A Quantitative Study of Student Perceptions of the Community of Inquiry Presences

in Community College Online Courses

A Dissertation

Presented in Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

with a

Major in Education

in the

College of Graduate Studies

University of Idaho

by

Carol Leigh Boosembark Billing

Major Professor: Allen Kitchel, Ph.D.

Committee Members: Paul Gathercoal, Ph.D.; Kathy Canfield-Davis, Ph.D.;

Daniel Campbell, Ph.D.

Department Administrator: Raymond Dixon, Ph.D.

May 2020

Authorization to Submit Dissertation

This dissertation of Carol Leigh Boosembark Billing, submitted for the degree of Doctorate of Philosophy with a Major in Education and titled "A Quantitative Study of Student Perceptions of the Community of Inquiry Presences in Community College Online Courses," has been reviewed in final form. Permission, as indicated by signatures and dates below, is now granted to submit final copies to the College of Graduate Studies for approval.

Major Professor: _____ Date: _____

                   Allen Kitchel, Ph.D.

Committee

Members: _____ Date: _____

                   Paul Gathercoal, Ph.D.

_____ Date: _____

                   Kathy Canfield-Davis, Ph.D.

_____ Date: _____

                   Daniel Campbell, Ph.D.

Department

Administrator: _____ Date: _____

                   Raymond Dixon, Ph.D.

Abstract

This three-article dissertation studied the student perceptions of the Community of Inquiry's cognitive presence, social presence and teaching presence in education and general education online community college courses. Students were queried over several semesters using the Community of Inquiry (CoI) instrument.

Manuscript 1

Manuscript 1 evaluated CoI's cognitive presence, social presence and teaching presence as self-reported by community college students in one instructor's online education courses. The research focused on the associations between the three constructs. The results of a multiple linear regression analysis indicated the teaching presence and social presence explained 68% of the variability of the cognitive presence. Further investigation of the associations of each CoI presence with sub-constructs from the remaining two CoI presences indicated a pair of predictor variables for each presence. The cognitive presence sub-construct exploration and the teaching presence sub-construct design and organization showed a significant, strong positive correlation to the social presence. The teaching presence was significantly, positively associated with two cognitive presence sub-constructs resolution and exploration. The analysis also showed a significant association between the cognitive presence and the teaching presence sub-construct facilitation and the social presence sub-construct group cohesive. Using indicators for each CoI sub-construct from previous research, this study aligned pedagogical benchmarks to the predictor variables.

Manuscript 2

In Manuscript 2, the CoI framework and instrument is used to investigate the commonalities and differences between perceived CoI presences experienced by community

college students enrolled in an online education (major-specific) course as compared to students enrolled in an online freshmen orientation (general education) course. A Pearson product-moment correlation coefficient was calculated for each of the paired associations between CoI constructs within each group of students. The data used was an interval scale measure because it was an average of several values. Both groups showed significant correlations between the teaching presence and the cognitive presence, as well as the social presence and the cognitive presence. Multiple regression models indicated the teaching presence and social presence explained 68% of the variability of the cognitive presence in the major-specific group. For the general education group, the teaching and social presences explained 76% of the variability of the cognitive presence.

Within each group, multiple linear regression was used to study associations between each CoI presence and sub-constructs from the remaining two CoI presences. The cognitive presence sub-construct exploration and the teaching presence sub-construct design and organization were significant predictors, explaining 61% of the variance of the social presence within the major-specific sample. Sixty-five percent of the variance of the social presence within the general education sample was explained by the cognitive presence sub-construct integration and the teaching presence sub-construct facilitation. The cognitive presence sub-constructs resolution and exploration were significant predictors, explaining 63% of the variance of the teaching presence for the major-specific group. The cognitive presence sub-construct integration and the social presence sub-construct group cohesion were significant predictors explaining 66% of the variance in the teaching presence for the general education group. Both teaching presence sub-construct facilitation and the social presence sub-construct group cohesive were significant predictors, explaining 73% of the variability of the cognitive

presence in the major-specific group, and 75% of the variability of the cognitive presence in the general education group. Once each CoI sub-construct was aligned to previously established indicators, this study defined specific pedagogical benchmarks to each predictor variable to provide instructional suggestions specific to a major-specific or general education online course.

Manuscript 3

The satisfaction construct was introduced in Manuscript 3, to better understand the relationship between the students' perceived CoI presences and course satisfaction. Used in conjunction with the CoI instrument, online community college students enrolled in education (major-specific) or freshmen orientation (general education) online courses were surveyed to provide a stronger understanding of their online learning experience. A Pearson product-moment correlation coefficient was calculated for each of the paired associations between the CoI presences and the satisfaction construct. Analysis showed a significant, strong positive correlation between the teaching presence and the satisfaction construct. The cognitive presence showed a slightly less significant, strong positive correlation to the satisfaction construct. The social presence also displayed a significant, strong positive correlation to the satisfaction construct. A Pearson product-moment correlation coefficient was calculated for each of the paired associations between the CoI sub-presences and the satisfaction construct. For each pairwise comparison, a significant correlation was found. The two strongest associations occurred between the teaching presence's sub-construct facilitation and satisfaction; and the cognitive presence's sub-construct resolution and satisfaction.

Multiple linear regression was used to further investigate the strengths of the associations between variables. The results indicated the teaching and social presences

explained 70% of the variability of the satisfaction construct. When multiple linear regression was conducted using the satisfaction construct and CoI sub-constructs, two predictive variables were identified. In this model, the teaching presence sub-construct facilitation and the cognitive presence sub-construct resolution were significant predictors, explaining 70% of the variance of the satisfaction construct. A one-way ANOVA was calculated for each demographic item and the satisfaction construct. No significant differences were found between the demographic items and the satisfaction construct.

Keywords: Cognitive Presence, Social Presence, Teaching Presence, Community of Inquiry Framework, Satisfaction, Online Learning, Online Teaching, Online Pedagogy

Acknowledgements

Throughout this journey, I couldn't have survived without the support of my husband Eric. I am grateful for your unarticulated support; picking up the pieces, ensuring everyone was fed, washed and ready for the next day while I studied or wrote. *Thank you, je t'aime.*

I am thankful for my children's ability to adjust and accommodate for a mom who spent hours on the computer. Their contribution to my success was invaluable. They were, and continue to be, my '*why*.'

To my best friend Teresa, I couldn't have survived without you. Visits, texts, trips and much more, your friendship knows no bounds and I am eternally grateful.

For my St. Mary's parents, who took the time to hug my kids, adjust their ties and ensure they were ready to start the day in my absence, I am so grateful. For all the mornings your kind words and hugs supported my journey and assured me this would be worth it, I have been truly blessed by your friendship.

Thank you to my co-workers at the College of Western Idaho and the University of Idaho for the many words of encouragement over the years. These conversations were more supportive than you can imagine.

While not on my committee, but integral to my success, I am so lucky to have found a friend and co-worker as supportive as Dr. John Cannon. Thank you for always being in my corner.

I am especially grateful to my committee members, Dr. Paul Gathercoal, Dr. Kathy Canfield-Davis and Dr. Dan Campbell. I appreciate the time and attention you unselfishly afforded me during this process. Your discerning feedback, encouragement and challenging questions made this experience my greatest academic adventure.

Finally, I am grateful for a major professor who was willing to mentor the mother of two young sets of twin boys as a doctoral student. Allen was patient when I needed time and pushed when necessary. I appreciate his kindness, '*heart of a teacher*' and willingness to let me craft a truly unique doctoral research experience. I feel lucky to have had a major professor with his knowledge, attention to detail and no-nonsense approach to mentorship.

Dedication

To my mother Lainda, who instilled my love of learning, unwavering work ethic

and self-confidence.

I was so blessed to have you as a role model and confidant.

You have always been, and will always be, my greatest inspiration.

Table of Contents

List of Figures

List of Tables

Chapter One: Introduction

Enrollment in online post-secondary courses remains strong, increasing since 2002 (Allen & Seaman, 2017). In an effort to adapt, faculty seek accurate tools to evaluate online teaching pedagogy. The Community of Inquiry (CoI) theoretical framework and instrument was created to better understand the dynamics of creating and maintaining a deep, meaningful online learning experience. This model assumes learning occurs through the interaction of three primary CoI elements: cognitive presence, social presence and teaching presence (Arbaugh et al., 2008).

Leveraging the benefits of online learning, post-secondary programs strive to improve the education provided in distributed environments. Use of the CoI theoretical framework and instrument to evaluate online instruction has yielded associations between the cognitive, social and teaching presences. The CoI framework is comprised of three primary constructs, and each of these constructs are composed of sub-constructs. Correlations between the primary constructs and sub-constructs further enable online instructors to evaluate the effectiveness of their pedagogical choices.

This study of virtual teaching and learning provides research to inform and improve online pedagogy. Focusing on major-specific and general education students enrolled in online courses at a community college, the data has been analyzed to inform best practices for course development and instruction.

Dissertation Problem Statement

Enrollment of community college students in online courses has increased consistently over the last 14 years. Community college students face challenges unique to a two-year institutional population. These students, often non-traditional and first-generation college

students, overcome monetary, employment and familial challenges not experienced by traditional, four-year university students. The community of inquiry developed within an online environment can be a significant factor in a community college students' ability to persevere (Ishitani, 2005; Nomi, 2005; Tibbetts et al., 2018; Wighting, Liu, & Rovai, 2008; Shea & Bidjerano, 2008).

Currently online courses are not tailored to best meet the needs of a specific student population within a community college setting. Online instructors struggle to identify pedagogical strategies to support the development of strong CoI presences that support and enhance the creation and sustainability of a community of inquiry within a community college online course. There is a gap in the research to inform how best practices of online pedagogy differ for major-specific and general education students in a community college environment. Lastly, more research is needed to specifically evaluating how the CoI presences correlate with student satisfaction in an online community college course

This dissertation study of the CoI framework's presences encompasses three manuscripts that will be referred to as manuscript 1, manuscript 2 and manuscript 3. The document includes six individual chapters. The first chapter, this one, introduces the overall dissertation purpose and structure. The second chapter provides a historical overview of the Community of Inquiry (CoI) theoretical framework that is the basis for each of the three studies that follow. Chapters 3-5 represent the individual research studies, manuscript 1 (Chapter 3), manuscript 2 (Chapter 4), and manuscript 3 (Chapter 5). The final chapter, Chapter 6, serves as a summary and discussion of the commonalities and differences across the three manuscripts.

Dissertation Research Question

The purpose of this study was to investigate students' perceptions of the CoI framework's cognitive, social and teaching presences in community college online major-specific and general education courses. This dissertation features three related research manuscripts that analyzed students' perceptions of the CoI frameworks' cognitive, social and teaching presences in community college online major-specific and general education courses. Although related, each manuscript investigated a unique research question and its sub-questions that delved more deeply into the intricacies of developing an effective community of inquiry in a fully-online, asynchronous learning environment.

The first study investigated students' perception of the CoI framework's three primary presences when taught with a specific set of pedagogical practices within an online education course. Subsequent analysis reviewed the associations between the primary CoI presences and sub-presences, and aligned pedagogical benchmarks believed to strengthen specific sub-constructs.

The second study expanded upon the first study and focused on the differences in which students perceived the CoI cognitive, social and teaching presences between major-specific (education) and general education (freshman orientation) online courses taught with defined pedagogical benchmarks by the same instructor. Associations between the primary CoI presences and sub-presences of the remaining two CoI presences for each group of students were analyzed. Instructional strategies were aligned to the correlated sub-constructs to show how pedagogy can strengthen the development of CoI presences in major-specific and general education online courses.

This third study examined associations between the CoI cognitive, social and teaching presences and the student satisfaction construct within community college online courses taught by a variety of instructors. The sub-constructs for the CoI presences were analyzed to determine which sub-constructs are the most significant predictors of student satisfaction.

Commonalities & Differences

Writing a three-article dissertation enables CoI data to be creatively analyzed from three distinct perspectives contributing to the body of research specializing in the identification of best practices for online and distance learning. In the process, it is necessary that some areas of each study repeat similar information. Each study addresses the same overarching problem, has a similar review of literature focused on the CoI framework, population, methods, participants and timeframe. Each manuscript has an individual introduction, statement of the problem, purpose, research questions, hypotheses and significance statement.

Within the methodology section, manuscript 1 focused on pre-service teachers enrolled in an online education course taught by one instructor. Manuscript 2 used data from students enrolled in an online major-specific (education) course, as well as data from students enrolled in a general education (freshman orientation) course taught by the same instructor. Manuscript 3 participants were students in online major-specific (education) course, as well as data from students enrolled in a general education (freshman orientation) course taught by several instructors. The data was collected during the same semesters using Qualtrics, a software program for collecting and analyzing research data. The research was certified as exempt by the institutional review boards of all participating institutions. Because the same

data is used in all three research studies, there is commonality in the population and sampling sections.

Differences are illustrated in tables to delineate between CoI presences, CoI presence sub-constructs, and demographic factors used in data analysis. The demographic categories are detailed in tables. Potential threats to validity were examined, including issues related to measurement, construct, internal and conclusion validity. They are reviewed and addressed within each manuscript.

Vocabulary & Abbreviations for All Studies

Bartlett's Test: Prior to factor analysis, this test ensures all correlations in the matrix to be factor analyzed are zero (Vogt & Johnson, 2011).

Community of Inquiry (CoI): Created by Garrison and colleagues, this framework and instrument was created in 1999. The instrument includes 34 Likert scale questions to evaluate an instructor's cognitive, social and teaching presence in an online or blended class (Garrison, Anderson, & Archer, 1999).

Cognitive presence: exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry (Garrison, 2007).

Constructivism: learners construct their own understanding and knowledge of the world through experiencing and reflection in experiences (Dewey, 1938).

Correlation Matrix: A table of correlation coefficients that shows all pairs of correlations of a set of variables (Vogt & Johnson, 2011).

Cronbach's Alpha: A measure of internal reliability of items in an instrument. Scores range from 0 to 1.0, with .7 or higher indicating items in an index are measuring the same thing. (Vogt & Johnson, 2011).

Grow your own: Teacher preparation candidates from rural areas who wish to become teachers in their hometown districts (Bushweller, 2017).

Eigenvalue: A statistic in factor analysis that indicates how much of a variation in the original group of variables is accounted for by a particular factor. Values of less than 1.0 are not considered significant. Eigenvalues have similar uses in canonical correlations analysis (Vogt & Johnson, 2011).

EFA (exploratory factor analysis): Factor analysis conducted to show what latent variables or factors constitute a set of variables or measures.

Instructivism: Learners are the passive recipient of knowledge from the teacher (Onyesolu, Nwasor, & Ositanwosu, 2013).

KMO Test. The Kaiser-Myer-Olkin test indicates the strength of a relationship among variables in a correlational matrix. It is found by calculating the correlations between each pair of variables after controlling for effects of all other variables. The range is 0 to 1.0; .70 is considered a minimum for conducting a factor analysis (Vogt & Johnson, 2011).

Kurtosis: An indication of the extent to which a distribution departs from the bell-shaped or normal curve. It can have a sharper point, indicated by a positive number (leptokurtosis) or flatter (platykurtosis) shown by a negative number. Kurtosis for a normal distribution is zero (Vogt & Johnson, 2011).

Predictor Variable: Also known as independent variable or cause (Vogt & Johnson, 2011).

Skewness: The degree to which measures or scores are bunched on one side of a central tendency and dissipate toward the edge. A positive skewed distribution has infrequent scores on the right side of the x-axis (such as scores for a difficult test). A negative skewed distribution has fewer scores on the left side of the x-axis (such as scores for an easy test) (Vogt & Johnson, 2011).

Social presence: ability to project one's self and establish personal and purposeful relationships (Garrison, 2007).

Student Satisfaction: learner's perception of the value of educational experiences in an educational setting (Astin, 1993).

Teaching presence: design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Garrison & Arbaugh, 2007).

Chapter Two: History of Community of Inquiry Framework & Instrument

At a time when overall enrollment in post-secondary institutions is decreasing, the number of students registering for distance education courses continues to increase for the 14th consecutive year (Allen & Seaman, 2017). Each year researchers delve into the intricacies of effective online instruction using a plethora of instruments (Catalano, 2018). Within this quest to define best practices for online pedagogy, the importance of online presence has developed (Hosler & Arend, 2012).

The Community of Inquiry (CoI) framework is the most widely referenced framework associated with web-based and hybrid scholarly research today. It is a leading theoretical framework for comprehensive and explanatory educational theory applied within online and blended pedagogy (Catalano, 2018). The CoI framework and instrument provides a clear set of articulated elements with validated relationships and indicators enabling the CoI framework to be categorized as a theory (Garrison, 2016). Since its inception in 2000, research has validated the stability of the CoI framework, as well as the cognitive, social and teaching presence constructs derived from the CoI instrument (BouJaoude, 2016).

The CoI model was created during a Canadian Social Sciences and Humanities research-funded project, "A Study of the Characteristics and Qualities of Text-Based Computer Conferencing for Education Purposes." Conducted from 1997 to 2001, this work generated the initial versions of the CoI framework theory, methodology and instrument (Garrison et al., 2016). The research group included Randy Garrison, Terry Anderson and Walter Archer, with Liam Rourke joining the trio after the grant was awarded.

As the number of online course offerings continue to grow, the CoI model focuses on three essential, overlapping elements of an educational experience: cognitive presence, social

presence, and teaching presence (Allen et al., 2015; Allen & Seaman, 2018). Garrison, Anderson and Archer (1999) initially published the CoI framework and its elements. Next, three articles evaluating the methods for measuring the CoI elements were published (Garrison et al., 1999; Garrison, Anderson, & Archer, 2000; Rourke, Anderson, Garrison, & Archer, 2001a; Anderson, Rourke, Garrison, & Archer, 2001).

Additionally, a summary of the CoI methodological concerns related to the framework was published (Rourke, Anderson, Garrison, & Archer, 2001b). Several CoI books have been published by the researchers, including: *Blended Learning in Higher Education: Framework, Principles, and Guidelines* (Garrison & Vaugh, 2008), *Educational Communities of Inquiry: Theoretical Framework, Research and Practice* (Akyol & Garrison, 2013), *Thinking Collaboratively: Learning in a Community of Inquiry* (Garrison, 2016), and *E-learning in the 21st Century: A Framework for Research and Practice* (Garrison, 2016).

The CoI research has been summarized extensively since 1999, most noteworthy are four articles (Garrison & Arbaugh, 2007; Rourke & Kanuka, 2007; Garrison, Anderson, & Archer, 2010; Swan & Ice, 2010); two books (Garrison & Anderson, 2003; Garrison, 2016); and one dissertation (Befus, 2016). Each provides a concise overview of the CoI study themes, gaps in research and future research suggestions. According to Befus (2016), CoI research most often studies small groups of undergraduate and graduate student populations at one site in fully online courses.

Researcher Randy Garrison manages the CoI website at https://coi.athabascau.ca/. This website contains the original articles and subsequent studies, as well as annotated lists of research and CoI related links (Garrison, Anderson, & Archer, 2010).

Theoretical Framework

Since its inception, the CoI framework and instrument have evolved. It is grounded in social constructivist principles and John Dewey's (1938) notion of practical inquiry. The phrase 'community of inquiry' was borrowed from Lipman (1991) whose research was also built upon the work of Dewey (Garrison et al., 2010). CoI is a non-tangible environment created by an instructor and students in an online course. The model defines, describes, and measures its three overlapping principle elements: cognitive presence, social presence, and teaching presence experienced by students in an online course. (Swan & Ice, 2010). Levels of perceived CoI presences define the development and effectiveness of a community of inquiry experienced in an online class. The CoI framework and instrument provide articulated elements with validated relationships and indicators enabling the CoI framework to be categorized as a theory (Garrison, 2016).

To best develop a conceptual framework to understand cognitive, social and teaching presences, the initial researchers Garrison, Anderson, Archer and Rourke embarked on a three-phase project. They evaluated cognitive, social and teaching presences using empirical evidence gathered during a study of online graduate courses. The research produced three studies, each providing a review of relevant, previous research on the specific construct or a similar model. The articles defined the cognitive, social or teaching constructs, as well as the associated dimensions. They substantiated each construct's validity by evaluating data generated from coding online course transcripts of two 13-week online graduate courses. The research defined the presences and provided a theoretical and empirical base to inspire future online pedagogical research, (Garrison, Anderson, & Archer, 2001; Garrison, Anderson & Archer, 2001; Anderson, Rourke, Garrison, & Archer, 2001).

