significantly different for those attending the live session than those who watched the recording, thus the transactional distance between the learner and the teacher was relatively the same for the live and the recording participants. The use of online synchronous technology to build a virtual environment minimizes transactional distance for online learners allowing for greater teaching presence regardless of when the learner participates in the experience. Teaching presence that effectively facilitates discussion provides continuous feedback and offers encouragement to participate in the lesson while promoting an

inviting atmosphere of inclusion with kindness and attention to all builds the successful Community of Inquiry. Therefore, effective teaching presence is a mechanism to bridge transactional distance (Arbaugh & Hwang, 2006) providing opportunities for transactions between the instructor, the learner, and the content to be relevant, useful, and good.

Distance learning, by its very nature, exists to serve online learners at their time and place. When virtual sessions are offered, they are done so without any expectation that students will be able to attend a live synchronous session. In this study, the fact that the recorded participants and live participants did not differ in their perception of teaching presence is valuable. Dockter (2016) considered the problems of teaching presence in transactional theories stressing that "collectively, the give and take of information results in informational transactions, through which knowledge is developed" (p. 76), and argued that online learning environment's communication differs from that of face-to-face as it is not immediate and direct and therefore an ineffective domain for knowledge creation built on student to teacher interactions. I would counter that argument and state that based on this research, synchronous environments can provide the immediate and direct context that a face-to-face classroom does.

While teaching presence proved to be established and positive across both the live and recorded modes, the benefits of the online synchronous environment lend to establishing a Community of Inquiry across all three constructs of teaching, social, and cognitive presence. The online virtual classroom provides the space and creates the environment that lays the foundation of a Community of Inquiry as an online community of learners who rely on and share characteristics of identity, influence, integration and

fulfillment of needs, and shared emotional connection (Wighting et al., 2008) allowing for a contextually based and socially situated learning environment as posited by Dewey (Swan et al., 2009). Positive commentary pointing toward each presence outweighed negative and neutral feedback on participants' experiences and as seen in the emergence of the core themes of the qualitative data, connection, confidence and transference. The experience, whether live or recorded, proved useful and effective pointing toward student success.

Teacher immediacy as a component of teaching presence and inherent in Moore's Theory of Transactional Distance is rooted in the establishment of a successful synchronous online experience as evidenced in this study. Hunt et al. (2004) provided a list of verbal and physical techniques including humor, expressiveness, accessibility, informality, similarity, familiarity, attractiveness, expertise, and self-disclosure that are teacher immediacy behaviors, which contribute to shaping perceptions of closeness and enhance the online learning experience. As the instructor in the virtual library sessions, all attributes listed above were present in the sessions and acknowledged through feedback by the participants as well as in the chat transcripts.

The literature review provided support for the association of teaching immediacy to teaching presence and the successful online learning environment (M. Allen et al., 2006; Hunt et al., 2004; Wei et al., 2012). This study's survey findings and positive qualitative data confirm the importance of teaching presence as the catalyst for establishing a successful community of inquiry. The survey data fell overwhelmingly to the positive end of the survey scale with the majority of responses falling within the

agree and *strongly agree* categories. Additionally, the study points to a variety of best practices in conducting synchronous online learning sessions many of which pertain to immediacy behaviors that create momentum for social and cognitive presence to emerge and flourish. Continual demonstrating, questioning, and acknowledgment of study participants provided a context to promote social and cognitive presence as displayed throughout the qualitative data.

Aragon (2003) provides a checklist for online instructors to establish social presence in the online environment, that overlaps Hunt et al. (2004), and includes the use of humor, addressing students by name, allowing students options for addressing the instructor, providing frequent feedback, striking up a conversation, and sharing personal stories—all of which I do as the instructor in the synchronous online virtual library sessions. As seen in chat transcripts and open-ended survey responses throughout this study, I called out students by their names and encouraged the use of the chat box to share their voices. Prior to the official start of the instruction I told students that the online environment is their classroom and the chat box is their voice and it should be used. Also, prior to beginning a session I welcomed each student by name as they entered the virtual environment often times asking how their day or weekend was.

The use of humor and a real view of myself on camera in my home provided the social context to build upon social and cognitive presence. For example my dog on many occasions inserts herself into the session by barking and making an on camera appearance instigating emotional and risk free reactions often asking to see her on camera, what her name is, breed, and so forth. While not everyone may be concerned about or care to see a

dog, cat, bird, or child on camera as I teach, these actions usually are well received and allow me as the session instructor to assume social presence that enhances the teaching presence.

Limitations

Research on the Community of Inquiry and the three presences has primarily been based upon distance learning as educational interactions taking place in an asynchronous environment. Interaction in the distance learning occurs over a course of time; students read information and respond on their own time receiving feedback with discussion occurring over a course of time predominantly on discussion boards. Students in distance learning courses may be presented with a variety of multimodal opportunities to engage with course content and learning tools but primarily do so on their own receiving commentary and feedback at times other than when present with the learning process. Much of the research examining teaching, social, and cognitive presence in the static online learning environment has focused on discussion boards to determine the effects of the presences.