In the initial article, *Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education* (Garrison, Anderson, & Archer, 2001), the researchers explained each construct's importance in CoI framework. They provided a synthesis of previous research to substantiate each CoI construct as applicable to an online environment. This article generated the conceptual framework and model of a community of inquiry. Additionally, the authors provided a roadmap for coding online course transcripts to evaluate CoI presences and discuss the interoperability of the constructs.

The teaching presence, was discussed in *Assessing Teaching Presence in a Computer Conferencing Context* (Anderson, Rourke, Garrison, & Archer, 2001). In this paper the researchers define what a teaching presence is, the teaching sub-constructs, and provides a methodology of transcript analysis. The development of teaching presence indicators for measuring teaching presence is the essence of the paper. In the results section, researchers address the issue of interrater reliability within the coding procedures by having two raters code all messages from both 13-week courses. This is an exhaustive measure that adds validity to their findings. The article concludes by suggesting the coding process is applicable in many instances, including evaluating effectiveness of teaching presence and analyzing differences in teaching styles among faculty, disciplines or contribution of student teaching assistants.

The validity of the social construct was evaluated in *Assessing Social Presence in Asynchronous Text-Based Computer Conferencing* (Rourke, Garrison, Anderson, & Archer, 2001a). The researchers evaluated the course transcripts for 'social presence' using three categories or indicators. The three categories evolved into the three sub-constructs of the social presence construct. The first, behavioral indices created from the social presence

outlined by Garrison et al., were used to evaluate the course transcripts. Social interaction indicators resulting from media capacity, teacher presence and group interaction literature were used deductively. Lastly, researcher generated additional indices deduced from analyzing the transcripts were added to the coding scheme. These three broad categories of communicative responses reflected the nature of emergent indicators. The article continues by detailing each sub-construct within social presence. Researchers acknowledge unit of analysis and interrater reliability as the two significant challenges of establishing validity of the social construct. To determine the efficacy and reliability of identifying social presence, researchers selected transcripts from two 13- week graduate-level online courses. The transcripts were coded and results were analyzed from both courses to evaluate the ability of the tool to define social presence. The article concludes by stating the tool enables researchers, as they define social presence, to assess the level of social presence in an online course.

The cognitive construct was evaluated in *Critical Thinking, Cognitive Presence, and Computer Conferencing in Distance Education* (Garrison, Anderson, & Archer, 2001). Specifically, the article states the importance of recognizing that cognitive presence centers on higher-order thinking processes. The researchers investigated the nature and quality of cognitive presence, according to the stages of a generalized model of critical thinking: practical inquiry. Transcripts from online course's discussion boards were coded with strict adherence to optimal interrater reliability evaluation using Holsti's (1969) coefficient of reliability (CR) and Cohen's (1969) kappa (k). Interrater reliability is problematic due to the 'latent projective' nature of an internal cognitive process. Additionally, this study had a small sample size. However, researchers concluded the CoI instrument was an efficient and reliable tool for evaluating the nature and quality of the cognitive presence in an online course.

The theoretical framework's initial design is shown in Figure 2.1 (Garrison et al., 1999). Subsequently, the framework has become more complex, better reflecting the evaluation of pedagogical and instructional design trends in online learning. A graphical representation of the current CoI framework is depicted in Figure 2.2 (Garrison, Cleveland-Innes, & Vaughan, 2016).

Figure 2.1

Elements of an educational experience (Garrison, Anderson, & Archer, 1999).
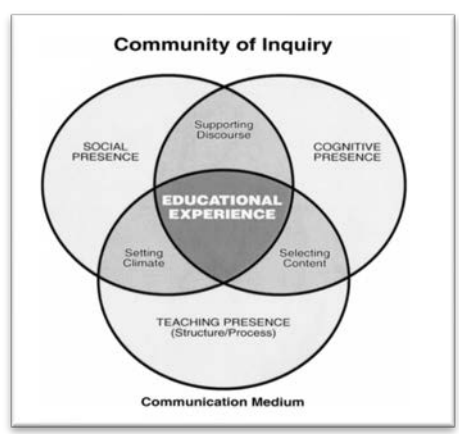
Figure 2.2

Graphical interpretation of the current CoI theoretical framework (Garrison, Cleveland-Innes, & Vaughan, 2016).
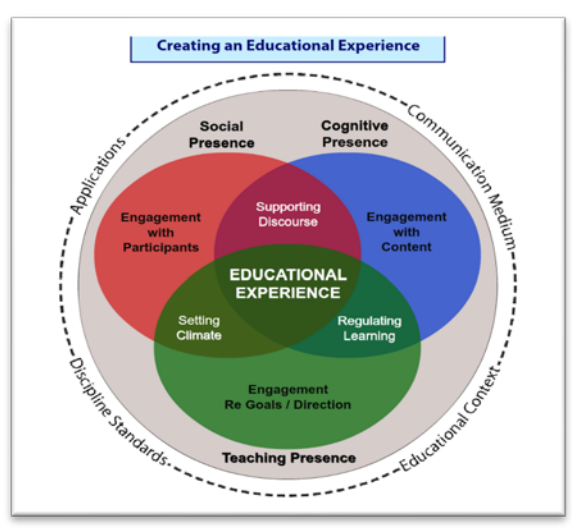
Teaching Presence

Teaching presence within the CoI is defined as the design, facilitation, and direction of cognitive and social processes in an online learning environment to attain learning outcomes. It is worth noting, that while teaching presence is equal in size in the graphical interpretation of the current CoI theoretical framework in Figure 2.2, it is positioned below social and cognitive presences. This illustrates the importance of the teaching presence, representing it as the foundation on which the other two constructs are built.

The teaching presence is comprised of three categories: design and organization; facilitating discourse; and direct instruction. These categories can be mapped directly to previous research by Berge, Paulsen, Mason, Rossman, Coppola, Hiltz, and Rotter (Anderson et al., 2001; Garrison & Vaugh, 2008)).

During the design and organization of a web-based course, the instructor is required to think through the process, structure, evaluation, and integration of the course components. Without the learned expectation of classroom norms, an effective online teacher will need to be purposeful during the planning process to ensure he or she is teaching in a more explicit and transparent manor enabling students to perceive a stronger teaching presence during the course.

Facilitating effective communication within an online environment is paramount when trying to maintain student interest, motivation, and engagement. Instructor facilitation often takes the form of consistent feedback, commenting or responding to students, as well as being able to pace the course appropriately. Successful instructors model appropriate best practices including encouragement, engaging less involved students, and redirecting dominate students. The teacher's responsibility for establishing and maintaining open communication is critical

for creating an effective teaching presence, which in turn supports the instructor's social presence.

Within the direct instruction dimension, the instructor provides intellectual and scholarly leadership, pedagogical expertise, and shares their subject matter knowledge with students. The teacher's personal interest, enthusiasm, and in-depth understanding of the content enhances direct instruction. Presentation of content, assessing student comments, questioning techniques, diagnosing misconceptions, providing feedback, and focusing and refining discussions are examples of direction instruction specifically evaluated within the CoI instrument (Anderson et al., 2001). Table 2.1, below, provides a summary of CoI constructs.

Social Presence

Expressions of emotion, feelings, and mood is a defining characteristic of social presence. Once online learners and instructors can project their personal characteristics into the community of inquiry and represent themselves as 'real people' then a social presence has been achieved. The online, often asynchronous, learning environment is more readily identified with constructivist rather than instructivist orientations, requiring a social presence be created by learners and teachers (Rourke et al., 2001).

The social presence construct has three sub-constructs: affective expression, open communication and group cohesive. Closeness, warmth, affiliation, attraction, and openness are adjectives used to demonstrate affective interaction within social presence constructs. An online community with strong affective interactions generates feelings of belonging among students. Previous research has focused upon non-verbal communication displayed in a traditional classroom. A challenge to social presence online: emoticons, humor and self-

disclosure are conscious manifestations within an asynchronous environment, whereas body language, facial expression and vocal intonations are subconscious manifestations of social presence in a synchronous setting.

Open communication, also called interactive responses, enables students to build and sustain relationships. This occurs when students provide socially meaningful interactions, such as interpersonal support, encouragement and acceptance, within the online environment. Effective open communication among students promotes feelings of comfort in conversing, participating and interacting within the online course.

The group cohesive construct includes activities that build and sustain a sense of group commitment within participants. Researchers Garrison, Anderson, and Archer defined their analysis of the group cohesive construct using three indicators: phatics and salutations; vocatives; and addressing the group as "we," "our," or "us." Phatics, defined as communication "used to share feelings or to establish a mood of sociability rather than to communicate information or ideas," is almost synonymous with social presence. Vocatives, addressing participants by name, are an expression of cohesion. Eggins and Slade support the use of vocatives to facilitate social presence, noting "the use of redundant vocatives would tend to indicate an attempt by the addresser to establish a closer relationship with the addressee," (Eggins & Slade, 1997). When students and instructors use pronouns such as we, our, or us, feelings of closeness and association are identified, as supported in the teacher immediacy literature (Christensen & Menzel, 1998; Gorham, 1988; Gorham & Zakahi, 1990; Sanders & Wiseman, 1990; Rourke et al., 2001).

Cognitive Presence

Cognitive presence is established through the process of constructing meaning through sustained communication experienced by students. It is important to recognize that cognitive presence focuses on higher-order thinking processes as opposed to specific individual learning outcomes (Akyol & Garrison, 2011).

Garrison, Anderson, and Archer developed and employed a practical inquiry model to guide the methodology when researching how to effectively assess cognitive presence (Garrison et al., 2001). The practical inquiry model yielded triggering, exploration, integration and resolution as the four dimensions within the cognitive presence. Although created independently from Duffy, Dueber, and Hawley's *Critical Thinking in a Distributed Environment: A Pedagogical Base for the Design of Conferencing Systems*, these four dimensions are similar to the basic structure of inquiry suggested in the earlier article. Duffy, Dueber, and Hawley define five components providing an initial focus point for critical thinking as it occurs in a problem solving activity (Duffy, Dueber, & Hawley, 1998). These five areas are not as concisely defined as the four sub-constructs identified by Garrison, Anderson, and Archer.

Triggering, the first dimension of the model focuses on the range between action and deliberation. Triggering occurs when an issue, dilemma, or problem emerges within the online course environment. A triggering event may be the instructor's role in communicating learning challenges or tasks. It may also be experienced when an instructor initiates, manages or discards a potentially distracting situation and students maintain focus on the course content.

The second dimension of the model, exploration, evaluates the cognitive process of associating facts and ideas. This perception-conception aspect of the model specifically focuses on the transition between the concrete and abstract worlds. The transition occurs within a community of inquiry as students shift from critical reflection within a private, individual perspective to the social exploration of course curriculum. This is generally experienced in the shared environments or tasks of an online course. This phase requires students to understand the essence of a lesson and begin seeking more related information. This dimension features brainstorming, questioning, and exchanging information as students evaluate what is relevant to the current situation.

Integration, the third phase, occurs as students construct meaning from the ideas produced in the exploratory phase. While still navigating between reflection and dialog, students evaluate the applicability of ideas. Students seek to better understand how ideas connect and describe the challenge or concept. This dimension is difficult to recognize, requiring an active teaching presence to identify misunderstandings of the curriculum, use questioning to check for understanding, support cognitive development, and model critical thinking. Because students prefer the comfort of the exploration phase, an online instructor's role becomes increasingly pivotal in supporting students' transition into more advanced stages of critical thinking and cognitive development.

The final dimension, resolution, occurs when students solve a problem or dilemma. Online instructors facilitate student development by providing clear expectations and opportunities to apply newly created knowledge.

The CoI's cognitive presence construct enables researchers to evaluate students' critical thinking process. Using the practical inquiry model to guide its methodology, this

cognitive presence reveals higher-order knowledge acquisition and application. This cognitive

presence is usually included in the literature and research associated with critical thinking

(Akyol & Garrison, 2011).

Table 2.1

Summary of CoI Constructs, Sub-constructs & Survey Questions

CoI Presence	Sub-construct	Survey Questions
	Effective Expression	3
Social	Open Communication	3
	Group Cohesion	3
		Social Presence Total: 9
	Triggering Event	3
	Exploration	3
Cognitive	Integration	3
	Resolution	3
		Cognitive Presence Total: 12
	Design & Organization	4
Teaching	Facilitation	6
	Direct Instruction	3
		Teaching Presence Total: 13

CoI Framework & Instrument Validation

The scholars who conceptualized the CoI model, Randy Garrison, Terry Anderson and

Walter Archer, as well as other researchers have published articles evaluating the validity of

the CoI framework and instrument in a variety of post-secondary settings (Bangert, 2009;

Carlon et al., 2012; Garrison, 2007; Garrison et al., 2010; Kozan, 2016; Randolph &

Crawford, 2013; Shea & Bidjerano, 2009; Swan et al., 2008; Wladis & Samuels, 2016; Yu &

Richardson, 2015; Kovanovic, 2018). The structure of the CoI framework was confirmed

through factor analysis by Garrison, Cleveland-Innes and Fung (2004), Arbaugh and Hwang

(2006), and Garrison (2007). Notable articles have used factor analysis to confirm the

tripartite theoretical structure of the CoI model, and structural equation modeling (SEM) to evaluate relationships between the three presences.

As the CoI framework and instrument has evolved, a shift from evaluating threaded discussions and text-based communication to evaluating the entire course(s) has transpired. When the CoI was created, most online coursework was conducted in discussion-based online environments. With today's advances in multimedia tools for online learning, the research has evolved to incorporate all aspects of the presences experienced within a more rich and diverse online learning environment.

Testing the validity of the CoI framework and instrument has remained a popular research focus, with additional emphasis on the elements individually and collectively. Researcher Karen Swan has evaluated the CoI framework and instrument (Swan et al., 2008; Swan & Ice, 2010). Her research also focuses on the social presence and student perceptions of the importance of the CoI (Swan & Shih, 2005).

Studies have been published evaluating CoI and the level of learning, as perceived by students, occurring in various subjects taught online at undergraduate and graduate levels (Shea et al., 2008). Along the lines of educational objectives, CoI has been used to evaluate critical thinking and meaningful learning occurring in online courses. Meaningful learning is predicated by student discovery, as well as project and problem-based learning scenarios.

Self-reporting of perceived learning has been studied with CoI elements. While course letter grades can be used as a measure, they have restricted ranges, are unreliable and may not be an accurate measure of student learning. To better examine learning and its association with the CoI elements, the Study Process Questionnaire (SPQ) (Biggs, 2002) and the

Structure of the Observed Learning Outcomes (SOLO) (Biggs & Collis, 1982) instruments have been used with CoI in several published studies (Rourke & Kanuka, 2007).

Demographic, Programmatic & Design Influences on CoI

With many different types of online courses offered, research into the programmatic differences experienced by students is often evaluated using CoI. In these studies, researchers question the type of online learning community fostered within various disciplines. An intriguing area of research, evaluating how students perceive cognitive, social and teaching presence within different types of academic courses or programs is an area initially studied but open to further research. Other research foci include investigations into the effects of different LMSs and using new multimedia tools on perceived CoI elements.

Methodology

In manuscript 1, community college students enrolled in multiple sections of an online education course over several years were surveyed to measure their perceptions of the CoI framework. The data was summarized and compared against a set of pedagogical practices or benchmarks that were used in the delivery of the courses examined. By aligning these pedagogical benchmarks with known indicators for the CoI presences and sub-constructs, targeted teaching strategies were identified as tools to enhance deep and meaningful online learning experiences.

While manuscript 1 focused primarily on students enrolled in an introduction to education course, manuscript 2 delved into the distinctions between teaching different types of groups of online students. In this study, the similarities and differences between CoI presences is experienced by students enrolled in online major-specific and freshman orientation (a required general education course for all students) courses taught by the same

instructor using the same targeted instructional techniques. Pedagogical benchmarks were aligned to associated CoI presences and sub-constructs, delineating the differences in how each type of online course can develop stronger cognitive, social and teaching presences within a community of inquiry.

Manuscript 3 was built on the body of CoI research by examining correlations between students' perception of cognitive, social and teaching presences and a measurement of student satisfaction. Participants from major-specific and general education community college online courses taught by a variety of instructors rated the CoI presences experienced and their level of satisfaction with the online course. Associations between these constructs could inform an instructor's choices for best practices to improve the effectiveness of their online pedagogy.

Statistical Procedures & Assumptions

Descriptive statistics for the data was analyzed. A Pearson product-moment correlation coefficient was calculated for each of the paired associations between CoI constructs. The data used was an interval scale measure because it was an average of several values. Lastly, multiple regression was used to examine associations between the CoI presences and sub-constructs.

The CoI presences were measured in interval scales. No significant outliers were shown in scatterplots generated when analyzing the correlation coefficients for the CoI presences or their sub-constructs. Linearity and homoscedasticity were additionally verified within the scatterplots. The data was evaluated for the normality assumptions (Privitera, 2012). Skewness and kurtosis statistics were acceptable and ensured the normality of variables. Due to the small sample size, a more conservative p value of .05 was used.

Dissertation Significance Statement

This research provides insight into how the CoI is perceived by students in a specific type of course, within a community college setting. It contributes to the understanding of correlations between the CoI and student satisfaction constructs. Alignment of pedagogical benchmarks with indicators from the CoI sub-constructs identifies best practices for online pedagogy to strengthen the learning experienced within an online environment

Although this research used a small convenience sample, it provides insights into how learners perceive online instructor presence differently in major-specific and general education online community college courses. With detailed pedagogical benchmarks identified as supporting the development of each CoI presence and sub-construct, this research defined best practices for teaching each type of online course.

Chapter Three: (Manuscript 1) Student Perceptions of Community of Inquiry Presences

in Community College Online Education Courses

For non-traditional and first-generation post-secondary students, community college is the first step toward obtaining a rewarding professional career (Tibbetts et al., 2018). Often students begin at a community college because it is perceived as more affordable. Additionally, community colleges offer many online courses enabling students in rural areas to complete their first two years of college without the costs or inconvenience of relocating (Miller, & Tuttle, 2007; Ishitani, 2005).

With community colleges positioned to recruit from a diverse population, colleges offering online education courses can cultivate more pre-service teacher candidates to help address substantial teacher shortages (Nomi, 2005). With the availability of online courses, community colleges can attract potential 'grow your own' teacher candidates from rural areas (Knapczyk, Chapman, Rodes, & Chung, 2001; Reeves, 2005). Given the growth of online education courses, assessing the validity of learning occurring in online teacher preparation courses becomes significant (Graziano & Bryans-Bongey, 2018; Moore-Adams, Jones, & Cohen, 2016; Moore, 2013). Online pedagogy to enhance teacher training courses should be targeted and focused on the unique aspects of the community college learner. This research used the CoI to evaluate the online learning online environment in teacher preparation course at a community college, with the goal of aligning student perceptions of the CoI framework with specific pedagogy.

Statement of the Problem

Currently no research-based evidence to support targeted, best practices for online pedagogy specific to education courses taught in the community college environment is

available. In the United States, there is a shortage of elementary and secondary teachers, across disciplines, and often candidates do not reflect the community in which they teach (Villegas & Davis, 2007, Irizarry, 2007, Hrabowski & Sanders, 2015, Goings, Bianco & Brandehoff, 2018). Community college pre-service teaching programs could provide a more diverse population of future teachers across disciples and geographic areas to address substantial teacher shortages.

For community college students, the ability of an online instructor to build and maintain a community of inquiry environment in an online course may be pivotal to the students' ability to persist and complete a course. While the course content and life goals may be the initial motivational, the connections a student feels to classmates and the instructor may prove instrumental in the depth of the academic information acquired, as well as the students ability to persist (Wighting, Liu, & Rovai, 2008; Shea & Bidjerano, 2008).

Frequently, community college students face unique challenges that test their ability to persevere and complete academic degrees. Community college students are more likely to be non-traditional and first-generation college students. They often face financial hardship, family responsibilities, the challenges of juggling full-time employment while attending college. Four-year institutions have a greater percentage of traditional students, aged 18 to 22, who do not face these same challenges (Ishitani, 2005; Nomi, 2005; Tibbetts et al., 2018).

Community colleges offering online teacher preparation courses need to engage non-traditional and first-year preservice teachers to improve course retention and content knowledge. A benchmark in testing the effectiveness of online learning is evaluating the community of inquiry experienced by online students. Previous research has shown the use of the Community of Inquiry (CoI) survey instrument may be more appropriate for online

education courses than other subjects. In a study of 1,500 students in seven disciplines, researchers concluded the CoI maybe be more applicable to applied rather than pure disciplines. (Arbaugh, Bangert, & Cleveland-Innes, 2010). To provide real-world applicability, this study evaluated online students' perceptions of the CoI framework's cognitive, social and teaching presence when specific pedagogy is implemented.

Purpose

The purpose of this comparative study was to evaluate perceived CoI presences experienced by online community college students enrolled in education course taught asynchronously by the same instructor using common specific pedagogical benchmarks. This research informs best practices by aligning instructional benchmarks with CoI presences for online pedagogy specific to pre-service teachers enrolled in community college 100-level education courses. This research could be generalizable to other online community college education courses. It could inform instructional choices and pedagogy to improve online learning environments and ultimately produce more, diverse K12 teachers to address the shortage of instructors.

Research Questions & Hypotheses

The guiding research question for Manuscript 1 was:

- How do community college students perceive the CoI presences when enrolled in an education course taught asynchronously by the same instructor using common specific pedagogical benchmarks?
  - H_1: Teaching presence and social presence, as defined by the Community of Inquiry (CoI) framework, are significant predictive variables for the CoI cognitive presence.

The specific research sub-questions for Manuscript 1 were:

1. Are there significant associations between the cognitive presence and the social and teaching presences?

    a. H_1: There is a significant association between the cognitive presence, and the social and teaching presences.

2. Are there significant associations between a CoI presence and the sub-constructs of the remaining two CoI presences?

    a. H_1: There are significant correlational between the cognitive presence and the teaching and social presence sub-constructs.

    b. H_2: There are significant correlational between the social presence and the teaching and cognitive presence sub-constructs.

    c. H_3: There are significant correlational between the teaching presence and the social and cognitive presence sub-constructs.

Significance Statement

This research provides insight into how the CoI is perceived by pre-service teachers, within a community college setting. In practice, this research provides an alignment of pedagogical benchmarks with indicators from the CoI sub-constructs that identifies best practices for online pedagogy to strengthen the learning experienced within an online education course taught at a community college

Pedagogical Benchmarks

The online course examined for this manuscript provided an overview of the teaching profession. Students delved into topics such as the history of public education in the United States, diversity and socialization in the classroom, teaching pedagogy, curriculum

development, educational technology, ethics and legal issues, philosophical foundations of American education, educational administration, governing and finance, and educational reform.

Direct Instruction

The course lessons were provided using screencast-recorded lectures from the instructor. With a PowerPoint to guide the lecture, the instructor discussed key topics in each content area. Personal teaching anecdotes from her real-life experiences as a public-school teacher supplemented the information provided by the course textbook and other source material.

The Blackboard navigational tutorial, course syllabus, course calendar and assignments were introduced using instructor-developed screencast videos. Complex assignments required additional screencast video tutorials to explain expectations and review exemplary submissions from prior semesters.

Student Collaboration

During the course, students were encouraged to work collaboratively on wiki assignments. Often these wikis were used to gather and create comprehensive resource lists focused on a specific topic.

Assessment & Assignment Feedback

Assignment feedback was provided within Blackboard. Most feedback was narrative in nature. Feedback on the signature writing assignment was extensive, spanning five submissions. Each of the five components of the signature assignment were reviewed individually, as sections of the final paper. Feedback included organization of ideas, depth of response to the prompt, editing to correct grammar and punctuation, and revisions to adhere to

APA format. Narrative feedback was provided using TypeItIn, to provide comprehensive, consistent feedback, as well as links to pre-recorded screencast tutorial videos created by the instructor. These tutorials addressed common errors or provided step-by-step guidance for technical challenges related to APA formatting.

Communication

Grading was completed in one to four weeks after the assignment due date. Students were required to submit any grading questions within two weeks of the assignment feedback and points being posted to Blackboard. Assignments were due by 5:00pm each Monday.

In addition to traditional communication tools such as providing a direct office phone number and email, this instructor used a www.zoom.us meeting link to meet virtually with students as needed, often in the evenings. In the course syllabus and course announcements, the instructor suggested students provide a phone number for her to call during office hours, instead of requiring students to remember to call or visit the office during specific times.

Student email questions were responded to and often answered within an hour if received between 7am and 9pm weekdays, and within 12 hours when received on the weekends. Complex responses were explained in a personal recorded screencast, with the instructor showing a document or web page to answer the student's question.

Methodology

This descriptive research was exploratory in nature. The manuscript's methodology included conducting a survey of students, followed by correlational-predictive data analysis. Associations between constructs was examined, as well as associations between constructs and sub-constructs. Dominate sub-constructs were aligned to pedagogical benchmarks, according to indicators developed in previous research.

Population & Sampling

The population of interest was pre-service teacher candidates enrolled in an online education course at one community college in the Western US. The sample consisted of 42 students enrolled in a fully-online education course at a community college in southwestern Idaho. A focused CoI research project of students enrolled in online education courses at a community college has not previously been conducted.

Instrument

Participants completed the 34-item CoI online questionnaire during the last two weeks of each of the semester's included in the study. Students were invited to participate via an email message and an announcement placed in Blackboard. A second reminder email and announcement were sent during finals week. The CoI survey instrument used a five-point response scale (1 = strongly disagree to 5 = strongly agree). The survey measured the CoI's cognitive, social and teaching presence experienced by the online students (Arbaugh et al., 2008).

The CoI survey instrument has been used to study online learning since 2000. Multiple studies have supported the construct validity of the presences as measured by the CoI questionnaire (Swan et al., 2008; Arbaugh & Hwang, 2006). The theoretical structure of the CoI framework has been verified by factor analysis demonstrating the clustering of sub-elements within the CoI model (Kozan & Richardson, 2014a). Additionally, Arbaugh (2008) found high levels of internal consistency as represented by Cronbach's alpha indexes: cognitive presence = 0.95; social presence = 0.91 and teaching presence = 0.94.

Methods

Quantitative data was gathered using non-probability, purposive sampling methods. The census survey methodology spanned six semesters. Participants were students enrolled in online educational courses taught by the same instructor during Fall 2015, Spring 2016, Spring, Summer and Fall 2017, and Spring 2018 semesters. Each of the three constructs (cognitive presence, social presence and teaching presence), was individually reviewed. Within the data analysis, correlations between the constructs was examined. Each of the three primary constructs (cognitive presence, social presence and teaching presence) have three to four sub-constructs. Associations between a CoI presence and the sub-constructs of the remaining two presences were investigated. This analysis was conducted to inform the development of best practices for creating and maintaining a CoI in an online course.

Data was collected online using Qualtrics, a software program for collecting and analyzing research data. Institutional review boards certified the research project as exempt. Potential duplicate responses were prevented by identifying any duplicate IP addresses to ensure participants had a unique student identification number and other unique demographic information listed.

Less than five percent in each data set was missing, enabling most procedures to account for missing data points and retain the integrity of the research. The mean of each variable was used to replace missing data points (Tabachnick & Fidell, 2013).

Non-response Bias

Previous research has concluded a low response rate does not increase the likelihood of non-response bias (Peytchev, 2013; Dillman, 2014). In fact, a survey's response rate is reflective of the participants' characteristics, the survey and their interactions, such as

personalized recruitment messages (Fosnacht, Sarraf, Howe, & Peck, 2017). Research has shown findings from a sample may be representative of the population, if there is no significant difference between early and late respondents (Radhakrishna, R., & Doamekpo, 2008).

To support the generalizability of the research findings of manuscript 1, a Wilcoxon-Mann-Whitney two-sample rank-sum test was conducted. This test was selected because the sample size was small (Winter, 2013). There was no evidence to support a difference between the ratings of the first five and the last five responses in the data (Mann–Whitney, teaching presence $U = 7.0$, social presence $U = 5.5$ cognitive presence $U = 5.0$, $n_1=5$, $n_2=5$, Teaching presence $P = .2$, social presence $P = .1$, cognitive presence $P = .1$, two-tailed).

Additionally an independent samples t-test was conducted to compare data from the first five and last five responders (Lindner, Murphy, & Briers, 2001, Winter, 2013; Winter & Dodou, 2012). Equal variances were not found in the Levene's Test for all CoI presences (cognitive presence: $t(8) = 1.193$, $p = .267$; teaching presence $t(8) = 1.077$, $p = .313$; social presence $t(8) = 1.449$, $p = .185$). There were no significant differences in the scores between the early and late responders for the CoI presences. The results of the two-tailed t-test is shown in Table 3.1.

Table 3.1

Two-tailed t-test of CoI Presences between Survey Participants Early and Late Responders

Variable	First Five Responders ($n = 5$)		Last Five Responses ($n = 5$)	
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
Cognitive Presence	4.67	.49	4.28	.53
Social Presence	4.69	.43	4.09	.82
Teaching Presence	4.89	.20	4.65	.47

Findings

Preliminary Analysis

All students enrolled in the examined courses were asked to participate in the study

and complete the CoI online survey instrument; 30% of the students chose to participate (N =

145). The convenience sample of students in the study (*n* = 42) were primarily education

majors from a community college who were enrolled in online education courses taught by

the same instructor. Of the 42 participants, 17.1% were male and 83% were female.

All participating students were between the ages of 18 and 54. The largest group were

between the ages of 18 and 25 (55%). Most students were between the ages of 18 and 44

(98%). Most participants were Caucasian (76%). This demographic information is shown in

Table 3.2.

Table 3.2

Demographic Variables for All Participants

Variable	*n*	Percent
Gender		
Female	34	82.9
Male	7	17.1
Age (years)		
18 to 25	23	54.8
26 to 34	9	21.4
35 to 44	9	21.4
45 to 54	1	2.4
55 or older	0	0
Ethnicity		
Hispanic or Latino	5	11.9
Caucasian	32	76.2
African American	1	2.4
Asian	2	4.8
American Indian	1	2.4
Decline to state	1	2.4

Most participants were education majors (74%), with the majority identifying as elementary education majors (43%). There were a few students from secondary education fields (English, math, social studies), early childhood studies and one special education major.

Participants were asked if they received any training to prepare for an online learning course. The majority of participants (91%), stated they did not receive any training prior to taking the online course.

Almost half the participants (45%) have completed three to five online courses. In total, 39 participants (93%) have completed one or more online courses previously. Only three participants (7%) stated this was their first online course.

Most participants were in the second or subsequent year of college. Fifteen participants (36%) were in their first or second semester of college.

When asked to rate their computer skills, more than 95% of participants were confident their technical competencies were average or higher than average. A majority, 40 participants (98%), stated they enjoyed the content and subject of the course (see Table 3.3).

Table 3.3

Percentages and Frequencies for Major, Online Course Training, Online Learning Experience, Semester in College, Computer Literacy Skills and Course Enjoyment.

Variable	*n*	Percent
Majors		
Early Childhood	1	2.4
Physical Education	1	2.4
Elementary Education	18	42.9
Education	7	16.7
Secondary, English	1	2.4
Secondary, Math	1	2.4
Secondary, Social Science	1	2.4
Special Education	1	2.4
Communications	2	4.8
Health Science	1	2.4
Liberal Arts	2	4.8
Music Production	1	2.4
Political Science	1	2.4
Psychology	1	2.4
Sign Language Studies	2	4.8
Sociology	1	2.4
Online Course Training (hours)		
No training	38	90.5
1 to 4	4	9.5
4 to 8	0	0
8 or more	0	0
Online Learning Experience (online courses completed)		
First online course	3	7.1
1 to 2	6	14.3
3 to 5	19	45.2
5 or more	14	33.3
Semester in College		
First	3	7.1
Second	12	28.6
3 to 4 (2nd year)	17	40.5
5 to 6 (3rd year)	6	14.3
6 or more	4	9.5
Computer Literacy Skills		
Above average	6	14.3
Average	34	81
Below average	2	4.8
Course Enjoyment		
Enjoyed the content and subject of the course	40	95.2
Did not enjoy the content and subject of the course	1	2.4
Did not respond	1	2.4

Manuscript 1, Question 1: Are there significant correlations between the cognitive presence and the social and teaching presences?

The descriptive statistics for the CoI constructs of cognitive presence, social presence and teaching presence are summarized in Table 3.4. The means of all three variables are similar, aligning with previous research (Shea & Bidjerano, 2009; Garrison et al., 2010; Shea et al., 2011; Kozan & Richardson, 2014a). The teaching presence had the highest mean with the lowest standard deviation. Conversely, the social presence had the lowest mean with the highest standard deviation.

Table 3.4

Descriptive Statistics of CoI Constructs for All Participants

Variable	n	M	SD	Min	Max
Cognitive Presence	42	4.39	.68	2.50	5.00
Social Presence	42	4.21	.72	1.78	5.00
Teaching Presence	42	4.65	.52	2.85	5.00

A Pearson product-moment correlation coefficient was calculated for each of the paired associations between CoI constructs. The coefficients were evaluated to determine if the teaching presence and social presence are associated with the cognitive presence ($n = 42$).

Earlier research has shown academic growth occurs when a strong cognitive presence is experienced by students. The cognitive presence has been positively associated with the social and teaching presences in several studies (Archibald, 2010; Garrison et al., 2010; Gutiérrez-Santiuste et al., 2015). The multidimensional and interdependent nature of the CoI presences is noted in earlier research (Archibald, 2010; Rockinson-Szapkiw et al, 2016, Kozan & Richardson, 2014a). Gutierrez-Santiuste, Rodriquez-Sabiote and Gallego-Arrufat (2015) found the teaching and social presences predicted 81% of the variability of the

cognitive presence. Archibald's research (2010) stated 69% of the variance in the cognitive presence is explained by social and teaching presence for his data. Lastly, Shea & Bidjerano (2009) found 70% of the variance in the cognitive presence is explained by social and teaching presence in their research. Supplementary research included Kozan & Richardson (2014a) who used correlation and partial correlation analysis to show how the CoI presences can mediate one another.

The analysis showed a significant, strong positive correlation between the teaching presence ($M = 4.65$, $SD = 0.52$) and the cognitive presence ($M = 4.39$, $SD = 0.68$), $r(40) = .759$, $p < .001$. Higher levels of perceived teaching presence are associated with higher levels of perceived cognitive presence.

Coincidently, the social presence ($M = 4.21$, $SD = .72$) demonstrated an equal significantly, strong positive correlation to the cognitive presence ($M = 4.39$, $SD = 0.68$), $r(40) = .759$, $p < .001$. Higher levels of perceived social presence are associated with higher levels of perceived cognitive presence. While there is a significant positive correlation between social presence ($M = 4.21$, $SD = .72$) and teaching presence ($M = 4.65$, $SD = .52$), $r(40) = .684$, $p < .001$, the association is not as strong.

In addition to conducting a basic paired correlation analysis, the presences were also examined using a multiple linear regression procedure to further investigate the association between variables, as recommended by Cronk (2014).

The results of a multiple linear regression analysis indicated the teaching presence and social presence explained 68% of the variability of the cognitive presence, $F(2, 39) = 42.25$, $p < .001$, $R^2 = .684$. This finding is consistent with previous research. Archibald (2010) found the teaching presence and social presence explained almost 69% of the variance in cognitive

presence in his study of 189 learners enrolled in 10 research methods courses between two higher education institutions. See Table 3.5 for the results of the linear regression analysis. In comparing the two predictors, the teaching presence more strongly explained the cognitive presence than the social presence. The results of Table 3.5 can be represented in the linear regression model equation:

Cognitive Presence = -.092 + .420 (Social Presence) + .584 (Teaching Presence)

Table 3.5

Linear Regression Results for Teaching Presence and Social Presence as Predictors for Cognitive Presence.

Variable	β	Beta	t	p
constant	-.092		-.168	.867
Teaching Presence	.584	.452	3.66	.001
Social Presence	.420	.450	3.65	.001

Manuscript 1, Question 2: Are there significant correlations between a CoI presence and the sub-constructs of the remaining two CoI presences?

The descriptive statistics for the CoI sub-constructs of cognitive presence, social presence and teaching presence are summarized in Table 3.6. The means of all 10 sub-constructs were similar. The teaching presence sub-construct design and organization had the highest mean with the lowest standard deviation. Conversely, the social presence sub-construct affective expression had the lowest mean with the highest standard deviation.

Table 3.6

Descriptive Statistics of CoI Sub-constructs for All Participants

Variable	n	M	SD	Min	Max
Cognitive: Triggering Event	42	4.36	0.78	2.00	5
Cognitive: Exploration	41	4.28	0.76	1.67	5
Cognitive: Integration	42	4.56	0.59	3.00	5
Cognitive: Resolution	42	4.41	0.77	2.00	5
Social: Affective Expression	42	3.89	0.92	1.33	5
Social: Open Communication	42	4.50	0.71	2.00	5
Social: Group Cohesion	42	4.25	0.81	2.00	5
Teaching: Design & Organization	42	4.77	0.51	3.00	5
Teaching: Facilitation	42	4.58	0.58	2.67	5
Teaching: Direct Instruction	42	4.63	0.62	3.00	5

Each CoI presences was examined using a multiple linear regression to investigate associations with sub-constructs from the remaining two CoI presences. Analysis showed two sub-constructs were associated with each of the three primary CoI constructs.

Multiple regression was conducted using the social presence as the outcome variable and the sub-constructs of the teaching and cognitive presences ($n = 42$) as the predictor variables. The cognitive presence sub-construct exploration ($M = 4.28$, $SD = .76$) and the teaching presence sub-construct design and organization ($M = 4.77$, $SD = .51$) showed a significant, strong positive correlation to the social presence, $F(2, 38) = 29.90$, $p < .001$ with an R^2 of .611. Data showed social presence is equal to -.001 + .543 (Cognitive: Exploration) + .401 (Teaching: Design and Organization).

Both cognitive presence sub-construct exploration and the teaching presence sub-construct design and organization were significant predictors, explaining 61% of the variance of the social presence. See Table 3.7 for the results of the linear regression analysis. The cognitive presence sub-construct exploration had a higher regression coefficient ($\beta = .571$, $p < .001$) than the teaching presence sub-construct design and organization ($\beta = .284$, $p < .035$).

Table 3.7

Linear Regression Results for Cognitive Presence Sub-construct Exploration and Teaching Presence Sub-construct Design and Organization as Predictors for Social Presence.

Variable	β	Beta	t	*p*
constant	-.001		-.001	.999
Cognitive: Exploration	.543	.571	4.397	.000
Teaching: Design and Organization	.401	.284	2.187	.035

Multiple regression analysis of the teaching presence and the sub-constructs of the social and cognitive presences (n = 42) confirmed two associations. The teaching presence was significantly, positively associated with two cognitive presence sub-constructs resolution (*M* = 4.41, *SD* = 0.77) and exploration (*M* = 4.28, *SD* = 0.76), $F(2, 38) = 32.86$, $p < .001$ with an R^2 of .634. Data showed the teaching presence is equal to 1.949 + .347 (Cognitive: Resolution) + .270 (Cognitive: Exploration).

Both cognitive presence sub-constructs resolution and exploration were significant predictors, explaining 63% of the variance of the teaching presence. See Table 3.8 for the results of the linear regression analysis. The cognitive presence sub-construct resolution had a higher regression coefficient (β = .449, $p < .010$) than the cognitive presence sub-construct exploration (β = .389, $p < .023$).

Table 3.8

Linear Regression Results for Cognitive Presence Sub-construct Resolution and Cognitive Presence Sub-construct Exploration as Predictors for Teaching Presence.

Variable	β	Beta	t	*p*
constant	1.949		5.655	.000
Cognitive: Resolution	.347	.449	2.732	.010
Cognitive: Exploration	.270	.389	2.363	.023

A multiple regression performed using the cognitive presence as the outcome variable and the social and teaching sub-constructs as the predictor variables generated two significant, positive correlations ($n = 42$). The analysis showed a significant association between the cognitive presence and the teaching presence sub-construct facilitation ($M = 4.58$, $SD = .58$) and the social presence sub-construct group cohesive ($M = 4.25$, $SD = .81$), $F(2, 39) = 51.74$, $p < .001$, $R^2 = .73$.

The student participants predicted cognitive presence was equal to .152 + .609 (Teaching: Facilitation) + .341 (Social: Group Cohesive). Both teaching presence sub-construct facilitation and the social presence sub-construct group cohesive were significant predictors, explaining 73% of the variability of the cognitive presence. See Table 3.9 for the results of the linear regression analysis. The teaching presence sub-construct facilitation had a higher regression coefficient ($\beta = .521$, $p < .001$) than the social presence sub-construct group cohesive ($\beta = .407$, $p < .001$).

Table 3.9

Linear Regression results for Teaching Presence Sub-construct Facilitation and Social Presence Sub-construct Group Cohesive as Predictors for Cognitive Presence.