A limitation associated with the design of this study is that the data collected, both quantitative and qualitative, were based upon participants' engagement in a single session, not as a review of a course over a period of time. In all of the literature reviewed, studies on the Community of Inquiry framework and measurement of teaching, social, and cognitive presence, participation relied on observation of courses, not stand alone sessions. The participants in this study experienced an online virtual library session as perhaps a novel occurrence in a course that might not otherwise use synchronous

technologies, a departure from the norm and possibly mundane nature of attending to an online class. In addition to the exciting technology, the session itself departed from the course content to serve as a very directed lesson. Taking the technology used with the break from the course content may be a contributing factor to a number of statistical violations, which occurred upon analysis of the data and the perceptions of the presences.

Prior research using the Community of Inquiry survey in asynchronous distance learning situations coupled with the length of time each participant in this study spent in the synchronous sessions serve as a limitation and may speak to the mismatch between the CoI survey instrument in the synchronous online environment. Additionally, as the instructor for each synchronous session, I too serve as a research limitation. It is clear by the overwhelmingly high scores on the survey coupled with the positive feedback on teaching presence that I may be much more proficient at teaching online virtual sessions than others who take to the task. I have close to 10 years of experience teaching in the synchronous environment and enjoy the process each time I teach, effectively conveying the subject matter with a relaxed attitude and ability to attend to all the details associated with managing an online classroom.

Conclusion and Considerations for Future Research

This study looked toward online synchronous technologies having an effect on teaching, social, and cognitive presence as a mechanism to create deep and meaningful learning experiences. It was hypothesized that perceptions of the three presences would differ between participants attending a live online session than those who watched a recording of the session and that the synchronous environment would afford teaching

presence to have a positive impact on social and cognitive presence. The results of this study have several implications for consideration of future research.

The CoI framework as the foundation for this study relied on using the Community of Inquiry Survey as the mechanism to collect quantitative and some of the qualitative data. This survey was built around the notion of distance learning as an asynchronous function. Although the survey used for this study was an abbreviated (and validated) version of the longer version of the survey to which language was edited to relate to the context of the study, the survey was developed as a mechanism to measure perceptions of the presences, as they may exist in an asynchronous environment, not the synchronous environment. Future research may investigate the validity of the CoI survey in synchronous environments based on longer activity in the environment, such as the repeated use of synchronous technologies throughout a semester.

Another consideration for future research determined by the outcomes of this study and previous research lies in examination of the importance of teaching presence in the Community of Inquiry framework and in the realm of online education. Past research on teaching presence in the asynchronous environment has validated as well as questioned the subscale constructs of teaching presence. In this study the subscales (design and organization, facilitation, and direct instruction) of teaching presence were weakened in the synchronous environment while high levels of overall satisfaction with teaching presence suggested perception of the construct as a whole. Is this an anomaly based upon my experience teaching in the synchronous environment, the content of the virtual sessions or the context in which the sessions occurred? Maybe instead of a single

session as the basis of obtaining data, the collection of data based on synchronous sessions over a course of time would further validate the survey in the synchronous environment and provide more robust data to examine the level of perceptions of the presences. Or can synchronous technologies truly enhance the capabilities to achieve greater teaching presence and ultimately higher levels of social and cognitve presence?

Based on the two groups in the study that showed no difference in perception of teaching presence, future research measuring the impact of teaching presence on the transactional distance between the teacher and the learner would be incredibly beneficial to the study of distance learning. As stated earlier in this chapter, "a clear understanding of the multidimensional structure of teaching presence has practical implications for a community of inquiry and supporting social and cognitive presence" (Garrison & Arbaugh, 2007, p. 165), studying the context of the instruction may provide insight into best teaching practices to promote teaching presence. Additionally, studying teaching presence in depth may contribute to the Community of Inquiry framework by further validating the subscales, or finding new concepts associated with teaching presence.

Lastly, considering the lack of prior research on the type of participation with the synchronous environment (attending live or watching a recording), studies that specifically look toward the type of participation would be useful. Do the presences manifest differently in the two environments and if so how? What type of participation works or works better (or worse) than the other.

This dissertation began with a quote from Kelly's article *The Sensuous Classroom*, which spoke to the classroom as an element of the learning environment

made up of more than just a teacher, classmates, walls, desks and thoughts, and so forth, but all of those entities intertwined to create an experience that is education. Kelly (2008) ended her article with a story of a student's description of her as a teacher who spoke waving her arms while eating an orange, a description of an instructor with quirky mannerisms who had an impact on the student's learning experience:

> The student's description was a useful reminder, helping me better see myself as a professor with a body, and to think about the meanings—both known and not yet understood—that are embedded in our physical proximity to one another.

While the synchronous online environment is far from offering those within its virtual classroom the opportunity to see, hear, or smell and react to one another, the technology and teaching style does provide the mechanisms by which connections can occur that otherwise may not in the asynchronous environment. These connections promote proximity and the connections allow teaching presence, social presence, and cognitive presence to build a community of inquiry. To conclude, I believe it is imperative to continue to study the effectiveness and affordabilities that synchronous environments may provide in establishing teaching, social, and cognitive presence in an effort to promote deep and meaningful learning in the realm of online education.

APPENDICES

APPENDIX A

LETTER TO FACULTY

Appendix A

Letter to Faculty

Dear English Faculty –

Here's my friendly reminder to consider scheduling a virtual library instruction session for your distance learning courses:

If you are teaching an online or blended course this semester please consider scheduling a virtual library instruction session for your classes. The intent is to expose the students to the library's electronic resources that most folks have no idea exist AND to help with gathering credible and relevant sources for papers and assignments. The sessions, which take place in a synchronous environment, allow students to ask questions as I share my computer screen and guide them through various resources that accommodate the course needs. Sessions are recorded, so those students that cannot make a scheduled session will have the ability to view it on their own.