Variable	β	Beta	t	p
constant	.152		.337	.738
Teaching: Facilitation	.609	.521	4.55	.000
Social: Group Cohesive	.341	.407	3.55	.001

Discussion

The convenience sample was small, but provided insight into the CoI presences perceived by a specific population in a two-year institution. The findings from this study of primarily education majors found the instructional strategies employed yielded significant correlations between the CoI constructs and sub-constructs. Previous research found similar

associations between the CoI presences (Garrison et al., 2010, Kozan & Richardson, 2014a, Akyol & Garrison, 2008, Kozan, 2016, Armellini & De Stefani, 2015).

The CoI primary constructs cognitive presence, social presence and teaching presence had similar means. However, it is noteworthy the highest mean (teaching presence) also had the lowest standard deviation. Students seemed to agree closely in their perceptions of the teaching presence. Adversely, the social presence had the lowest mean with the highest standard deviation. Students registered a greater variety within a lower level of perceived cognitive presence.

The descriptive statistics for the three primary CoI constructs are consistent within the results of the multiple regression. Both the teaching presence and social presence showed a significant, strong positive correlation with the cognitive presence. The teaching presence was more strongly correlated with the cognitive presence than the social presence. Additionally, both the teaching presence and social presence explained 68% of the variability of the cognitive presence. However, the teaching presence had a higher regression coefficient (β = .452, $p < .001$) than the social presence (β = .450, $p < .001$).

The high correlation of all three CoI factors is consistent with previous research. In a study of more than 2,000 online learners, Shea and Bidjerano (2009) established with structural equation modeling that 70% of the variance in cognitive presences is influenced by the instructor's ability to develop and maintain the teaching and social presence. The study's model also illustrated social presence and teaching presence was correlated with the cognitive presence. A later study used structural equation modeling to support the theoretical prediction that the teaching presence is essential to establishing and maintaining social and cognitive presence (Garrison et al., 2010). Additional studies support the essential role of the teaching

presence in developing a positive online learning experience (Bangert, 2008; Arbaugh, 2005; Pawan, Paulus, Yalcin, & Chang, 2003; Schrire, 2004).

An evaluation of the sub-constructs most significantly correlated to each of the three CoI constructs may illuminate the effectiveness of the teaching strategies employed during this study. As with the cognitive, social and teaching presences, all 10 sub-constructs had similar means. The data showed the teaching presence sub-construct design and organization had the highest mean with the lowest standard deviation. The social presence sub-construct affective expression had the lowest mean with the highest standard deviation. This data analysis showed participants perceived stronger teaching presence sub-constructs, but a diminished presence within the sub-constructs of the social presence.

The analysis of the sub-constructs is consistent with the performance of the three primary CoI constructs. Students in this study rated the teaching presence highest with more similar scores (smaller standard deviation). Conversely, the social presence and its sub-constructs registered lower mean scores and a wider disparity among the scores given (higher standard deviation). Participants ratings were more alike when rating the teaching presence, and less unified when rating the social presence.

Because the three primary CoI constructs are highly correlated, further analysis of the associations of the sub-constructs was justified. Reviewing the associations between each primary CoI construct and the sub-constructs of the remaining two CoI presences provides insight into how to develop each CoI presence.

A multiple regression analysis showed the cognitive presence sub-construct exploration and teaching presence sub-construct design and organization explained 61% of the variability of the social presence. Social presence is defined as the ability of learners to

project their personal characteristic into the online environment to present themselves as real people. When students feel able to project themselves as 'real people' then a social presence has been established. (Garrison, D., Anderson, T., & Archer, 2000). The social presence was most associated with cognitive presence sub-construct exploration. The sub-construct exploration focuses on a student's ability to transition from critical reflection within a private, individual perspective to a social exploration of lesson's related information. This occurs as meaning is constructed from ideas generated during the exploratory phase of learning in the online course (Gutiérrez-Santiuste et al., 2015).

The social presence is also associated with the teaching presence sub-construct design and organization, the process a teacher must complete as he or she is developing the structure, evaluation and integration of the course into an online environment (Bangert, 2009). This research study showed an instructor that employs a more explicit and transparent online pedagogy during in the planning process will be perceived by students more strongly within the teaching presence's sub-construct design and organization.

The data in this study indicates to increase students' perception of the social presence in an online course, the teaching strategies should focus on enabling students to shift between private, reflective introspective work temperaments to social exploration of ideas. This is characterized by brainstorming, questioning and exchanging information. Secondly, an online instructor should ensure the design and organization of a web-based class reflects the critical analysis of the process, structure, evaluation, and integration of the course components. In doing so, the instructor develops a more explicit and transparent course design.

The teaching presence was the only CoI presence to have two highly-correlated sub-constructs from the same primary CoI presence (cognitive presence). Data showed 63% of the

variance of the teaching presence was explained by two cognitive presence sub-constructs, resolution and exploration.

The teaching presence is defined as the design, facilitation and direction of cognitive and social processes for the purpose of comprehending personally meaningful and educational learning outcomes (Shea, Vickers, & Hayes, 2008). This study showed the teaching presence was most significantly affected when students focused on the resolution of a problem or dilemma and exploration (cognitive: resolution) and the instructor's ability to shift between private, reflective introspective work to the social exploration of course curriculum (cognitive: exploration) (Bangert, 2009).

The associations between the cognitive sub-constructs resolution and exploration in this study suggested to increase the teaching presence, the online instruction needs to resolve a problem or dilemma using clear expectations and opportunities to apply newly created knowledge. Additionally, teaching choices should enable students to shift between private, reflective introspective work temperaments to social exploration of ideas. This is characterized by brainstorming, questioning and exchanging information.

Because the social and teaching presence are both associated with the cognitive presence sub-construct exploration, improving the indicators for exploration will increase the social and teaching presences perceived by students. One indicator for the cognitive sub-construct exploration is an online instructor who successfully enable students to shift from private, reflective introspective work to the social exploration of ideas (Garrison, 2007). The study supports the belief that this instructor would see an increase in both the social presence and teaching presence.

The cognitive presence showed associations from both the teaching presence and social presence sub-constructs. The teaching sub-construct facilitation and the social presence sub-construct group cohesive explained 73% of the variability of the cognitive presence.

The cognitive presence is defined as the extent to which online students are able to construct meaning through continuous communication. The two sub-constructs most influencing cognitive presence evaluate the strength of how students perceive what the instructor does to maintain the interest, motivation, and engagement of students in active learning (facilitation); and how strongly activities that build and sustain a sense of group commitment in the online course is perceived (group cohesive) (Garrison, 2007). This research study suggests to positively influence the cognitive presence, online instructors should focus on maintaining the interest, motivation and engagement of students in active learning; and incorporating activities that build and sustain a sense of group commitment.

Additionally, a review of indicators for each CoI sub-constructs is shown in Table 3.10. It indicates techniques for increasing social presence included enhancing information exchange (exploration) and more clearly setting curriculum and methods (design and organization). To improve online teaching presence, results from the data analysis indicated continued improvement of information exchange (exploration) and providing more opportunities for students to apply new ideas from the course to real-world experiences (resolution). While social and teaching presences are highly associated with the cognitive presence, sub-constructs correlated specifically with cognitive presence indicated improving the opportunities for online students to share personal meaning (facilitation) and activities to encourage collaboration (group cohesion) also improve cognitive presence.

Table 3.10

Indicators associated with the CoI constructs and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

CoI Presence	Sub-construct	Indicators
Social	Effective Expression	Emoticons
	Open Communication	Risk-free expression
	Group Cohesion	Encourage Collaboration
Cognitive	Triggering Event	Sense of Puzzlement
	Exploration	Information Exchange
	Integration	Connecting Ideas
	Resolution	Apply New Ideas
Teaching	Design & Organization	Setting Curriculum & Methods
	Facilitation	Sharing Personal Meaning
	Direct Instruction	Focusing Discussion

The study also showed no associations between the cognitive, social or teaching presences and some sub-constructs. Other aspects of online pedagogy which didn't correlate as strongly are listed in Table 3.11.

Table 3.11

CoI Sub-constructs not strongly correlated to social, teaching or cognitive presences
(Garrison, Anderson, & Archer, 1999).

CoI Presence	Sub-construct	Definition
Cognitive	Triggering Event	An issue, dilemma, or problem that emerges from experience is identified or recognized. In an educational context, the teacher often explicitly communicates learning challenges or tasks that become triggering events. A critical role of the teacher (actualizing teacher presence) is to initiate, shape, and, in some cases, discard potentially distracting triggering events so that the focus remains on the course content and outcomes.
	Integration	Constructing meaning from ideas generated in the exploratory phase. Process of moving from more advanced stages of critical thinking and cognitive development.
Social	Effective Expression	Expression of emotion, feelings, and mood is a defining characteristic of social presence. Use of emoticons, humor and self-disclosure are used when body language, facial expression and vocal intonations are removed.
	Open Communication	Purposeful nature of the community, enables students to build and sustain relationships, provides socially meaningful interactions, encouragement, acceptance, feelings of comfort in conversing, participating and interacting.
Teaching	Direct Instruction	Providing intellectual and scholarly leadership, pedagogical expertise and share their subject matter knowledge with students

Pedagogy Alignment

The greatest value in this research would be if an online instructor had a similar

course, with comparable students, and was able to use specific pedagogy to improve how

students perceived the CoI presences. To that end, an analysis of the pedagogical benchmarks

used in this study aligned with the CoI presences and associated sub-constructs would prove

valuable insight when an instructor is making instructional choices.

In this study, mostly education majors were enrolled in a fully online, asynchronous education course at a community college. The majority of the student participants were Caucasian female students ranging in age from 18 to 25, with little to no training specific to learning in an online environment. Most of the students were in their second or subsequent year of college and had completed one or more online courses previously. Most of the students felt confident in their online learning skills and enjoyed the course content.

The three primary CoI presences cognitive, social and teaching had similar means and standard deviations. As reported in earlier research, the three CoI presences were highly correlated (Archibald, 2010; Garrison et al., 2010; Shea & Bidjerano, 2009). The results of a multiple linear regression analysis showed the teaching and social presence explained 68% of the variability of the cognitive presence.

When specifically investing the associations between the social presence and the sub-constructs of the teaching and cognitive presence provided the two strongest levels of correlation occurred. Data showed cognitive presence sub-construct exploration and teaching presence sub-construct design and organization explained 61% of the variability of the social presence.

After reviewing the pedagogical benchmarks defined within the study, the instructional choices that could support the development of each associated sub-constructs were aligned. The use of voice messaging within the application Voxer, evening virtual meetings using zoom.us, scheduled faculty-to-student calls during office hours, timely replies to student emails, and use of collaborative wiki assignments to research and list content-specific resources support the instructor's efforts to transition from private, reflective

introspect work to the social exploration of the course content, possibly strengthening the cognitive presence sub-construct exploration.

The inclusion of screencast lectures from the instructor over the course content, syllabus, calendar and assignments, in addition to the Blackboard navigational tutorials, demonstrates the instructor's ability to design an effective, transparent online course, may strengthen the teaching presence sub-construct design and organization. The CoI social presence, its associated sub-construct, known CoI indicators and possible pedagogical benchmarks from this exploratory study are aligned in Table 3.12 (Garrison, 2007).

Table 3.12

Pedagogical benchmarks aligned to CoI social construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Social	Cognitive: Exploration	Critical reflection to social exploration, brainstorming, questioning, information exchange	✓ Instructional screencasts ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Timely responses to email
	Teaching: Design & Organization	Process to develop structure, evaluation and integration of online course, setting curriculum & Methods	✓ Technical tutorial screencasts ✓ Extensive personalized feedback ✓ Timely grading and email responses

The teaching presence had two significant correlations with sub-constructs from the cognitive presence, resolution and exploration. Instructional strategies such as narrative feedback including screencast tutorials, individual screencast tutorials to address specific student challenges, and timely grading support the resolution of a problem or dilemma and exploration of the course content could improve student perception of the cognitive presence resolution sub-construct.

The cognitive sub-construct exploration was also associated with the social presence. In the case of the teaching presence, many of the pedagogical benchmarks that may have supported the development of the teaching presence remain the same. The use of voice messaging, evening virtual meetings, scheduled faculty-to-student calls during office hours, timely replies to student emails, and use of collaborative wiki assignments the instructor's efforts to transition from private, reflective introspect work to the social exploration of the course content within the teaching presence may enhance the students' perception of the cognitive sub-construct exploration. The CoI teaching presence, its associated sub-construct, known CoI indicators and possible pedagogical benchmarks from this exploratory study are aligned in Table 3.13 (Garrison, 2007).

Table 3.13

Pedagogical benchmarks aligned to CoI teaching construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Teaching	Cognitive: Resolution	Solve challenges with clear expectations and application of new knowledge, apply new ideas	✓ Extensive personalized feedback ✓ Timely grading and email responses ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
	Cognitive: Exploration	Critical reflection to social exploration, brainstorming, questioning, information exchange	✓ Instructional screencasts ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Timely responses to email

The cognitive presence is significantly correlated to the teaching sub-construct facilitation and the social sub-construct group cohesive. Possible instruction choices such as using voice messaging, evening virtual meetings, scheduled faculty-to-student calls during office hours, timely responses to student emails, screencast lectures featuring personal teaching anecdotes could assist in maintaining student interest, motivation, engagement and send of a shared personal meaning within the course, consequently improving the students' perception of the teaching presence sub-construct facilitation. Electing to incorporate collaborative wiki assignments for research and resource cultivation could build and sustain

group commitment, encourage collaboration and enhance active learning, ultimately improving the students' perception of the social presence sub-co0sntruct group cohesive. The CoI cognitive presence, its associated sub-construct, known CoI indicators and possible pedagogical benchmarks from this exploratory study are aligned in Table 3.14 (Garrison, 2007).

Table 3.14

Pedagogical benchmarks aligned to CoI cognitive construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Cognitive	Teaching: Facilitation	Maintain interest, motivation, engagement and share personal meaning	✓ Personal teaching anecdotes ✓ Extensive personalized feedback ✓ Timely grading ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
	Social: Group Cohesive	Build and sustain group commitment, encourage collaboration, active learning	✓ Collaborative wiki ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Extensive personalized feedback

A complete flowchart of the benchmark pedagogies aligned to the sub-constructs and their correlated CoI presence in this study is shown in Figure 3.1. The diagram focuses on the overarching goal of improving the educational experience at its core. Each presence is parsed and the two sub-constructs that showed the strongest associations are aligned. Additionally, the pedagogical benchmarks related to the sub-construct's known indicators are defined.

Figure 3.1

Pedagogical benchmarks associated with the sub-constructs and their associated CoI presence.
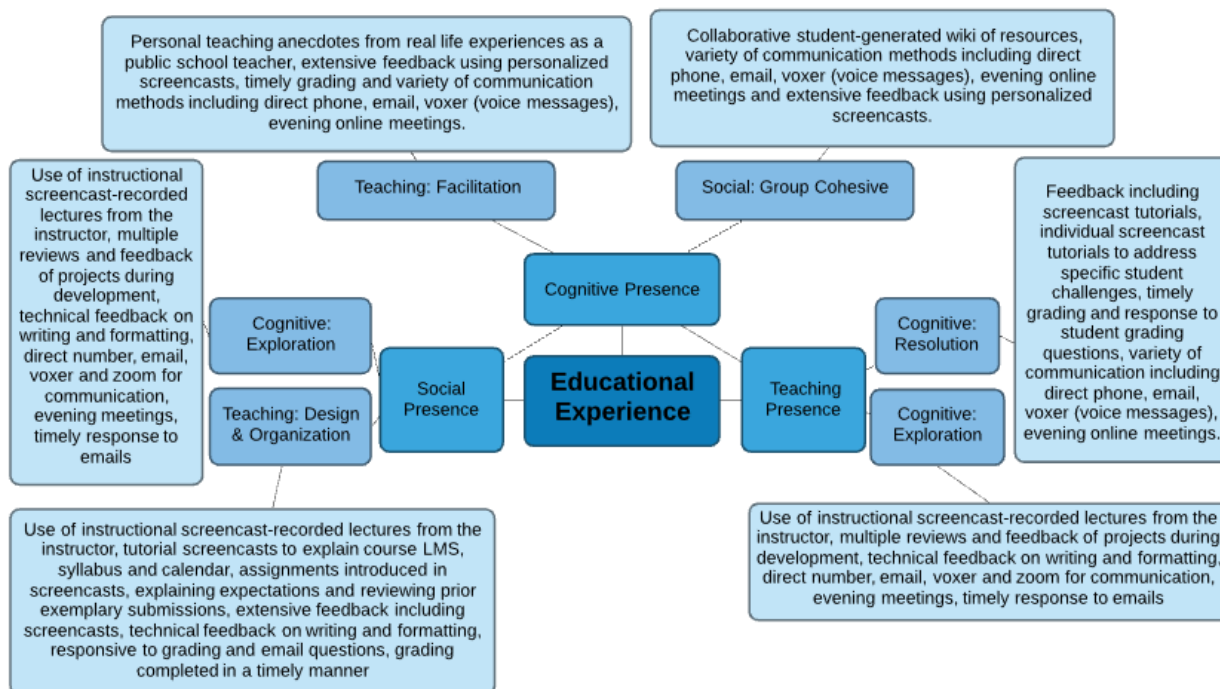
Validity Concerns

The greatest threat to external validity is this study's lack of a random sample because the study uses a convenience sample. Its evaluation of the CoI presences is reported from only one instructor's online course, and may be generalizable to instructors teaching in similar situations. This study contributes to the broader knowledge of post-secondary online instruction. Additionally, it provides valuable findings to instructors in comparable online teaching environments.

Additional validity concerns include selection threat, selection history, selection mortality, and social threats to internal validity. Selection threat could arise if the convenience sample is not representative of the population. Selection maturation threat could arise due to

the diversity in academic, technical skills, language acquisition, socio-economic level, or the presence of a diagnosed or undiagnosed learning disability. Selection history threat may occur if participants are also enrolled in technology courses or other online courses that drastically improve their technical skills within the semester. The range of abilities, financial resources, access to current technology, and academic skills could pose a threat to validity.

Pre-course technical training for students could also affect the validity of this study. Students who attend pre-course training to better function in the online course environment may perceive the instructor's presences more favorably due to their familiarity with the course interface and functionality.

Social threats to validity are possible if students work in study groups or have tutoring. Participants may reflect positively on items referencing an aspect of the instructor's presence because they worked with a tutor or in a study group. Because of the social environment experienced outside the online environment, students may not respond to the instrument accurately.

Bias

While bias can occur within many points during the research process, selection bias is the greatest concern within this manuscript. When education course participants were evaluated, their academic skills, motivation and subject interest may not reflect the perceptions of the broader community college online student population. This presents an instance of under-coverage bias if the goal of the sample is to project results as representative of the general community college population. Therefore, this study results are created from a specific convenience sample of students from a community college online education course.

To address this bias, this study is not meant to be representative of the entire community college online student body, but rather applicable to instructors teaching in a similar situation.

Volunteer bias may occur since students are not compensated for participation. If the sample population has difficulty understanding the survey questions, response bias may ensue. Nonresponse bias may occur once participants see the length of the survey or do not feel they can accurately respond to the questions given their experience in the online course. For example, if an item discusses group interaction and the student feels they did not interact with their peers within the course, the student may elect to skip the question. Multiple instances of this will generate non-response bias. This could be minimized by requiring a response to all questions before advancing within the online survey. However, that may cause fewer participants to complete the instrument.

Selection bias may also occur within the students who elect to participate. The students did not receive extra credit or any other type of compensation for participation. This may introduce a selection bias if only one classification of student completes the instrument.

Reliability

Reliability of the measures have two concerns: changes in technology and participant mood. If a student obtains a new computer or software during the course they may perceive assignments, online course interaction or instruction more positively than students with an older device. Additionally, participant moods may change during the course of the semester. This may affect their positive or negative reflections on survey items, consequently providing inaccurate assessment of the CoI constructs.

Delimitations/Limitations/Assumptions

Delimitations

Detailed parameters that restricted the scope and defined the limitations of this research, referred to as delimitations (Befus, 2016), were determined by study data, the purpose of the research and research questions. The most significant delimitation is the use of a convenience sampling method that affects its generalizability. Participants in the study attended the same course, taught by the same instructor at one community college. Multiple education courses taught by different faculty across several community colleges would provide for robust sampling.

Use of the CoI framework and instrument required all data to be self-reported. More diverse methods for collecting data, including monitoring online activity, student-to-student and student-to-instructor interactions, and other asynchronous communication may provide a more complete understanding to enhance online pedagogical practices. Qualitative data collected to expand upon the trends uncovered in the Likert-scale data, as well as open-ended questions, would enable researchers to better comprehend participants experiences.