This is a wonderful and very engaging opportunity for DL students to gain exposure to and appreciation of the resources we have available to them.

If you know of another faculty member that teaches online please pass this information along.

Thanks and have a great semester!

APPENDIX B

LESSON PLAN

Appendix B

Lesson Plan

The online classroom is made up of four individual layouts; a prescreen layout, a polling layout, a sharing layout and a collaboration layout. These screens serve to provide an enhanced experience that moves fluidly from a distinct starting point to a distinct end of the session. The prescreen layout serves as a holding space for the class including the day and time the instruction will take place. The prescreen is created to act as a "virtual" sign on the door to the classroom; as students will have the link to the virtual classroom prior to the session, they may investigate the scene prior to class starting. The prescreen includes an inviting graphic and indication of human presence and enthusiasm for the session.

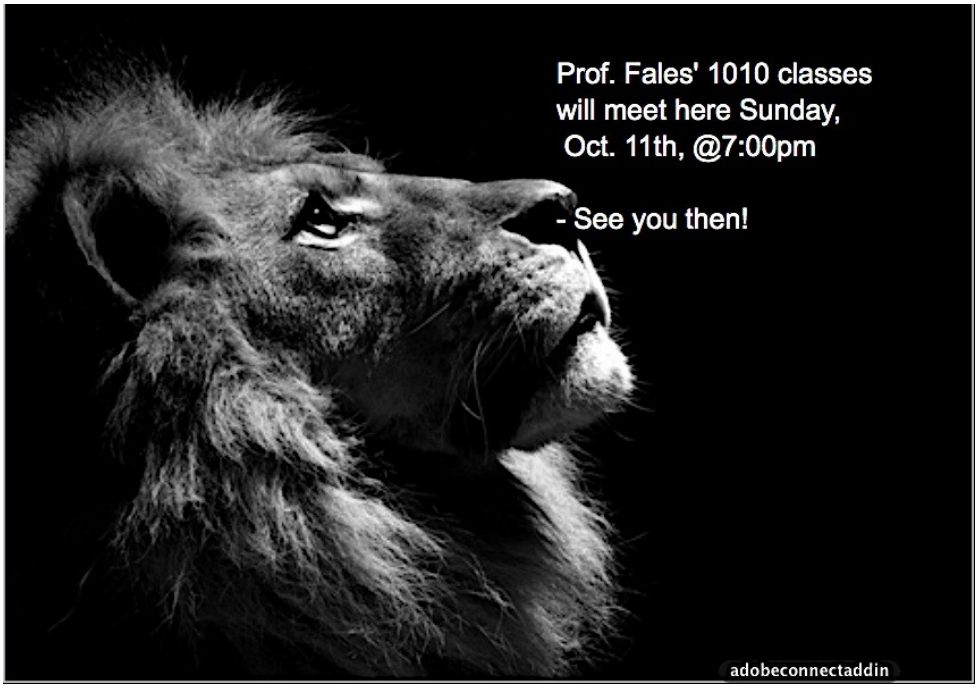


Figure B1. Adobe Connect Prescreen Layout.

At the time of the instruction I change the format to the polling layout. Here, students (and perhaps the instructor of the course) access the virtual classroom via the link provided and begin the session by filling out interactive polls. There are four polls that ask questions related to library instruction, the library website, experience with online learning and research resources. The data collected from the polls are not used in the research, however, the act of filling out the polls is intended to engage the student with the technology. A "notes" window provides detail on the class. Additionally, this layout includes an attendee list and a chat window. While students are entering the virtual environment and filling out the polls, the I type a message asking what topics they need information for and that the researcher will be on camera at the start of the class.

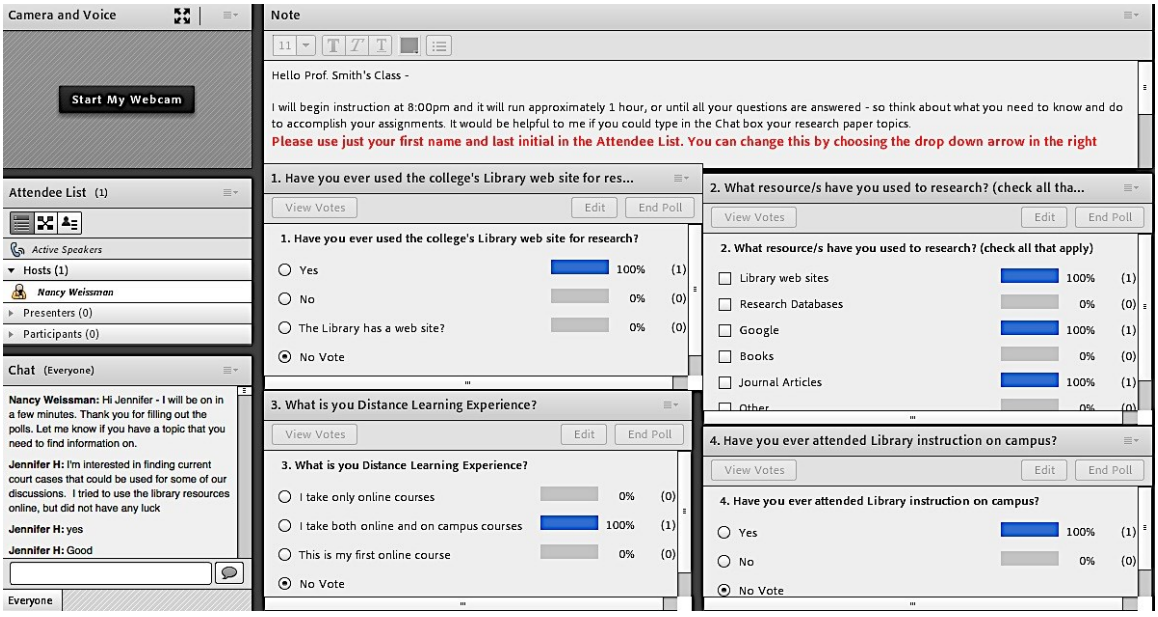


Figure B2. Adobe Connect Polling Layout Screen.

When the online session officially begins I start the camera and microphone and begin to engage with the students by asking such things as, “Can you hear me?” “How was your day/weekend?” “What assignment are you working on?” and “Is this your first time using this technology?” I then explain that I am only person on camera and with a microphone throughout the session but will encourage students to use the chat feature as that is “their voice” for the classroom. The introductions, polls, and instructions take no more than five minutes.

The next step is to move to the screen share layout and share the computer desktop with the class. At this point I walk the students through the library’s website in order to expose them to resources for use while they work on and through papers, assignments, projects, etc. Students see and hear me throughout the session although they may choose to enlarge the screen and in that case will just hear. Enlarging the screen results in losing the chat box but any typed chat will pop up in a small box on the lower right hand corner of the screen. Students may toggle back and forth between a full screen view and the regular view showing all features of the virtual environment. I spend roughly 45 minutes reviewing resources during which students are asked questions regarding what is being done, questions on how to create searches, as well as questioning search results, consistently asking for indication of understanding.

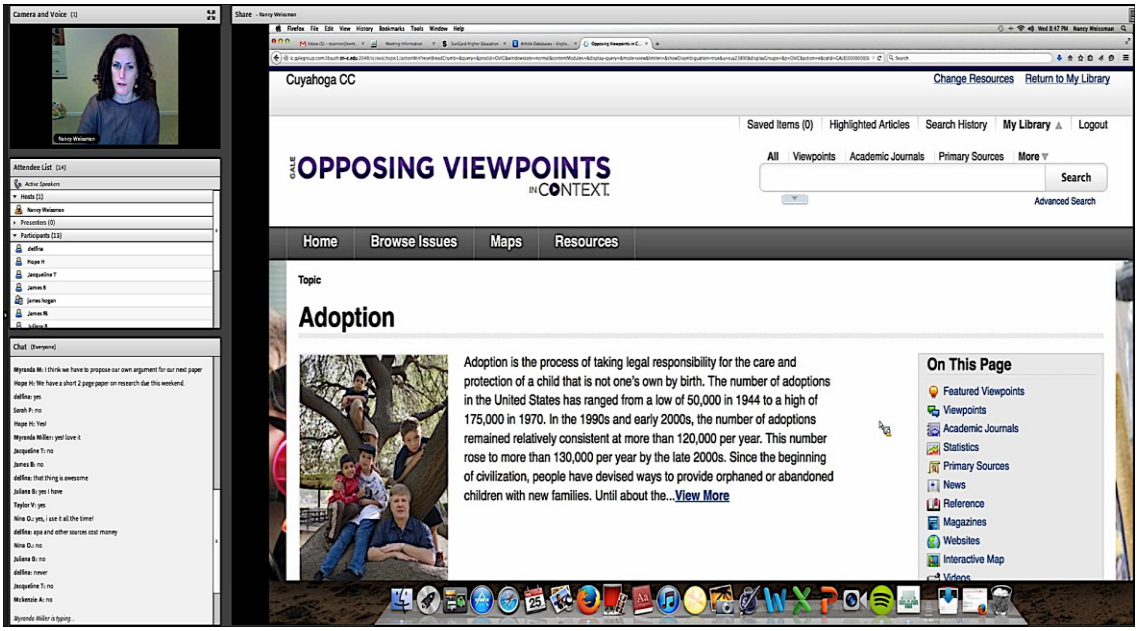


Figure B3. Adobe Connect Screen Share Layout

The session ends on the collaboration layout, a screen in which the session is recapped by my typing what was covered throughout the session and I then ask for further questions. It is at this point in which a link to the survey is presented. I am on camera throughout the session. Additionally, the chat and attendee list windows are available for the duration of the live session. Each session is recorded and immediately following the session the link to the recording is provided on Adobe Connect and the instructor of the course will be emailed the link to the recording as well. Students who view the recorded session will have access to the survey link from their instructor.