Limitations:

According to Befus (2016), limitations, or weaknesses of this research that could not be controlled. In this manuscript, the software and hardware used by participants was not monitored or recorded. The use of higher-powered computers, better internet connectivity, newer software or hardware, or a more comfortable work space could affect a student's perception of the CoI presences. The students' perceptions of the CoI presences from the perspective of the individual learning experience is the foundation of this study. The accuracy of those perceptions cannot be verified (McWhorter, 2013).

Recommendations

Policy

Future funding to support the development of best practices for online course creation and instruction is needed. Financial support used to enhance online teacher preparation coursework may enable more teachers to be trained remotely, ultimately helping to ease the shortage of needed teachers. The financial incentives made available to post-secondary instructors to investigate and implement best practices for online teacher preparation courses may support the development of a more diverse pool of teacher candidates across geographic boundaries.

Educational Leadership & Practice

In the future, educational leadership should encourage online faculty to use the CoI instrument as one tool for course assessment. Results of the CoI provides insight into their students' learning experience. By evaluating strengths and weaknesses of the CoI framework's presences as reported by students, an instructor can be more purposeful in the design and delivery of their online courses (Bangert, 2009).

Research

While the CoI framework has been significant in the research of online pedagogy since 2000, the more researchers understand the nuances of online learning, the more questions and issues warranting research emerge. Additional research, similar to this study, evaluating the CoI as experienced by pre-service teachers in other courses would be beneficial in analyzing a complete teacher preparation program.

The CoI research is highly descriptive in nature. Experimental research using a variety of multimedia tools, instructional design or prescribed instructor interactions may provide

insight for practical applications to improve online teaching techniques. Additionally, quasi-experimental studies testing for causal effects on cognitive presence would build upon current research that currently only provides a quantitative cross-sectional summary of a population (Befus, 2016).

Research evaluating the effect of CoI-based practices on student satisfaction, retention, learning and interaction is currently under-developed. While each variable may be descriptively researched, few quasi-experimental studies have been published.

Articles with participants from multiple post-secondary institutions are lacking (Garrison & Arbaugh, 2007; Arbaugh et al., 2010, Stenbom, 2018). Most studies were conducted in one institution, occasionally a study will use a sample from two institutions. Leading scholars acknowledged and addressed this issue in a 2008 study of four institutions located in the United States and Canada. The study stated multi-institutional samples provide increased external validity of the findings (Arbaugh, et al., 2008). Shea and Bidjerano addressed the lack of CoI research across multiple institutions in their 2009 research using 30 public institutions representing community colleges and four-year colleges. While valuable, this research provides insight into online teaching in general, not within a disciple or specific post-secondary setting (Shea & Bidjerano, 2009). A study to evaluate the same course offered online from multiple institutions may show interesting trends across geographic areas.

Research to evaluate social presence and provide practical strategies and guidelines for creating a social presence in an online environment is needed. Evaluations of best practices for improving cognitive presence and metacognitive awareness is emerging. Additional research into defining the correct balance between facilitation and direct instruction in online teaching is needed.

Suggested future research includes studies beyond courses related to education. Specifically, collaborations between CoI veteran researchers and those teaching online courses from disciplines other than education could prove insightful.

Evaluation of the interactions between sub-constructs within the cognitive, social and teaching presences warrants future examination. The interaction between the cognitive, social and teaching presence has been studied. In 2014 Kozan & Richardson published an exemplary study of the interrelationships among the CoI elements. However, research to provide insights into the interconnectedness of the cognitive, social and teaching presence sub-constructs is still needed. The Kozan & Richardson study (2014) provides a history of evaluation techniques to consider applying when evaluating how the sub-constructs of the three presences relate. The interoperability of these sub-constructs may yield key information in online course design and instruction.

Examining the constructivist vs instructivist orientation of a course may provide more insight into student's perception of CoI presences. A study of CoI by Akyol, Ice, Garrison and Mitchell (2010) found the CoI presences were experienced differently among learners in various age groups. Younger and older students tended to see teaching and cognitive presence as the same construct. Middle age range students were more flexible and experience-oriented than their younger and older peers. Middle age range students were also found to be more perceptive of the three CoI elements. Research to validate the survey instrument and model across disciplines, teaching orientations and student demographics, as well as the interpretability of each model component is needed (Carlon et al., 2012).

Lastly, studies using samples from K12 online schools are virtually absent. According to Befus (2016) of the 11 articles studying K12 populations, only two used CoI concepts on a research treatment level.

Chapter Four: (Manuscript 2) A Comparison of Student Perceptions of

Community of Inquiry Presences in Community College Online

Major-Specific and General Education Courses

Significant diversity exists among students opting to learn in an online post-secondary environment. Given a general education course is comprised of a variety of students and a major-specific course may have students with similar characteristics, the most effective online instructional strategies may not be applicable to both courses. It is possible that students' perceptions of the online learning environment may differ when enrolled in a course that focuses on their future career, rather than general education. If true, instructors in major-specific and general education courses may need to employ different instructional strategies to engage online students. There is a need to identify research-based techniques for improving a specific type of online course. In this study, the Community of Inquiry (CoI) framework and instrument is used to measure the students' experience in each type of course. Analysis of this data may be used to strengthen students' perception of the community of inquiry within each type of community college online course.

Statement of the Problem

In higher education, faculty are increasingly asked to teach online or hybrid courses. There were 6,359,121 students enrolled in at least one distance education course in Fall 2016, a 6% increase from the previous year. This represents 32% of all higher education enrollments (students taking courses at a distance, and those in hybrid courses). The enrollment in distance education courses has increased 26% in 2012, 27% in 2013, 28% in 2014 and 30% in 2015 (Seaman et al., 2018) . The increase is present across the various forms of postsecondary educational institutions.

Community colleges have experienced a dramatic increase in online course enrollment (Shaw & Witt, 2015). As community college faculty learn to develop and teach a variety of courses online, scant published research exists investigating best practice differences for online pedagogy between teaching a general education course and teaching a major-specific course in an online for–mat (Arbaugh et al., 2010). The motivation of students in a general education course may be quite different from a smaller or more focused major-specific course. Cultivating meaningful interactions and inspiring learning in each online environment may require enhancing different aspects of the online pedagogy. The CoI framework and instrument were developed to assist in the creation of a more meaningful online experience for students. The quality of the educational experience is conceptualized as the intersection of the social, teaching and cognitive presences (Szeto, 2015). While CoI research is plentiful, research specifically evaluating the student perceptions of the CoI framework's presences experienced in an online general education course, in contrast to a major-specific online course environment is needed (Bolliger et al., 2013; Kozan & Caskurlu, 2018; Arbaugh, Bangert & Cleveland-Innes, 2010; Garrison & Arbaugh, 2007).

Purpose

The purpose of this quantitative comparative study was to investigate the commonalities and differences between perceived CoI presences experienced by online community college students enrolled in education (major-specific) course as compared to students enrolled in a freshmen orientation (general education) course. Each of these courses being taught asynchronously by the same instructor using common specific pedagogical benchmarks. By aligning the pedagogical benchmarks to the CoI framework's perceived

cognitive, social and teaching presences, best practices for each population could be theorized.

Research Questions & Hypotheses

The research question and associated hypotheses that guided the study were as follows:

- How do community college students perceive the CoI presences when enrolled in a major-specific course in education as compared to students enrolled in a freshmen orientation general education (GenEd) course, each taught asynchronously by the same instructor using common pedagogical benchmarks?

  - H_1: Teaching presence and social presence, as defined by the Community of Inquiry (CoI) framework, are significant predictive variables for the CoI cognitive presence for the major-specific group.

  - H_2: Teaching presence and social presence, as defined by the Community of Inquiry (CoI) framework, are significant predictive variables for the CoI cognitive presence for the general education group.

Research sub-questions include:

1. Are there significant associations between the major-specific students' perceptions of cognitive presence, social presence and teaching presences, and the general education students' perceptions of cognitive presence, social presence and teaching presences?

   a. H_1: Significant associations exist between the major-specific students' perceptions of cognitive presence, social presence and teaching presences, and the general education students' perceptions of cognitive presence, social presence and teaching presences

2. Are there associations between a CoI presence and the sub-constructs of the remaining two CoI presences within the two groups of students (major-specific and general education)?

   a. H_1: Significant correlations exist between the teaching and social presence sub-constructs and the cognitive presence within both groups.

   b. H_2: Significant correlations exist between the teaching and cognitive presence sub-constructs and the social presence within both groups.

   c. H_3: Significant correlations exist between the social and cognitive presence sub-constructs and the teaching presence within both groups.

Significance Statement

While research focusing on best practices for online instruction is available, there is little published research comparing and contrasting the needs of online learners enrolled in major-specific courses to those of online learners enrolled in general education courses within the community college environment (Arbaugh, Bangert & Cleveland-Innes, 2010). This setting provides a unique opportunity to study the perceptions of an online instructor teaching two different types of courses.

Alignment of pedagogical benchmarks with indicators from the CoI sub-constructs, as defined by Garrison (2007), may identify best practices for online pedagogy unique to a general education or major-specific online course taught at a community college. The findings from this study may help improve retention of online students, as well as better focus resources to support developing meaningful online communities of inquiry within a particular type of course (Bolliger et al., 2013).

Findings from this study may identify, inform or direct best practices for teaching online general education courses to specifically support a variety of learners. Conversely, different instructional strategies may be needed for effectively teaching major-specific online courses.

Pedagogical Benchmarks

The online courses examined for this study included a general education course (freshman orientation) and a major-specific course (education). Both courses were taught by the same instructor using specific instructional strategies.

Direct Instruction

The course lessons were provided using screencast-recorded lectures from the instructor. With a PowerPoint to guide the lecture, the instructor discussed key topics in each content area. Personal teaching anecdotes from her real-life experiences as a public-school teacher supplemented the information provided by the course textbook and other source material.

The Blackboard navigational tutorial, course syllabus, course calendar and assignments were introduced using instructor-developed screencast videos. Complex assignments required additional screencast video tutorials to explain expectations and review exemplary submissions from prior semesters.

Student Collaboration

During the course, students were encouraged to work collaboratively using the Wiki tool in Blackboard. The Wiki tool enables students to add text to the same word processing document (online) seamlessly. Often these wikis were used to gather and create comprehensive resource lists focused on a specific topic.

Assessment & Assignment Feedback

Assignment feedback was provided within Blackboard. Most comments were narrative in nature. Edits and suggestions to the signature writing assignment were extensive, spanning the five parts of the project. Each component of the signature assignment was reviewed individually, as sections of the final paper. Feedback included organization of ideas, depth of response to the prompt, editing to correct grammar and punctuation, and revisions to adhere to APA format. Narrative guidance was provided using a software tool called TypeItIn. This tool enables instructors to assign text, with links to information or videos, to a button. Once selected, the tool types the pre-written, custom text and links. Using TypeItIn enables comprehensive, consistent advice, as well as links to pre-recorded screencast tutorial videos created by the instructor, to be entered into the Blackboard gradebook. These tutorials addressed common errors or provided step-by-step guidance for technical challenges related to APA formatting.

Communication

Grading was completed in one to four weeks after the assignment due date. Students were required to submit questions or responses to any grading points or feedback within two weeks of the assignment feedback and points being posted to Blackboard. Assignments were due by 5:00pm each Monday.

In addition to traditional communication tools such as providing a direct office phone number and email, Zoom meeting software (http://www.zoom.us) was also used to facilitate online meetings between the instructor and students, with evening meeting available by appointment. In the course syllabus and course announcements, the instructor suggested

students provide a phone number for her to call during office hours, instead of requiring students to remember to call or visit the office during specific times.

Student email questions were responded to and often answered within an hour if received between 7am and 9pm weekdays, and within 12 hours when received on the weekends. Complex responses were explained in a personal recorded screencast, with the instructor showing a document or web page to answer the student's question.

Methodology

This comparative descriptive study was exploratory, investigating and comparing and contrasting the difference in CoI presences perceived by students enrolled in a major-specific course to those enrolled in a general education course. Participating students were surveyed and correlational-predictive data analysis was performed. Associations between the CoI constructs in each group of students were examined. Additionally, associations between constructs and sub-constructs within each group were evaluated. Significant associations between constructs and sub-constructs were further aligned to pedagogical benchmarks, as defined by indicators established in previous research.

Population & Sampling

The theoretical population of interest is community college students enrolled in online courses. More specifically, community college students enrolled in major-specific (education) and general education (freshman experience) online courses at a community college in the Western US. Data collection for this study occurred at one such institution across a set of online courses taught by the same instructor using similar teaching methods for each. The census method was used in an attempt to obtain responses from 42 students enrolled in a major-specific online course and 50 students enrolled in a general education online course at a

community college in southwestern Idaho. No students were enrolled in both courses, each group is a unique set of students.

Instrument

Participants completed the 34-item CoI questionnaire online during the last two weeks of the semester. Students were invited to participate via an email message and announcement in Blackboard. A second reminder email and announcement were sent a week after the initial request, at the start of finals week. The CoI questionnaire presents a five-point Likert response scale (1 = strongly disagree to 5 = strongly agree) to measure the students' perception of the CoI framework's cognitive, social and teaching presences.

The CoI questionnaire has been used to investigate online learning since 2000. Research findings have supported the construct validity of the presences as measured by the CoI questionnaire (Swan et al., 2008; Arbaugh & Hwang, 2006). The theoretical structure of the CoI framework has been verified by factor analysis demonstrating the clustering of sub-elements within the CoI model (Kozan & Richardson, 2014b). Additionally this validation produced Cronbach's alpha indexes showing high internal consistency: cognitive presence = 0.95; social presence = 0.91 and teaching presence = 0.94 (Arbaugh et al., 2008).

Procedures

The defined population was contacted using the census method during Fall 2015, Spring 2016, Spring, Summer and Fall 2017, and Spring 2018 semesters, and invited to participate in this CoI study. The population sub-groups of interest were new students enrolled in online general education courses (freshman orientation) and pre-service teacher candidates enrolled in online major-specific courses (education). The participating students

were enrolled in one of the following courses shown in Table 4.1. The courses were taught by the same instructor using a specific set of pedagogical benchmarks.

Table 4.1

Manuscript 2 Participant Courses

Course	Course	Semester
Education	General Education (Freshman Orientation)	Fall 2015
Education	General Education (Freshman Orientation)	Spring 2016
Education	General Education (Freshman Orientation)	Spring 2017
	General Education (Freshman Orientation)	Summer 2017
Education	General Education (Freshman Orientation)	Fall 2017
Education	General Education (Freshman Orientation)	Spring 2018

Each of the three CoI constructs (cognitive presence, social presence and teaching presence) was reviewed for each group of students. Within the data analysis, correlations between the constructs was examined. Each of the three CoI constructs have three to four sub-constructs. Within this manuscript, associations between a CoI presence and the sub-constructs of the remaining two CoI were examined. Associations between the presence and sub-constructs were investigated to inform the development of best practices for creating and maintaining an online community of inquiry within each type of online course.

Prior to data collection, the study was reviewed for human subject compliance by the institutional review board, who certified the study as exempt. Data collection occurred through Qualtrics, a software program used for collecting and analyzing research data. A review of any duplicate IP addresses, student identification numbers and demographic information was performed to prevent duplicate responses. Less than five percent in each data

set missing which according to Schafer (1999) is inconsequential. To adjust, the mean of each variable was used to replace missing data points, a technique validated in research conducted by Tabachnick & Fidell (2013).

Non-response Bias

Investigating non-response bias is important for any survey-based research, and needs to be accounted for within the methodology of the study. The analysis of a non-response bias can assist in evaluating the likelihood of a sample to be representative of the target population (Kitchel, Cannon, & Duncan, 2011).

Previous research has determined a low response rate may not increase the likelihood of nonresponse bias (Peytchev, 2013; Dillman, 2014). Research has determined findings from a sample may be representative of the population, if there is no significant difference between early and late respondents (Radhakrishna, R., & Doamekpo, 2008). Table 4.2 shows the Wilcoxon-Mann-Whitney two-sample rank-sum test results conducted to verify there was not a significant difference in the ratings of the first five and the last five responses in each group.

Table 4.2

Wilcoxon-Mann-Whitney two-sample rank-sum test of CoI Presences between Early and Late Responders in Each Group

Variable	Major-specific $n_1=5$, $n_2=5$		General Education $n_1=5$, $n_2=5$	
	U	*P*	*U*	*P*
Cognitive Presence	5.0	.10	9.0	.50
Social Presence	5.5	.10	9.0	.50
Teaching Presence	7.0	.20	8.5	.40

To further support the analysis, an independent samples *t*-test was conducted to compare data from the first five and last five responders in each group (Lindner et al., 2001). In the major-specific data set, there were no significant differences in the scores between the

early and late responders for the CoI presences in the major-specific group (cognitive

presence: $t(8) = 1.193$, $p = .267$; teaching presence $t(8) = 1.077$, $p = .313$; social presence $t(8)$

$= 1.449$, $p = .185$).

For the early and late responders in the general education group, there was no

significant differences in the scores between the early and late responders for the CoI

presences (cognitive presence: $t(8) = 2.139$, $p = .065$; teaching presence $t(8) = 1.324$, $p =$

$.222$; social presence $t(8) = .826$, $p = .433$). The two-tailed t test results are shown in Table

4.3.

Table 4.3

Two-tailed t test of CoI Presences between Early and Late Responders in Each Group

Variable	Major-specific				General Education			
	First Five Responders ($n = 5$)		Last Five Responses ($n = 5$)		First Five Responders ($n = 5$)		Last Five Responses ($n = 5$)	
	M	SD	M	SD	M	SD	M	SD
Cognitive Presence	4.67	.49	4.28	.53	4.91	.14	4.29	.64
Social Presence	4.69	.43	4.09	.82	4.53	.49	4.20	.76
Teaching Presence	4.89	.20	4.65	.47	4.89	.22	4.55	.51

Findings

All students enrolled in a defined set of education (major-specific) or freshman

orientation (general education) online courses were asked to participate in this study. The

major-specific courses had a response rate of 30% (N = 145). The general education courses

had a response rate of 21% (N = 236).

Demographics

The sample ($n = 92$) included 42 from the major specific class (17% male, 83%

female) and 50 from the general education course (35% male, 65% female). All participating

students were between the ages of 18 and 54. The largest group were between the ages of 18

and 25 for both types of classes. Most students were between the ages of 18 and 44. Most

participants were Caucasian. This demographic information is shown in Table 4.4.

Table 4.4

Demographic Variables for Major-specific and General Education Participants

Variable	Major-specific		General Education	
	n	percent	*n*	percent
Gender				
Female	34	82.9	32	65.3
Male	7	17.1	17	34.7
Age (years)				
18 to 25	23	54.8	22	44.9
26 to 34	9	21.4	15	30.6
35 to 44	9	21.4	7	14.3
45 to 54	1	2.4	4	8.2
55 or older	0	0	1	2.0
Ethnicity				
Hispanic or Latino	5	11.9	3	6.1
Caucasian	32	76.2	33	67.3
African American	1	2.4	3	6.1
Asian	2	4.8	5	10.2
American Indian	1	2.4	1	2.0
Pacific Islander	0	0	1	2.0
Decline to state	1	2.4	3	6.1

Majors

Most participants within the major specific course (i.e., education course) were

education majors (74%), with the majority identifying as elementary education majors (43%).

The majors represented in the general education course are more diverse than the participants

in the major-specific online course. The three largest majors represented included business

(16%), Liberal Arts (16%) and undecided students (16%). Nursing at 12%, Biology at 10%

and psychology at eight percent were other majors listed predominately. Those majors

constituted about 70% of the participants from the general education courses. See Table 4.5

for a complete comparison of the major-specific and general education data related to major.

Table 4.5

*Percentages and Frequencies for Major within the Major-specific and General Education
Participants*

Variable	Major-specific		General Education	
	n	percent	*n*	percent
Majors				
Early Childhood	1	2.4	0	0
Physical Education	1	2.4	0	0
Elementary Education	18	42.9	1	2.0
Education	7	16.7	1	2.0
Secondary, English	1	2.4	0	0
Secondary, Math	1	2.4	0	0
Secondary, Social Science	1	2.4	0	0
Special Education	1	2.4	0	0
Agriculture	0	0	1	2.0
Biology	0	0	5	10.0
Business	0	0	8	16.0
Communications	2	4.8	0	0
Criminal Justice	0	0	3	6.0
Health Science	1	2.4	1	2.0
Liberal Arts	2	4.8	8	16.0
Medical Assisting	0	0	1	2.0
Music Production	1	2.4	0	0
Networking & Security	0	0	1	2.0
Nursing	0	0	6	12.0
Pharmacy	0	0	1	2.0
Political Science	1	2.4	0	0
Psychology	1	2.4	4	8.0
Sign Language Studies	2	4.8	0	0
Sociology	1	2.4	1	2.0
Undecided	0	0	8	16.0

Academic Experience

Thirty-eight participants (91%) within the major-specific group stated they did not

receive any training prior to taking the online course. Almost half the participants (45%) have

completed three to five online courses. In total, 39 participants (93%) have completed one or

more online courses previously. Most of the major-specific participants were in their second or subsequent year of college. Fifteen participants (36%) were in their first or second semester of college. When asked to rate their computer skills, more than 95% of participants were confident their technical competencies were average or higher than average. A majority, 40 participants (98%), stated they enjoyed the content and subject of the course.