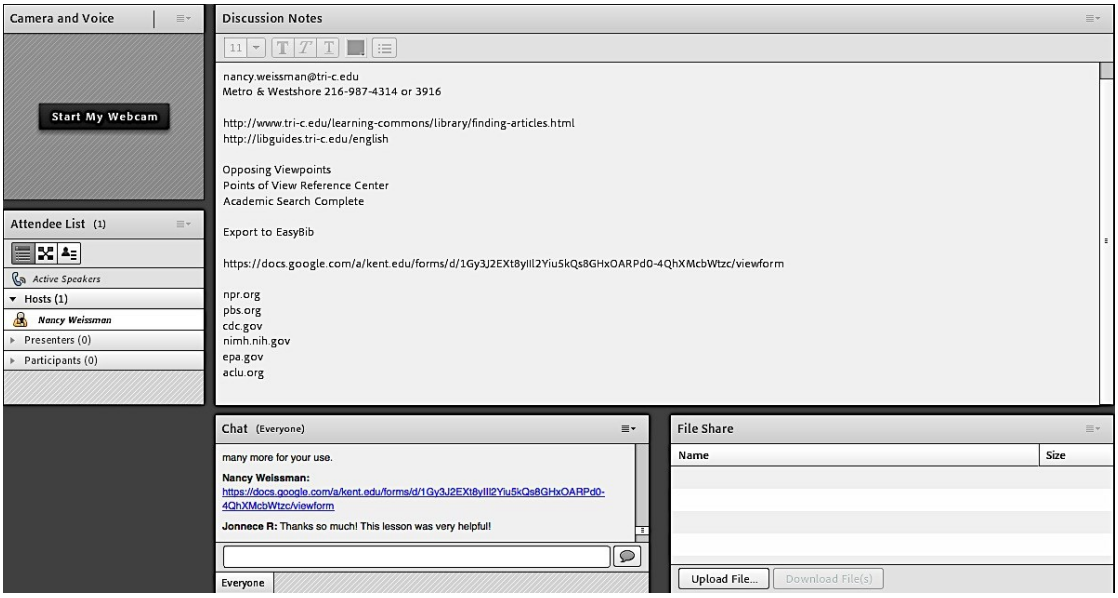


Figure B4. Adobe Connect Collaboration Layout Screen.

APPENDIX C

CONSENT TO PARTICIPATE IN THE LIVE SESSION

Appendix C

Consent to Participate in the Live Session

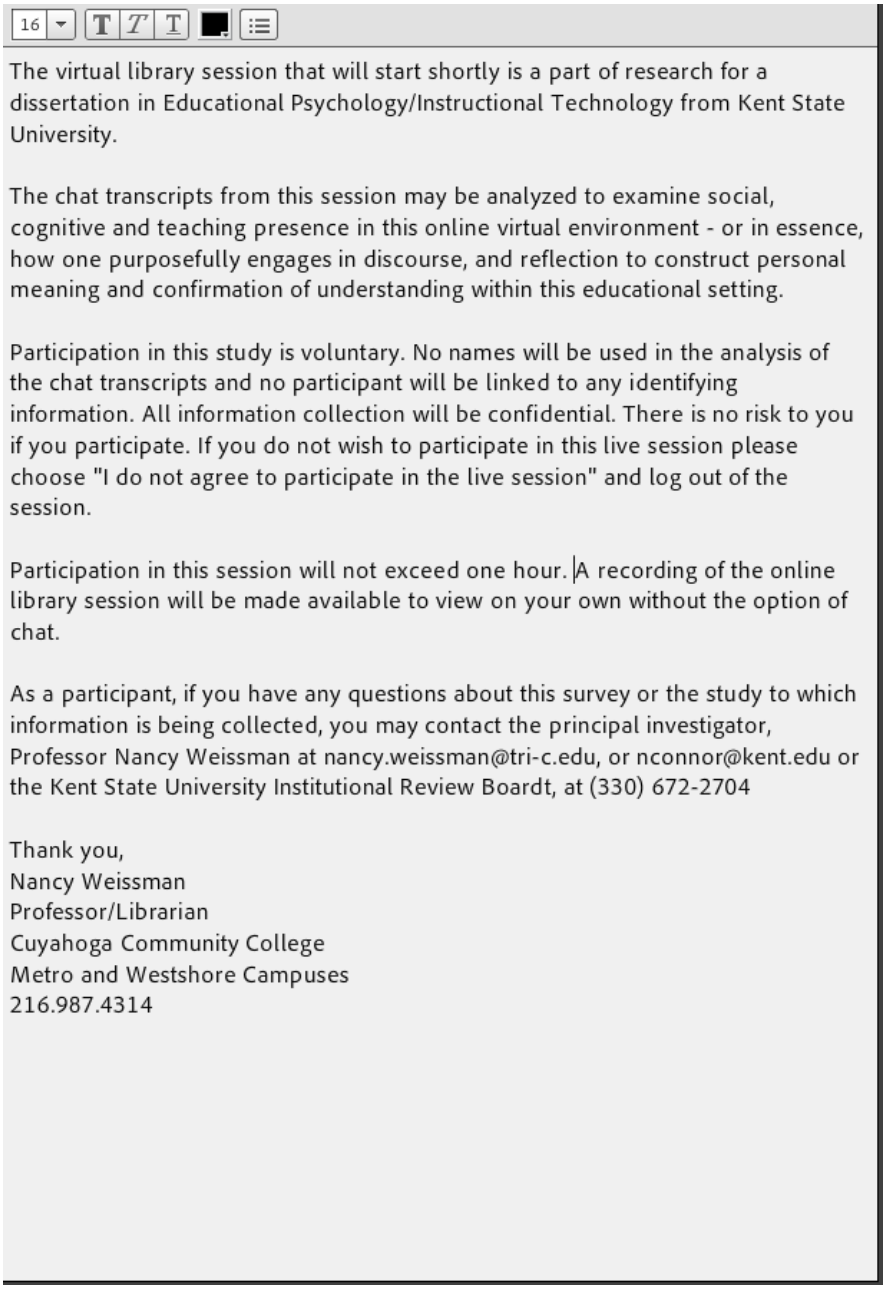


Figure C1. Information on participation in live session.

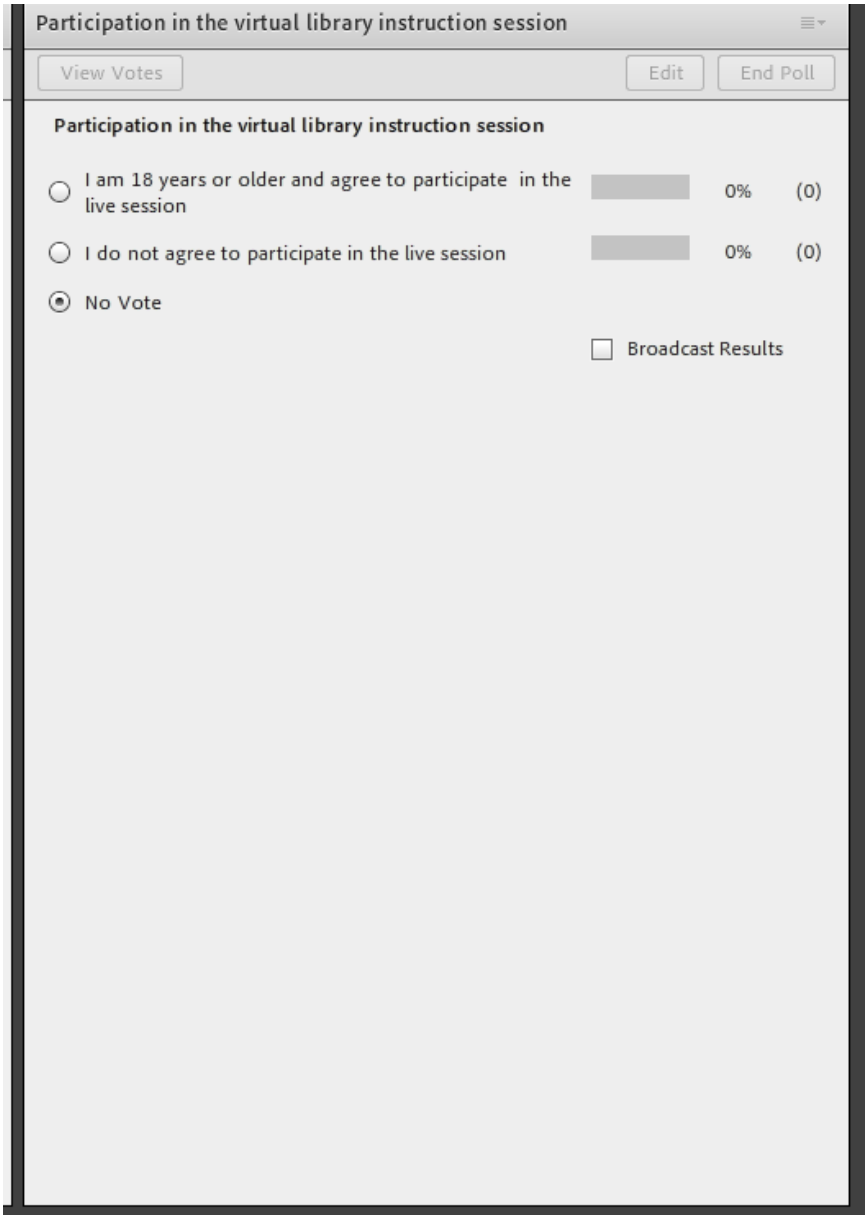


Figure C2. Options to consent in the live session.

APPENDIX D

CONSENT FORM TO PARTICIPATE IN THE COMMUNITY OF INQUIRY SURVEY AND THE COMMUNITY OF INQUIRY SURVEY

Appendix D

Consent Form to Participate in the Community of Inquiry Survey and the Community of Inquiry Survey

Community of Inquiry Presences Survey - 2016

Q1 Community of Inquiry Presences Survey - Spring 2016

This survey seeks to measure the three presences of the Community of Inquiry model based upon your experiences in the Virtual Library Orientation session in which you participated in today.

The Community of Inquiry theoretical framework represents a process of creating a deep and meaningful (collaborative-constructivist) learning experience through the development of three interdependent elements - social, cognitive, and teaching presence.

Social presence is "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities" (Garrison, 2009).

Teaching Presence is the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Anderson, Rourke, Garrison, & Archer, 2001).

Cognitive Presence is the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson, & Archer, 2001).

This survey will take approximately 7 minutes to complete and participation is anonymous and all results are confidential.