Of the general education participants, 76% reported no online course training prior to the start of the semester. There were almost 15% more general education students reporting they received some training prior to taking the course, when compared to responses from major-specific students. While more than half of the major-specific students had completed three or more online courses, 42% of the general education students report this was their first online course. The contrast in online learning experience is illustrated in Figure 4.1.

Figure 4.1

Online learning experience of major-specific and general education study participants.
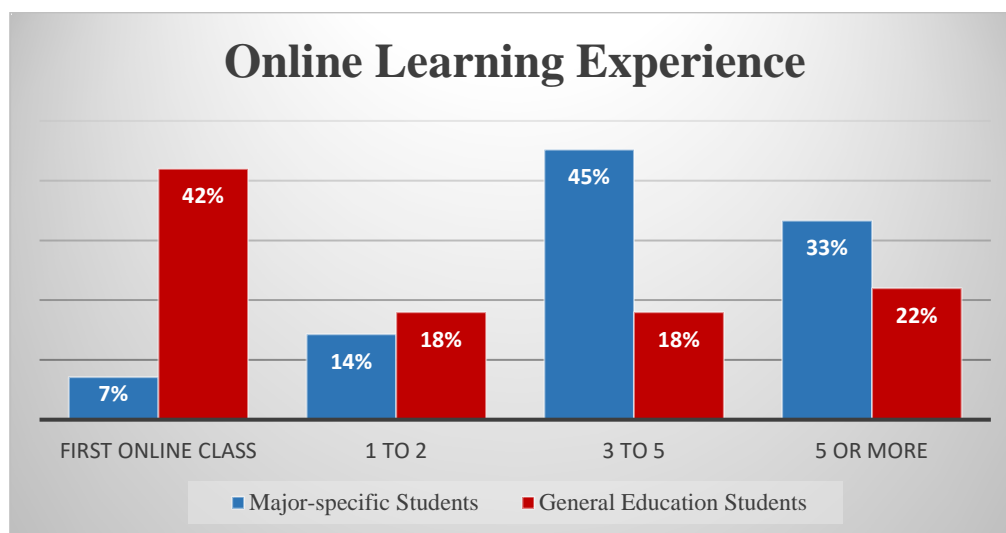
While most study participants were in their first or second year of college, the general education students are much more likely to be first semester students. Figure 4.2 visually depicts the differences in college semesters completed by each group of participants.

Figure 4.2

Semester in college data of major-specific and general education study participants.
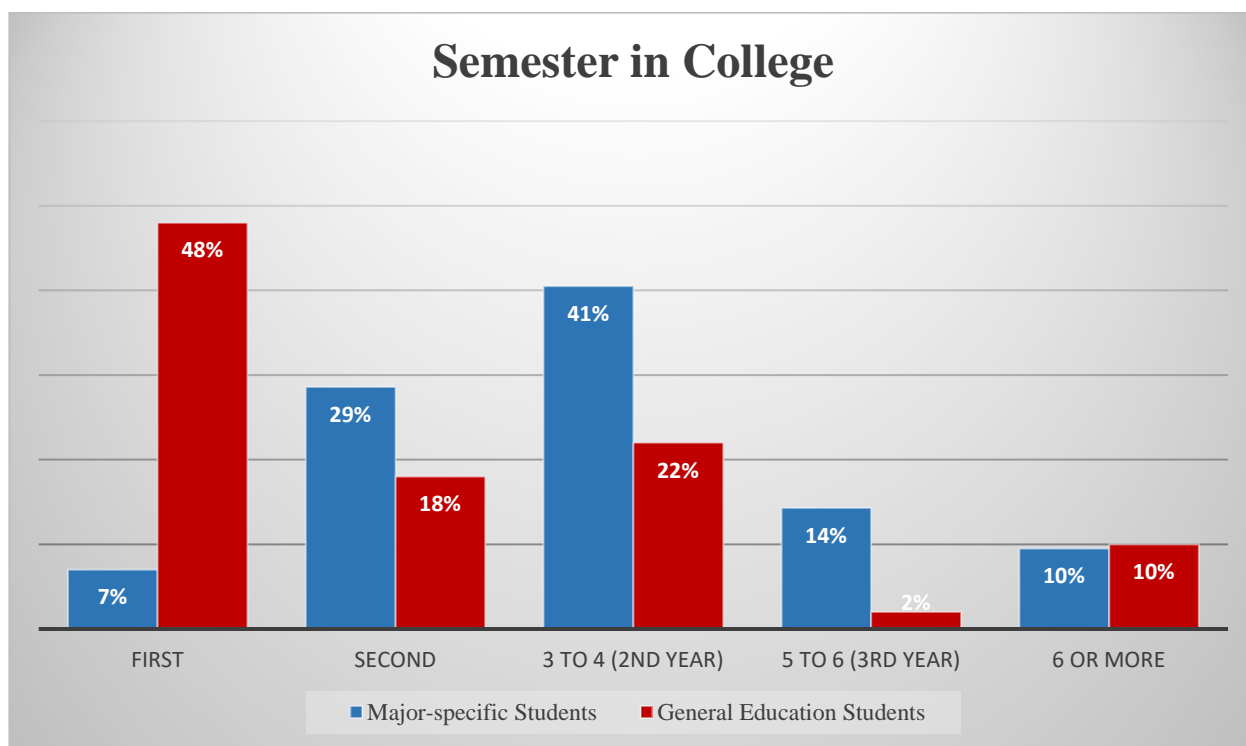
When asked to rate their computer literacy skills, the general education students were more confident than the major-specific students. A majority of both groups felt their skills were average. However, 36% of the general education students and only 14% of the major-specific participants felt their skills were above average, a difference of more than 20%. Figure 4.3 shows the difference in computer literacy confidence levels of the participant groups.

Figure 4.3

Computer Literacy skill confidence of major-specific and general education study participants.
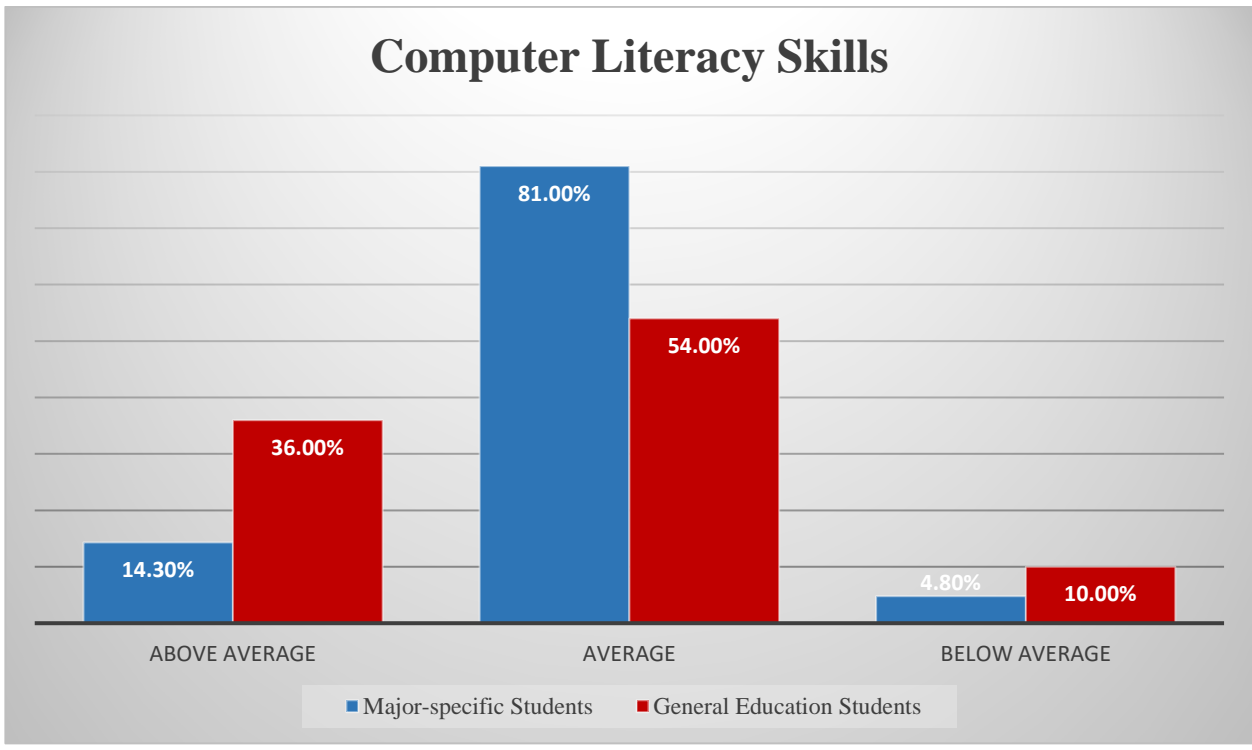
A majority of both groups of participants stated they enjoyed the content and subject of the course. See Table 4.6 for a complete comparison of the major-specific and general education data related to online course training, online learning experience, semester in college, computer literacy, and course enjoyment.

Table 4.6

Percentages and Frequencies for Online Course Training, Online Learning Experience, Semester in College, Computer Literacy Skills and Course Enjoyment for Major-specific and General Education Participants

Variable	Major-specific		General Education	
	n	percent	*n*	percent
Online Course Training (hours)				
No training	38	90.5	38	76.0
1 to 4	4	9.5	6	12.0
4 to 8	0	0	1	2.0
8 or more	0	0	5	10.0
Online Learning Experience (online courses completed)				
First online course	3	7.1	21	42.0
1 to 2	6	14.3	9	18.0
3 to 5	19	45.2	9	18.0
5 or more	14	33.3	11	22.0
Semester in College				
First	3	7.1	24	48
Second	12	28.6	9	18
3 to 4 (2nd year)	17	40.5	11	22
5 to 6 (3rd year)	6	14.3	1	2
6 or more	4	9.5	5	10
Computer Literacy Skills				
Above average	6	14.3	18	36.0
Average	34	81	27	54.0
Below average	2	4.8	5	10.0
Course Enjoyment				
Enjoyed the content and subject of the course	40	95.2	44	88.0
Did not enjoy the content and subject of the course	1	2.4	6	12.0
Did not respond	1	2.4	0	0

Research Question 1: Are there associations between the CoI framework's cognitive, social and teaching presences within the two groups of students (major-specific and general education)?

The descriptive statistics for the CoI constructs of cognitive presence, social presence and teaching presence for major-specific and general education participants are summarized

in Table 4.7. The means of all three variables are similar, which is consistent with the findings

of previous research (Shea & Bidjerano, 2009; Garrison et al., 2010; Shea et al., 2011; Kozan

& Richardson, 2014). The teaching presence has the highest mean and the social presence has

the lowest mean within both groups.

Table 4.7

Descriptive Statistics of CoI Constructs for Major-specific and General Education Participants

Variable	Major-specific					General Education				
	n	*M*	*SD*	Min	Max	*n*	*M*	*SD*	Min	Max
Cognitive Presence	42	4.39	.68	2.50	5.00	50	4.03	.88	1.25	5.00
Social Presence	42	4.21	.72	1.78	5.00	50	3.78	.88	2.0	5.00
Teaching Presence	42	4.65	.52	2.85	5.00	50	4.23	.91	1.46	5.00

A Pearson product-moment correlation coefficient was calculated for each of the

paired associations between CoI constructs within each group of students. The data used was

an interval scale measure because it was an average of several values. The coefficients were

evaluated to determine if the teaching presence and social presence are associated with the

cognitive presence in both major-specific ($n = 42$) and general education ($n = 50$) groups.

Within the major-specific group, analysis showed a significant, strong positive

correlation between the teaching presence ($M = 4.65$, $SD = 0.52$) and the cognitive presence

($M = 4.39$, $SD = 0.68$), $r(40) = .759$, $p < .001$. Higher levels of perceived teaching presence

are associated with higher levels of perceived cognitive presence in the major-specific sample.

The general education group also showed a significant, strong positive correlation

between the teaching presence ($M = 4.23$, $SD = 0.91$) and the cognitive presence ($M = 4.03$,

$SD = 0.88$), $r(48) = .806$, $p < .001$. Higher levels of perceived teaching presence are

associated with higher levels of perceived cognitive presence in the general education sample.

For the major-specific group, the social presence ($M = 4.21$, $SD = .72$) demonstrated an equal significantly, strong positive correlation to the cognitive presence ($M = 4.39$, $SD = 0.68$), $r(40) = .759$, $p < .001$. Higher levels of perceived social presence are associated with higher levels of perceived cognitive presence for the major-specific sample. While there is a significant positive correlation between social presence ($M = 4.21$, $SD = .72$) and teaching presence ($M = 4.65$, $SD = .52$), $r(40) = .684$, $p < .001$, the association is not as strong for major-specific students.

The social presence ($M = 3.78$, $SD = 0.88$) demonstrated an equal significantly, strong positive correlation to the cognitive presence within the general education sample ($M = 4.03$, $SD = 0.88$), $r(48) = .800$, $p < .001$. Higher levels of perceived social presence are associated with higher levels of perceived cognitive presence for the general education participants. While there is a significant positive correlation between social presence ($M = 3.78$, $SD = 0.88$) and teaching presence ($M = 4.23$, $SD = 0.91$), $r(48) = .706$, $p < .001$, the association is not as strong for general education students.

According to Cronk (2014), multiple linear regression may be used to determine the strength of the associations between the correlated variables. Multiple regression models using the social and teaching presences as the predicator variable and the cognitive presence as the dependent variable were generated for each group. These models indicated the teaching presence and social presence explained 68% of the variability of the cognitive presence in the major-specific group, $F(2, 39) = 42.25$, $p < .001$, $R^2 = .684$. For the general education group, the teaching and social presences explained 76% of the variability of the cognitive presence, $F(1, 47) = 20.52$, $p < .001$, $R^2 = .756$.

See Table 4.8 for the results of the linear regression analysis of both groups. In comparing the two predictors, the teaching presence more strongly explained the cognitive presence than the social presence for both groups. The results of Table 4.8 can be represented in a multiple regression equation for each group. Major-specific multiple regression model equation is Cognitive Presence = -.092 + .420 (Social Presence) + .584 (Teaching Presence). The general education multiple regression equation is Cognitive Presence = .294 + .464 (Social Presence) + .468 (Teaching Presence).

Table 4.8

Linear Regression results for Teaching Presence and Social Presence as Predictors for Cognitive Presence for Groups

Variable	Major-specific				General Education			
	β	Beta	t	p	β	Beta	t	p
constant	-.092		-.168	.867	.294		.926	.359
Teaching Presence	.584	.452	3.66	.001	.468	.481	4.727	.000
Social Presence	.420	.450	3.65	.001	.464	.461	4.530	.000

Research Question 2: Are there significant associations between a CoI presence and the sub-constructs of the remaining two CoI presences within the two groups of students (major-specific and general education)?

The descriptive statistics for the CoI sub-constructs of cognitive presence, social presence and teaching presence within each group are summarized in Table 4.9. The means of all 10 sub-constructs were similar across the two groups, with the general education sample generating lower means for all sub-constructs. The teaching presence sub-construct design and organization had the highest mean for both groups. Conversely, the social presence sub-construct affective expression had the lowest mean for both groups.

Table 4.9

Descriptive Statistics of CoI Sub-constructs for All Participants

Variable	Major-specific					General Education				
	n	*M*	*SD*	Min	Max	*n*	*M*	*SD*	Min	Max
Cognitive: Triggering Event	42	4.36	0.78	2.00	5	50	3.87	1.04	1.00	5
Cognitive: Exploration	41	4.28	0.76	1.67	5	50	3.85	1.04	1.00	5
Cognitive: Integration	42	4.56	0.59	3.00	5	50	4.12	0.94	1.00	5
Cognitive: Resolution	42	4.41	0.77	2.00	5	50	4.26	0.79	2.00	5
Social: Affective Expression	42	3.89	0.92	1.33	5	50	3.23	1.19	1.33	5
Social: Open Communication	42	4.50	0.71	2.00	5	50	4.25	0.87	2.00	5
Social: Group Cohesion	42	4.25	0.81	2.00	5	50	3.87	0.92	2.00	5
Teaching: Design & Organization	42	4.77	0.51	3.00	5	50	4.32	0.97	1.25	5
Teaching: Facilitation	42	4.58	0.58	2.67	5	50	4.17	0.92	1.33	5
Teaching: Direct Instruction	42	4.63	0.62	3.00	5	50	4.25	0.97	1.00	5

Within each group, multiple linear regression was used to study associations between each CoI presence and sub-constructs from the remaining two CoI presences. Analysis showed two sub-constructs were associated with each of the three primary CoI constructs from each group.

Social Presence

Multiple regression was conducted using the social presence as the outcome variable and the sub-constructs of the teaching and cognitive presences as the predictor variables in the major-specific group ($n = 42$) and general education group ($n = 50$). The cognitive presence sub-construct exploration ($M = 4.28$, $SD = .76$) and the teaching presence sub-construct design and organization ($M = 4.77$, $SD = .51$) showed a significant, strong positive correlation to the social presence in the major-specific group, $F(2, 38) = 29.90$, $p < .001$ with an R^2 of .611. The cognitive presence sub-construct integration ($M = 4.12$, $SD = .94$) and the teaching presence sub-construct facilitation ($M = 4.17$, $SD = .92$) demonstrated a significant, strong positive association to the social presence in the general education group, $F(2, 47) = 42.89$, p

< .001 with an R^2 of .646. For the major-specific sample, data showed social presence is equal to -.001 + .543 (Cognitive: Exploration) + .401 (Teaching: Design and Organization). For the general education sample, social presence is equal to .505 + .484 (Cognitive: Integration) + .307 (Teaching: Facilitation).

Both cognitive presence sub-construct exploration and the teaching presence sub-construct design and organization were significant predictors, explaining 61% of the variance of the social presence within the major-specific sample. Sixty-five percent of the variance of the social presence within the general education sample was explained by the cognitive presence sub-construct integration and the teaching presence sub-construct facilitation. See Table 4.10 for the results of the linear regression analysis for the social presence. The cognitive presence sub-construct exploration had a higher regression coefficient (β = .571, p < .001) than the teaching presence sub-construct design and organization (β = .284, p < .035) for the major-specific group. The cognitive presence sub-construct integration had a higher regression coefficient (β = .522, p = .001) than the teaching presence sub-construct facilitation (β = .321, p < .05) for the general education sample.

Table 4.10

Linear Regression results for Sub-constructs as Predictors for Social Presence in Major-specific and General Education Groups

	Variable	β	Beta	T	p
Major-specific	Constant	-.001		-.001	.999
	Cognitive: Exploration	.543	.571	4.397	.000
	Teaching: Design & Organization	.401	.284	2.187	.035
General Education	Constant	.505		1.384	.173
	Cognitive: Integration	.484	.522	3.573	.001
	Teaching: Facilitation	.307	.321	2.200	.033

Teaching Presence

Multiple regression analysis of the teaching presence and the sub-constructs of the social and cognitive presences confirmed two associations for each group, major-specific (n = 42) and general education (n = 50). The major-specific group's teaching presence was significantly, positively associated with two cognitive presence sub-constructs resolution (M = 4.41, SD = 0.77) and exploration (M = 4.28, SD = 0.76), $F(2, 38)$ = 32.86, $p < .001$ with an R^2 of .634. Data showed the teaching presence is equal to 1.949 + .347 (Cognitive: Resolution) + .270 (Cognitive: Exploration). The general education group's teaching presence was significantly, positively associated with the cognitive presence sub-construct integration (M = 4.12, SD = 0.94) and the social presence sub-construct group cohesion (M = 3.87, SD = 0.92), $F(2,47)$ = 44.99, $p < .001$ with an R^2 of .657. The sample data indicated the teaching presence is equal to .860 + .584 (Cognitive: Integration) + .250 (Social: Group Cohesion).