Participation in this survey is voluntary and you may withdraw from answering questions at any point. As a participant, if you have any questions about this survey or the study to which information is being collected, you may contact the principal investigator, Professor Nancy Weissman at nancy.weissman@tri-c.edu, or nconnor@kent.edu; or the Kent State University Institutional Review Board, at (330) 672-2704

- ❍ I Agree to participate in this survey
- ❍ I Do Not Agree to participate in this survey

If I Do Not Agree to Participate is selected, Then Skip To End of Survey

2. The instructor clearly communicated important virtual library session goals and topics. Teaching Presence - Design & Organization

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

3. The instructor provided clear instructions on how to participate in virtual library session learning activities. Teaching Presence - Design & Organization

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

4. The instructor clearly communicated important due dates/time frames for learning activities. Teaching Presence - Design & Organization

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

5. The instructor was helpful in identifying areas of agreement and disagreement on the session topics that helped me to learn. Teaching Presence - Facilitation

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

6. The instructor helped to keep virtual library instruction participants engaged and participating in productive dialogue. Teaching Presence - Facilitation

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

7. The instructor encouraged virtual library instruction participants to explore new concepts in this course. Teaching Presence - Facilitation

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

8. Instructor actions reinforced the development of a sense of community among virtual library session participants. Teaching Presence - Facilitation

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

9. The instructor helped to focus discussion on relevant issues in a way that helped me to learn. Teaching Presence - Direct Instruction

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

10. The instructor provided timely feedback that helped me understand my strengths and weaknesses. Teaching Presence - Direct Instruction

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

11. Teaching Presence - Open ended response. What are your impressions or comments on ways in which the librarian conducted this session to promote engagement, a sense of community and learning opportunities?

12. Getting to know other virtual library session participants gave me a sense of belonging in the course. Social Presence - Affective expression

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

13. Online or web-based communication is an excellent medium for social interaction. Social Presence - Affective expression

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

14. I felt comfortable participating in the virtual library session discussions. Social Presence - Open communication

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

15. I felt that my point of view was acknowledged by other virtual library session participants. Social Presence - Group cohesion
- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

16. Online discussions help me to develop a sense of collaboration. Social Presence - Group cohesion
- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

17. Social Presence - Open ended response What are your impressions or comments on your experience in this session with the ability of participants to feel a sense of community, ability to communicate and to project your individual personality into the session?

18. Problems posed increased my interest in virtual library session issues. Cognitive Presence - Triggering event
- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

19. The virtual library session activities piqued my curiosity. Cognitive Presence - Triggering event
- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

20. I utilized a variety of information sources to explore problems posed in the virtual library session. Cognitive Presence - Exploration

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

21. Discussing the virtual library session content with my classmates was valuable in helping me appreciate different perspectives. Cognitive Presence - Exploration

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

22. Combining new information helped me answer questions raised in course activities. Cognitive Presence - Integration

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

23. I can describe ways to test and apply the knowledge created in the virtual library session. Cognitive Presence - Resolution

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

24. I can apply the knowledge created in the virtual library session to my work or other non-class related activities. Cognitive Presence - Resolution

- ❍ strongly disagree
- ❍ disagree
- ❍ neutral
- ❍ agree
- ❍ strongly agree

25. Cognitive Presence - Open ended response What are your comments or impressions on your experience in this session with the extent to which you were able to construct meaning and understanding of the content in this session?

Did you attend the live virtual library session or watch the recording of the session?
- ❍ I attended the live session
- ❍ I watched the recording of the session

26. In what class were you a participate for the virtual library instruction? Examples - Eng. 1010, Psychology 2010, BADM 1010, Nurs. 1701, Speech, etc.

What format is the class in which you attended the session or viewed the recording?
- ❍ All Online
- ❍ Blended Learning (part face-to-face and part online)

What is your Distance Learning experience?
- ❍ I take only online classes
- ❍ I take both online and face-to-face classes
- ❍ This is my first online class

27. If you have any other feedback on your experience in this virtual library session, please enter your comments here. Thank you.

In what range is your age?
- ❍ 18-22
- ❍ 23-27
- ❍ 28-32
- ❍ 33-37
- ❍ 38-42
- ❍ 43-47
- ❍ 48-52
- ❍ 53-57
- ❍ 58 or older

APPENDIX E

COMMUNITY OF INQUIRY CODING TEMPLATE

Appendix E

Community of Inquiry Coding Template

Elements	Categories	Indicators (examples only)
Cognitive Presence	Triggering Event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Apply new ideas
Social Presence	Emotional Expression	Emoticons
	Open Communication	Risk-free expression
	Group Cohesion	Encouraging Collaboration
Teaching Presence	Instructional Management	Defining & initiating discussion topics
	Building Understanding	Sharing personal meaning
	Direct Instruction	Focusing discussion

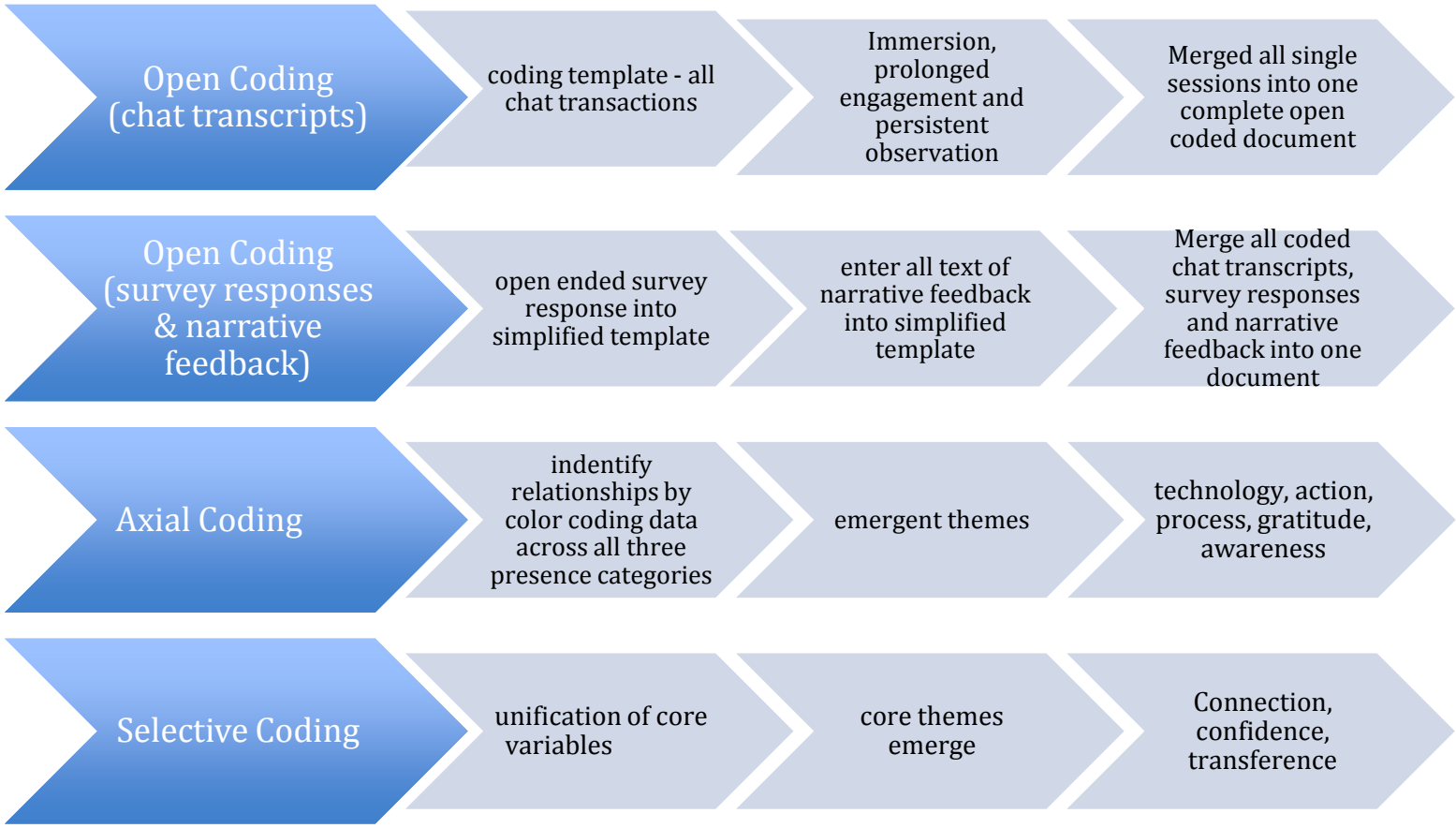
(Garrison, Anderson, & Archer, 2000a)

APPENDIX F

QUALITATIVE CODING PROCEDURES

Appendix F

Qualitative Coding Procedures

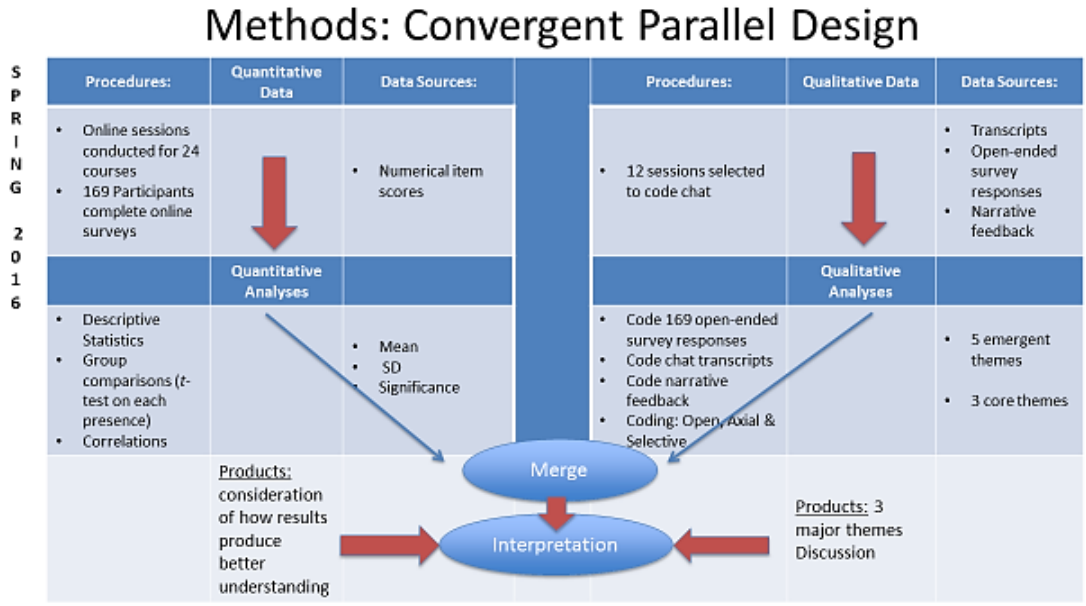


APPENDIX G

CONVERGENT PARALLEL DESIGN

Appendix G

Convergent Parallel Design



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