Both cognitive presence sub-constructs resolution and exploration were significant predictors, explaining 63% of the variance of the teaching presence for the major-specific group. The cognitive presence sub-construct integration and the social presence sub-construct

group cohesion were significant predictors explaining 66% of the variance in the teaching presence for the general education group.

See Table 4.11 for the results of the linear regression analysis for the teaching presence. The cognitive presence sub-construct resolution had a higher regression coefficient (β = .449, p < .010) than the cognitive presence sub-construct exploration (β = .389, p < .023) for the major-specific group. The cognitive sub-construct integration had a higher regression coefficient (β = .610, p < .000) than the social presence sub-construct group cohesion (β = .253, p < .05) for the general education sample.

Table 4.11

Linear Regression results for the Sub-constructs as Predictors for Teaching Presence in Major-specific and General Education Groups

	Variable	β	Beta	T	p
Major-specific	Constant	1.949		5.655	.000
	Cognitive: Resolution	.347	.449	2.732	.010
	Cognitive: Exploration	.270	.389	2.363	.023
General Education	Constant	.860		2.349	.023
	Cognitive: Integration	.584	.610	4.961	.000
	Social: Group Cohesion	.250	.253	2.058	.045

Cognitive Presence

A multiple linear regression analysis was performed using the cognitive presence as the outcome variable and the social and teaching sub-constructs as the predictor variables. The results indicated two associations for each group, major-specific (n = 42) and general education (n = 50). In both groups, the data showed a significant, positive association between the cognitive presence and the teaching presence sub-construct facilitation (major-specific: M = 4.58, SD = .58; general education: M = 4.17, SD = .92) and the social presence sub-construct group cohesive (major-specific: M = 4.25, SD = .81; general education: M = 3.87,

SD = .92). The major-specific participants predicted cognitive presence was equal to .152 +

.609 (Teaching: Facilitation) + .341 (Social: Group Cohesive). For the general education

sample, cognitive presence was equal to .412 + .583 (Teaching: Facilitation) + .307 (Social:

Group Cohesive).

Both teaching presence sub-construct facilitation and the social presence sub-construct

group cohesive were significant predictors, explaining 73% of the variability of the cognitive

presence in the major-specific group, and 75% of the variability of the cognitive presence in

the general education group.

See Table 4.12 for the results of the linear regression analysis for the cognitive

presence. The teaching presence sub-construct facilitation had a higher regression coefficient

(major-specific: β = .521, *p* < .001; general education: β = .606, *p* < .001) than the social

presence sub-construct group cohesive (major-specific: β = .407, *p* < .001; general education:

β = .319, *p* < .005).

Table 4.12

Linear Regression results for each Sub-construct as Predictors for Cognitive Presence in Major-specific and General Education Groups

	Variable	β	Beta	T	*p*
Major-specific	Constant	.152		.337	.738
	Teaching: Facilitation	.609	.521	4.55	.000
	Social: Group Cohesive	.341	.407	3.55	.001
General Education	Constant	.412		1.309	.197
	Teaching: Facilitation	.583	.606	5.742	.000
	Social: Group Cohesive	.307	.319	3.026	.004

Discussion

The participants have provided an understanding of how the CoI presences are perceived by major-specific and general education online learners. The findings provide insight into how the social and teaching presences are perceived differently and require differ instructional techniques to maximize the creation and maintenance of an effective online environment.

Demographics & Academic Experience

There were some significant similarities to each group. The participants were primarily Caucasian and similar in age, with most being between 18 and 25. The groups differed in the variety of majors represented, the major-specific sample was primarily education majors and the general education group was much more diverse. Participants from the major-specific group had more experience taking online classes and semesters in college than the general education group participants. Overall, participants from the general education sample felt more confident in their computer literacy skills. The demographic similarities and differences between the two groups should be reflected upon as the CoI's framework's presences are analyzed.

Multiple Linear Regression of Social, Teaching and Cognitive Presences

Multiple linear regression analysis showed the social presence and teaching presence are associated with the cognitive presence for both groups. For the major-specific students, 68% of the variability of cognitive presence was explained by the teaching and social presence. The general education showed a stronger association, with 76% of the variance of the cognitive presence explained by the teaching and social presence. The high correlation of all three CoI factors is consistent with previous researching (Shea & Bidjerano, 2009;

Garrison et al., 2010; Arbaugh, 2005; Pawan, Paulus, Yalcin, & Chang, 2003; Schrire, 2004; Archibald, 2010).

Development of critical thinking, knowledge, ability to evaluate & understand concepts, exploring new solutions and confirming facts occurs within the cognitive presence of the CoI. Previous research shows academic growth desired in the cognitive presence requires a strong foundation of social and teaching presences (Archibald, 2010; Garrison et al., 2010; Gutiérrez-Santiuste et al., 2015). The multidimensional and interdependent nature of the CoI presences is noted in earlier research (Shea & Bidjerano, 2009; Garrison et al., 2010; Arbaugh, 2005; Pawan et al., 2003; Schrire, 2004; Archibald, 2010; Kozan & Richardson, 2014; Rockinson-Szapkiw et al., 2016). Multiple previous research studies have concluded the teaching and social presences were significant predictor variables for the cognitive presence (Archibald, 2010; Gutiérrez-Santiuste et al., 2015; Shea & Bidjerano, 2009). Gutierrez (2015) found the teaching and social presences predicted 81% of the variability of the cognitive presence. Archibald's research (2010) stated 69% of the variance in the cognitive presence is explained by social and teaching presence for his data. Lastly, Shea & Bidjerano (2009) found 70% of the variance in the cognitive presence is explained by social and teaching presence in their research. Further research included Kozan & Richardson (2014) who used correlation and partial correlation analysis to show how the CoI presences can mediate one another.

CoI Sub-Constructs

With three very highly correlated CoI constructs, additional investigation of the associations of the sub-constructs was necessary. This analysis provided information instructors could use to evaluate how to develop each CoI presence for general education or

major-specific online courses. Consistent with the means and standard deviations of the three primary CoI presences, the general education group had lower means and higher standard deviations across almost all 10 sub-constructs. This would indicate the general education students perceived the CoI and sub-constructs presences to a lesser degree than the major-specific students. With a higher standard deviation, the range of each CoI presence and sub-constructs were more varied in the general education students' experience. For both groups the social presence sub-construct affective expression had the lowest mean and the highest standard deviation. Students across both groups rated the teaching presence sub-constructs with higher means and lower standard deviations than social and cognitive presences. Noteworthy is the rating of the social presence sub-construct open communication. In both groups this sub-construct has a higher mean and smaller standard deviation than the remaining social presence sub-constructs.

Social Presence

Multiple linear regression using the social presence as the outcome variable and the sub-constructs of the teaching and cognitive presences as the predictor variables for each group was conducted. The resulting regression models were different for each group. The major-specific students showed an association between the social presence and the cognitive presence sub-construct exploration and the teaching presence sub-construct design and organization. The general education students showed an association between the social presence and the cognitive presence sub-construct integration and the teaching presence sub-construct facilitation. The regression models explained 61% of the variance in the social presence for the major-specific students and 65% of the variance in the social presence for the general education students.

For the major-specific sample, the multiple linear regression model showed social presence is equal to -.001 + .543 (Cognitive: Exploration) + .401 (Teaching: Design and Organization). For the general education sample, the multiple linear regression model showed social presence is equal to .505 + .484 (Cognitive: Integration) + .307 (Teaching: Facilitation).

The difference in associated sub-constructs illuminates specific characteristics of each set of online learners. Since a social presence is established when students feel able to project themselves as 'real people' in an online environment (Garrison, D., Anderson, T., & Archer, 2000), each group perceives this presence differently. The major-specific students feel a stronger social presence when they are able to transition from critical reflection alone, from an individual perspective to a social exploration of the lesson's related information. Students are comprehending a greater meaning from the ideas generated using the exploratory phase of learning (Gutiérrez-Santiuste et al., 2015). This process can be facilitated by students' brainstorming, questioning and exchanging information. Additionally, major-specific students feel a stronger social presence when the design and organization of the course is perceived as purposefully organized, explicit and transparent. Major-specific students perceive a greater social presence when the process, structure, evaluation and integration of course components are clear and well-articulated within the course design.

For general education students, the social presence is developed differently. These students perceive a higher social presence when they begin to construct meaning, during a reflexive phase in learning. This is supported by instructors clarifying concepts, posing probing questions and comments, providing additional formation, and modeling critical thinking. Instead of focusing on the design of an online course, general education students

find a greater social presence when the instructor provides stronger facilitation. This can be accomplished when online instructors construct meaning by increasing interest, motivation, commitment and learning through effective communication methods (Gutiérrez-Santiuste et al., 2015).

Teaching Presence

Multiple linear regression using the teaching presence as the outcome variable and the sub-constructs of the social and cognitive presences as the predictor variables for each group was conducted. The resulting regression models were different for each group. The major-specific students showed an association between the teaching presence and the cognitive presence sub-constructs resolution and exploration. The general education students showed an association between the teaching presence and the cognitive presence sub-construct integration and the social presence sub-construct group cohesion. The regression models explained 63% of the variance in the teaching presence for the major-specific students and 66% of the variance in the teaching presence for the general education students.

For the major-specific sample, the multiple linear regression model showed the teaching presence is equal to 1.949 + .347 (Cognitive: Resolution) + .270 (Cognitive: Exploration). For the general education sample, the multiple linear regression model showed teaching presence is equal to.860 + .584 (Cognitive: Integration) + .250 (Social: Group Cohesion).

Interestingly, the major-specific group showed associations to two cognitive presence sub-constructs resolution and exploration. While resolution occurs sequentially later than exploration within the cognitive presence development, resolution had a higher association with the teaching presence for the major-specific students. The resolution phase involves

testing ideas and hypothesis and critically evaluating the content presented. This phase is supported by clear expectations articulated by the instructor. Within exploration, students move from individual reflection to the social expression of ideas. It is the basis for greater understanding of the contents (K. P. Swan et al., 2008).

Data from the general education students showed the cognitive presence sub-construct integration and social presence sub-construct group cohesion with the strongest associations to the teaching presence. For these students, a teaching presence was developed by reflecting learning to construct a meaning for the content presented. This is supported by instructors who ask detailed questions, comments and provide information to model critical thinking. Additionally, general education students felt a stronger teaching presence from an online environment that supported cohesion in the CoI model, generated by open, affective communication (Gutiérrez-Santiuste et al., 2015).

Cognitive Presence

Multiple linear regression using the cognitive presence as the outcome variable and the sub-constructs of the social and teaching presences as the predictor variables for each group resulted in the same sub-construct associations. Both groups showed an association between the cognitive presence and the teaching presence sub-constructs facilitation and the social presence sub-construct group cohesive. The regression models explained 73% of the variance in the teaching presence for the major-specific students and 75% of the variance in the teaching presence for the general education students.

For the major-specific sample, the multiple linear regression model showed the cognitive presence is equal to .152 + .609 (Teaching: Facilitation) + .341 (Social: Group Cohesive). For the general education sample, the multiple linear regression model showed

cognitive presence is equal to .412 + .583 (Teaching: Facilitation) + .307 (Social: Group Cohesive).

Since the major-specific and general education student data showed associations from the same sub-constructs for the cognitive presence, instructional choices to enhance this presence would apply to both groups. The teaching presence sub-construct facilitation is created by teacher actions to maintain the interest, motivation, and engagement of students in active learning. For the social presence sub-construct group cohesive, instructors would employ activities to build and sustain a sense of group commitment within the online community (Garrison, 2007).

There were some sub-constructs that did not associate with any CoI presences for the major-specific nor the general education students. These sub-constructs and their definitions are listed in Table 4.13.

Table 4.13

CoI Sub-constructs Not Strongly Correlated to Social, Teaching or Cognitive Presences in Either the Major-specific nor General Education Groups (Garrison, Anderson, & Archer, 1999)

CoI Presence	Sub-construct	Definition
Cognitive	Triggering Event	An issue, dilemma, or problem that emerges from experience is identified or recognized. In an educational context, the teacher often explicitly communicates learning challenges or tasks that become triggering events. A critical role of the teacher (actualizing teacher presence) is to initiate, shape, and, in some cases, discard potentially distracting triggering events so that the focus remains on the course content and outcomes.
Social	Effective Expression	Expression of emotion, feelings, and mood is a defining characteristic of social presence. Use of emoticons, humor and self-disclosure are used when body language, facial expression and vocal intonations are removed.
	Open Communication	Purposeful nature of the community, enables students to build and sustain relationships, provides socially meaningful interactions, encouragement, acceptance, feelings of comfort in conversing, participating and interacting.
Teaching	Direct Instruction	Providing intellectual and scholarly leadership, pedagogical expertise and share their subject matter knowledge with students

Pedagogy Alignment

The greatest use of this study would be if an instructor was able to try specific teaching strategies targeting a unique student population to improve a course's CoI presences. A model of the sub-constructs associated to each presence for each group is depicted in Figure 4.4. The image seeks to graphically illustrate the difference ways in which each presence is developed by major-specific and general education students.

Figure 4.4

The educational experience aligned to the CoI presences and their associated sub-constructs
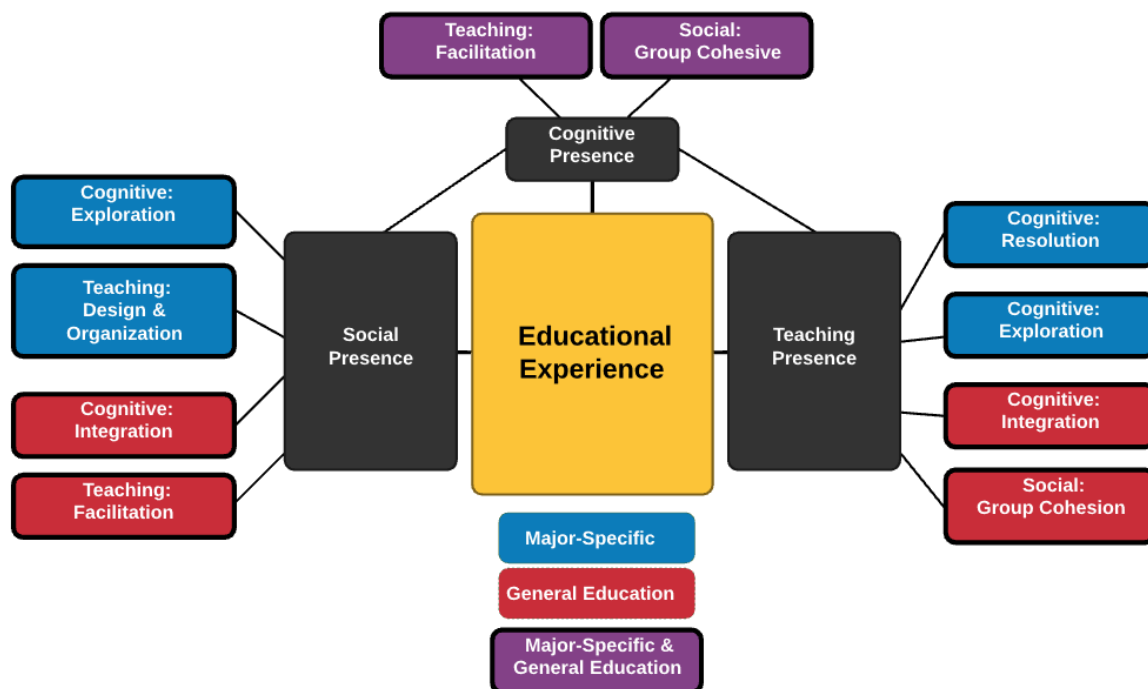
for each group.

An examination of the pedagogical benchmarks as they align with each group's CoI presences and associated sub-constructs would assist instructors as they create and teach online classes for specific populations. A review of indicators for each CoI sub-constructs is shown in Table 4.14. With these indicators developed in Garrison's (2007) research, the pedagogical benchmarks were aligned to indicators of each sub-construct.

Table 4.14

Indicators Associated with the CoI Constructs and Sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016)

CoI Presence	Sub-construct	Indicators
Social	Effective Expression	Emoticons
	Open Communication	Risk-free expression
	Group Cohesion	Encourage Collaboration
Cognitive	Triggering Event	Sense of Puzzlement
	Exploration	Information Exchange
	Integration	Connecting Ideas
	Resolution	Apply New Ideas
Teaching	Design & Organization	Setting Curriculum & Methods
	Facilitation	Sharing Personal Meaning
	Direct Instruction	Focusing Discussion

Social Presence Pedagogical Alignment

The major-specific students most associated the cognitive presence exploration and teaching presence sub-construct design and organization with the social presence. Indicators for the sub-construct exploration include critical reflection that transfers to social exploration facilitated by brainstorming, questioning and information change (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016). When aligned to the specific pedagogical benchmarks used in this study, specific teaching choices may include instructional screencasts, extensive personalized feedback, technical tutorial screencasts, as well as communicate via a direct phone number, email, voice and text messaging, availability of online evening meetings and timely responses to email.

Indicators for the sub-construct design and organization focus on the development of the course, including structure, evaluation, integration of online course, setting curriculum and methods (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

This study's corresponding pedagogical benchmarks to support the development of the design and organization sub-construct include technical tutorial screencasts, extensive personalized feedback, prompt responses to email and timely grading.

The general education student data indicated different sub-constructs (Cognitive: Integration and Teaching: Facilitation) to support the development of the social presence. The cognitive presence sub-construct integration is defined as constructing meaning from ideas generated in the exploratory phase, including more critical thinking and cognitive development. In this study, pedagogical benchmarks which support these indicators include instructional screencasts, timely response to email, extensive personalized feedback, technical tutorial screencasts, as well as communication via a direct phone number, email, text or voice messaging and online evening meetings.

Indicators for facilitation include the instructor's ability to maintain interest, motivation, engagement and share a personal meaning (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016). This may be achieved by using personal teaching anecdotes, extensive personalized feedback, timely grading, as well as communication via a direct phone number, email, text and voice messaging and online evening meetings.

The major-specific students, in this case mostly education majors, value exploring the content and a clear teaching design and course organization. Conversely, the general education students felt a stronger social presence when they are able to integrate ideas in the content into 'real life' by constructing meaning from the ideas presented. Additionally, the social presence was perceived stronger when students felt their interest, motivation and engagement was supported, as well as the content providing a shared personal meeting

between the instructor and students. Each group's CoI social presence, its associated sub-construct, known CoI indicators and possible pedagogical benchmarks from this exploratory study are aligned in Table 4.15 (Garrison, 2007).

Table 4.15

Pedagogical benchmarks aligned to CoI social construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016)

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Social Presence (Major-specific)	Cognitive: Exploration	Critical reflection to social exploration, brainstorming, questioning, information exchange	✓ Instructional screencasts ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Timely responses to email
	Teaching: Design & Organization	Process to develop structure, evaluation and integration of online course, setting curriculum & Methods	✓ Technical tutorial screencasts ✓ Extensive personalized feedback ✓ Timely grading and email responses
(General Education)	Cognitive: Integration	Constructing meaning from ideas generated in the exploratory phase. Process of moving from more advanced stages of critical thinking and cognitive development.	✓ Instructional screencasts ✓ Timely responses to email ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
	Teaching: Facilitation	Maintain interest, motivation, engagement and share personal meaning	✓ Personal teaching anecdotes ✓ Extensive personalized feedback ✓ Timely grading ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings

Teaching Presence Pedagogical Alignment

The teaching presence is also perceived differently for each group in this study. The major-specific students most associated two cognitive presence sub-constructs (resolution and exploration), while the general education students most associated the cognitive presence sub-construct integration and the social presence sub-construct group cohesion to the teaching presence.

An evaluation of the indicators for resolution, including solving challenges with clear expectations and applying new knowledge, align with several of this study's pedagogical benchmarks. To support resolution, instructors teaching major-specific courses may want to prioritize extensive personalized feedback, timely grading and email responses, and providing a direct phone number, email, text and voice messaging and offering evening online meetings. The exploration sub-construct indicators include critical individual reflection that moves into social exploration, including brainstorming, questioning, and information exchange. The aligned pedagogical benchmarks from this study for exploration include providing instructional screencasts, extensive personalized feedback, technical tutorial screencasts, as well as providing communication choices including a direct phone number, email, text and voice messaging, online evening meetings and prompt responses to email.

For the general education online course, the teaching presence is cultivated by activities that enable students to construct meaning from the content, using more advanced stages of critical thinking and cognitive development. Pedagogical choices including instructional screencasts, timely responses to email, extensive personalized feedback, technical tutorial screencasts and access to a direct phone number, email. Text or voice messaging and evening online meetings support this sub-construct. The second sub-construct

supporting the teaching presence for general education students, the social presence sub-construct group cohesion, is defined as a teacher's ability to build and sustain a group commitment, encourage collaboration and active learning. In this study, pedagogical benchmarks aligned to this sub-construct include use of collaborative wiki tools, providing a direct phone number, email, text and voice messaging, online evening meetings and extensive personalized feedback.

In broad pedagogical strokes, the major-specific students feel a stronger teaching presence from solving challenges with clear expectation and critical reflection. In this study, participants in the major-specific group are preservice teachers to seem to prefer individual reflection and application of ideas to the content. Conversely, the general education students perceive a stronger teaching presence when they are able to construct meaning within the content using critical thinking and problem solving. These activities are additionally supported by the development of a supportive, social, cohesive online environment. The alignment of the CoI teaching presence, its associated sub-constructs, known CoI indicators and possible pedagogical benchmarks for each group are displayed in Table 4.16 (Garrison, 2007).

Table 4.16

Pedagogical benchmarks aligned to CoI teaching construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016)

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Teaching Presence	Major-specific — Cognitive: Resolution	Solve challenges with clear expectations and application of new knowledge, apply new ideas	✓ Extensive personalized feedback ✓ Timely grading and email responses ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
	Cognitive: Exploration	Critical reflection to social exploration, brainstorming, questioning, information exchange	✓ Instructional screencasts ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Timely responses to email
	General Education — Cognitive: Integration	Constructing meaning from ideas generated in the exploratory phase. Process of moving from more advanced stages of critical thinking and cognitive development.	✓ Instructional screencasts ✓ Timely responses to email ✓ Extensive personalized feedback ✓ Technical tutorial screencasts ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
	Social: Group Cohesion	Build and sustain group commitment, encourage collaboration, active learning	✓ Collaborative wiki ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Extensive personalized feedback

Cognitive Presence Pedagogical Alignment

The cognitive presence is the only CoI presence that was associated with the same two sub-constructs for both the major-specific and the general education students. The sub-constructs most associated with the cognitive presence feature indicators such as maintaining interest, motivation, engagement and a shared personal meaning (teaching: facilitation) and building and sustaining group commitment that encourages coloration and active learning (social: group cohesion).

In this study, the pedagogical benchmarks that aligned to the sub-construct facilitation include providing personal teaching anecdotes, extensive personalized feedback, timely grading and student access to a faculty's direct phone number, email, text or voice messaging, and online evening meetings. To support the development of the social presence sub-construct group cohesions, aligned pedagogical benchmarks included use of a collaborative wiki tools, providing a direct phone number, email, text and voice messaging, evening online meetings and extensive personalized feedback. Each group's CoI cognitive presence, its associated sub-construct, known CoI indicators and possible pedagogical benchmarks are aligned in Table 4.17 (Garrison, 2007).

Table 4.17

Pedagogical benchmarks aligned to CoI cognitive construct and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016)

CoI Presence	Associated Sub-constructs	Indicators	Pedagogical Benchmarks
Cognitive	Major-specific & General Education	Teaching: Facilitation	Maintain interest, motivation, engagement and share personal meaning	✓ Personal teaching anecdotes ✓ Extensive personalized feedback ✓ Timely grading ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings
		Social: Group Cohesive	Build and sustain group commitment, encourage collaboration, active learning	✓ Collaborative wiki ✓ Direct phone ✓ Email/voxer ✓ Evening online meetings ✓ Extensive personalized feedback

Limitations

Using a convenience sample instead of a random sample presents the greatest threat to external validity. The evaluation of the CoI presences as experienced by general education and major-specific students, as reported from one instructor's courses, could be generalizable to online instructors in similar teaching situations. The findings of manuscript 2 contributes to the broader knowledge of post-secondary instruction specific to online general education and major-specific courses. Moreover, it provides valuable results beneficial to instructors in similar online teaching scenarios.

Selection maturation, selection history, selection mortality, and social threats are potential threats to internal validity. Diversity in socio-economic levels, academic, technical or language skills, as well as the presence of a learning disability could adversely affect selection maturation validity. Selection history threat may occur if participants have a significant increase in technical skills within the semester. Additional validity concerns focus on the influences of sub-groups within the convenience sample. Variety in the home computers or familiarity with course navigation and functionality could impact study results

Outside the online environment, social threats to validity may exist if support from student study groups affects the perceived cognitive, social and teaching presences of the instructor.

Bias

The research is vulnerable to bias at many stages in the process, selection bias is the greatest concern within this manuscript. When evaluating only education and general education course participants, their academic skills, motivation and subject interest may not be reflective of the greater population of community college online students. This presents an example of under-coverage bias if the goal of the sample is to extend outcomes as typical of the general community college student population. Consequently, these results are generated from specific convenience sample of students from a community college online education (major-specific) and freshman orientation (general education) courses, and not meant to be generalized to the broad community college online student population.

Volunteer or selection bias may occur since students are not compensated for participation. Response bias may occur if the sample population has difficulty understanding the survey questions. Once participants realize the length of the survey or do not feel they can

truthfully respond to the questions given their experience in the course, non-response bias may occur. Selection bias is possible because students participate voluntarily.

Reliability

The two primary concerns, changes in technology and participant mood, may affect reliability. Students with newer computers, devices or software purchased during the semester may reflection on assignments, online course interaction or instruction more favorably than students with older hardware or software. Additionally, participant moods may vary during the course of the semester, affecting their positive or negative responses to survey items. Ultimately this could provide an inaccurate assessment of the CoI experienced.

Delimitations/Limitations/Assumptions

Delimitations

According to Belfus (2016), specific parameters that limited the scope and defined the boundaries of this manuscript are delimitations. In this manuscript the delimitations were determined by study data, the purpose of the research, and research questions. This study data was restricted to major-specific and general education online courses taught by one instructor at a community college. This limitation affects the study's generalizability. The study cannot ensure equivalent groups. Participants from multiple community colleges, taking several different courses from a variety of instructors, would provide a stronger sampling.

Because student perceptions were gathered by the CoI instrument, all data was self-reported. This data may accurately reflect of authentic course engagement. Additional methods for gathering data related to monitoring the courses, classmate and instructor interactions, as well as rate of engagement in asynchronous online environments may provide more robust understanding to improving online pedagogy.

This research collected data using a Likert scale and did not include additional open-ended questions. Supplementary narratives, collected by interview or open-ended questions, would provide more insightful information on the participants' experiences.

Limitations

Limitations of this research that could not be controlled (Befus, 2016) include variations of the software and hardware utilized by participants. The diversity in internet connectivity speed, newer hardware and software, or a more comfortable work situation could affect a student's perception of the CoI environment. This research centers on the students' perceptions of the CoI presences from the perspective of the individual learning experience. The accuracy of those perceptions cannot be determined (McWhorter, 2013).

Recommendations

Policy

This study has shown how major-specific and general education online students perceive the CoI framework differently. Policymakers should consider targeted funds for the creation and instruction of online courses unique to a discipline or first-semester students within a community college environment. If financial support was offered to improve specific types of online courses, students may report higher cognitive learning and course satisfaction, as well as two-year institutions seeing an overall improvement in online course retention.

Educational Leadership & Practice

Online faculty should be encouraged to use the CoI instrument as a tool for online course assessment. CoI results could provide an improved awareness of their students' online experience. An instructor can be more purposeful in the design and delivery of their online

courses by evaluating the strengths and weaknesses of the CoI presences, as reported by past students (Bangert, 2009).

Research

Although the CoI framework has been used in online pedagogical research since 2000, the evolution of online coursework necessitates future research. Foremost, there is a need for more research using larger inter-disciplinary and inter-institutional samples over time (Garrison & Arbaugh, 2007; Arbaugh et al., 2010, Stenbom, 2018). This includes replicating the research provided in this study using other disciplines.

Further research to evaluate the associations between each CoI presence and the sub-constructs of the remaining two CoI presences may provide insight into how to strengthen each presence with specific teaching strategies tailored for either major-specific or general education online courses.

Future research using different mediating variables, such as satisfaction, academic performance and academic achievement, is needed. Research similar to Choy & Quek (2016) to test and validate relationships among the CoI presences and learning-related outcomes would contribute a significant perspective to the value perceived by online students.

Additionally, quantitative research can be combined with qualitative data to illuminate similarities and discrepancies within the participants' self-reported data and information discovered during interviews. The additional perspective provided by qualitative data could better discuss and explain the students' online experience (Kozan & Caskurlu, 2018).

Chapter Five: (Manuscript 3) An Investigation of Student Satisfaction and

Community of Inquiry Presences in Community College Online Courses

The significance of online education continues to grow in part because it enables more people to access a post-secondary education. Constrained by geographic location, full-time employment or other external factors, online learning becomes the only path to earning a college degree or certification. Simultaneously, community colleges have increased their offerings of online courses (McFarland et al., 2017). A critical factor in successful online student learning is perceived course satisfaction, which has been well researched (Freddolino & Sutherland, 2000; Fredericksen, Pickett, Shea, Pelz, & Swan, 2000; Hsieh Chang & Smith, 2008; Choy et al., 2016; Cho & Tobias, 2016; Bolliger & Waslik, 2012; Boliger et al., 2013; Richardson et al., 2017; Rubin et al., 2013; Lim et al., 2008).

Using the Community of Inquiry (CoI) framework and instrument, students can provide their perceptions of an online class environment (Garrison, Anderson, & Archer, 2010; Swan & Ice, 2010). The interaction of the three main elements: social presence, teaching presence and cognitive presence, provides insight into how online learning is experienced. Often used since its creation in 1999, the CoI framework and instrument has been widely used and cited in online learning research (Anderson, 2016, Befus 2016; Swan & Ice, 2010). Extensive studies have been conducted to support the construct validity of the CoI framework, as well as the reliability of the CoI instrument (Diaz, Swan, Ice, & Kupczynski, 2010; Garrison, Cleveland-Innes, & Fung, 2010; Kozan & Richardson, 2014). Understanding the relationship between students' perceptions of the CoI presences and course satisfaction merits investigation.

Statement of the Problem

Community colleges frequently include online courses and programs as an integral part of their operation. With the robust growth of online education over the past decade one might expect an accompanying growth in pedagogical knowledge for online teaching. Although the review of literature found many studies that addressed aspects of teaching within the online space, there remains unanswered questions and a need for continued research. The area of interest relevant to this study involves online pedagogical practices and their association with student satisfaction. A need for research addressing this topic has been articulated by a number of researchers (Summers, Waigandt & Whittaker, 2005; Boliger & Waslik, 2012; Chang & Smith, 2008; Lim et al., 2008; Kozan, 2016; Akyol & Garrison, 2008).

Purpose

The purpose of this study was to investigate the relationship between online community college student's perceptions of the CoI presences, those being cognitive presence, social presence and teaching presence, and student satisfaction. The examination of the association between the CoI constructs and the student satisfaction construct seeks to contribute to an understanding of the factors that may influence student course satisfaction, and therefore student success. An examination of this experience, through the lens of the CoI framework, provides those involved with online education a scientific foundation of knowledge from which to make pedagogical and instructional decisions. The findings from this study may be used to inform best practices for developing and teaching more impactful online courses in the community college setting.

Research Question & Hypotheses

The guiding research question for this study was: What is the association between community college students' perceptions of the CoI presences and their reported level of student satisfaction in online, asynchronous education and freshman orientation courses?

The null versions of each of the following hypotheses were tested in order to address the research question:

- H_1: There are significant correlations between the students' cognitive presence, social presence, teaching presences and their sub-constructs, and the students' level of course satisfaction.

- H_2: The CoI presences and their sub-constructs are significant predictors of the satisfaction construct.

- H_3: There are significant differences between students' level of course satisfaction based on demographic and background characteristics.

Review of Literature

The Community of Inquiry (CoI) is a well-known and widely referenced framework and instrument used to conduct online learning research. It is a major theoretical framework for comprehensive and explanatory educational theory applied within online and blended pedagogy (Catalano, 2018). The CoI framework and instrument consist of three primary presences: cognitive, social and teaching. Each presence has sub-constructs with corresponding indicators. These constructs have validated associations and indicators qualifying the CoI framework to be categorized as a theory (Garrison, 2016). The indicators aligned to each sub-construct are shown in Table 5.1. If a sub-construct is positively associated with the satisfaction construct for a sample, the instructor could alter teaching

strategies and pedagogy according to the indicator for a specific CoI sub-contruct. For example, if the data shows a strong positive association between the social presence's group cohesion sub-construct and the satisfaction construct, the instructor may wan to use more collaborative teaching methods or assignments to increase student satisfaction in the course. The ability to align specific teaching practices to enhance a sub-construct lends a unique and practical aspect to the use of CoI in online pedagogical research.

Table 5.1

Indicators associated with the CoI constructs and sub-constructs (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

CoI Presence	Sub-construct	Indicators
Social	Effective Expression	Emoticons
	Open Communication	Risk-free expression
	Group Cohesion	Encourage Collaboration
Cognitive	Triggering Event	Sense of Puzzlement
	Exploration	Information Exchange
	Integration	Connecting Ideas
	Resolution	Apply New Ideas
Teaching	Design & Organization	Setting Curriculum & Methods
	Facilitation	Sharing Personal Meaning
	Direct Instruction	Focusing Discussion

In addition to being widely used, the CoI framework and instrument have been validated in several research studies (BouJaoude, 2016; Stenbom, 2018; Garrison, Anderson & Archer, 2010; Bangert, 2009; Maddrell, Morrison & Watson, 2017; Garrison, 2016; Rourke & Kanuka, 2007; Armellini & De Stefani, 2015; Choy & Quek, 2016; Shea, Cohen & Uzuner, 2011; Garrison & Rourke, 2007; Garrison et al, 2010; Richardson & Ice, 2009; Archibold, 2010; Archer, 2010; Zkyol et al., 2010, Vaughan, 2010). Previous studies have evaluated the CoI framework when used to research student satisfaction. In 2013, Gutierrez-Santiuste &

Gallego-Arrufat analyzed 'chats' from a course (instead of using an instrument) to evaluate the level of student satisfaction with the course. However, this study lacked self-reported data specific to student satisfaction. Rubin, Fernandes and Avgerinou evaluated CoI, student satisfaction and the use of learning management system (LMS). This research study did not evaluate data to see if a correlation existed between the CoI and student satisfaction constructs. The CoI and student satisfaction constructs were analyzed with the LMS preferences to show correlations among LMS features, the development of a community of inquiry, as well as student satisfaction (Rubin, Fernandes, & Avgerinou, 2013).

Primarily CoI research has focused on undergraduate or graduate students at four-year institutions. In most cases, participants are derived from a specific major or course of study (Choy & Quek, 2016; Cho & Tobias, 2016; Maddrell, Morrison & Watson, 2017). At this time, specific research illustrating the interrelationships between CoI and student satisfaction construct is limited, particularly for the community college student population

In this study, the CoI and student satisfaction construct data is derived from a diverse sampling of community college students. Participants represent a variety of majors, academic histories, socio-economic backgrounds, and ages. Associations between the students' cognitive, social and teaching presences, and their level of course satisfaction identifies opportunities for instructional strategies to improve online pedagogy and strengthen the level of satisfaction experienced by online students at a community college.

Methodology

This descriptive study was exploratory, investigating the CoI presences perceived by online students enrolled in education and general education courses at a community college. Participating students were surveyed and correlational-predictive data analysis was

completed. Associations between the CoI presences and satisfaction constructs were examined. In addition, associations between the satisfaction construct and the sub-constructs of each CoI presence were also studied. Group differences between demographic factors and satisfaction constructs were analyzed.

Population & Sampling

The theoretical population of interest is online students attending a community college in the Western US. This study's data was collected at one such institution across online sections of a major specific course in education and sections of a general education courses taught by a variety of instructors over six semesters. The census method was used to attempt to gather responses from all students enrolled in the chosen online courses.

Instrument

Participants completed the 34-item CoI questionnaire, as well as 20 additional items that composed the satisfaction construct, online during the last two weeks of each semester included within this study. Students were invited to participate via an email message and announcement in Blackboard. A second reminder email and announcement were sent a week after the initial request, at the start of finals week.

The CoI questionnaire presents a five-point Likert response scale (1 = strongly disagree to 5 = strongly agree) to measure the students' perception of the CoI framework's cognitive, social and teaching presences. The CoI questionnaire has been used to investigate online learning since 2000. Research findings have supported the construct validity of the presences as measured by the CoI questionnaire (Swan et al., 2008; Arbaugh & Hwang, 2006). The theoretical structure of the CoI framework has been verified by factor analysis demonstrating the clustering of sub-elements within the CoI model (Kozan & Richardson,

2014). Additionally this validation produced Cronbach's alpha indexes showing high internal consistency: cognitive presence = 0.95; social presence = 0.91 and teaching presence = 0.94 (Arbaugh et al., 2008).

Student satisfaction questions originated from an instrument developed by Bolliger and Halupa (2012). The researchers conducted a pilot study of the revised instrument on a sample of 34 participants. The questions used a five-point Likert response scale (1 = strongly disagree to 5 = strongly agree). Reliability coefficients were calculated on the pilot data to validate the reliability of the modified instrument (a=.92) (Bolliger and Wasilik, 2012).

Procedures

Data for this study was collected using the census method during the Fall 2015, Spring 2016, Spring, Summer and Fall 2017, and Spring 2018 semesters. Each of the three CoI constructs (cognitive presence, social presence and teaching presence) and the satisfaction construct were reviewed. The data analysis included an examination of the associations between the CoI presences and the satisfaction construct. Each of the three CoI constructs have three to four sub-constructs. In addition to an examination of the CoI presences, associations between a CoI presence's sub-constructs and the satisfaction construct were also examined. Associations between the CoI sub-constructs and satisfaction construct were investigated to inform the development of best practices for creating and maintaining an effective online community of inquiry. Additionally, the satisfaction construct and demographic factors were examined to uncover associations to inform online instruction.

The study was reviewed for human subject compliance by the institutional review board, who certified the study as exempt. Data collection occurred through Qualtrics, a software program used for collecting and analyzing research data. A review of any duplicate

IP addresses, student identification numbers and demographic information was performed to prevent duplicate responses. Less than five percent in each data set was missing which according to Schafer (1999) is inconsequential. To adjust, the mean of each variable for each participant was used to replace the missing data point, a technique validated in research conducted by Tabachnick & Fidell (2013).

Non-response Bias

As described by Kitchel, Cannon and Duncan (2011), an analysis of non-response bias was conducted to evaluate the likelihood of this sample being representative of the target population. Research has determined findings from a sample may be representative of the population, if there is no significant difference between early and late respondents (Radhakrishna, R., & Doamekpo, 2008). An independent samples t-test was conducted to compare data from the first five and last five responders in the sample (Lindner et al., 2001). In the data set, there were no significant differences in the scores between the early and late responders for the CoI presences or satisfaction construct (cognitive presence: $t(8) = -0.940$, $p = .380$; teaching presence $t(8) = -0.670$, $p = .523$; social presence $t(8) = -1.276$, $p = .238$). The mean and standard deviation of the CoI presences between early and late responders are shown in Table 5.2.

Table 5.2

The Mean and Standard Deviation of CoI Presences between Early and Late Responders

Variable	Major-specific			
	First Five Responders ($n = 5$)		Last Five Responses ($n = 5$)	
	M	*SD*	*M*	*SD*
Cognitive Presence	4.16	0.84	4.58	0.58
Social Presence	4.38	0.50	4.76	0.43
Teaching Presence	4.51	0.64	4.75	0.51

Findings

All students enrolled in a defined set of education (major-specific) or freshman orientation (general education) online courses were asked to participate in this study. The response rate was 13%, with a 22% response rate from education courses and an 8% response rate from the general education courses. (*n*=61). Beyond email reminders, there was a lack of resources for connecting with students to improve the response rates. In-survey motivational items were used. They included telling participants the purpose of the research and how their feedback would be used. The survey encouraged students to provide an email to receive a summary of the research results.

Demographics

The sample (*n* = 61) included 18% male and 82% female. Most of the participants were Caucasian. All students were between the ages of 18 and 54, the largest being 18 to 25-year-old students (57%). The majority of students were between the ages of 18 and 44. The demographic information is shown in Table 5.3.

Table 5.3

Demographic Variables

Variable	Major-specific	
	n	percent
Gender		
Female	50	82
Male	11	18
Age (years)		
18 to 25	35	57
26 to 34	10	16
35 to 44	11	18
45 to 54	5	8
55 or older	0	0
Ethnicity		
Hispanic or Latino	4	7
Caucasian	51	84
African American	3	5
Asian	1	2
American Indian	1	2
Pacific Islander	0	0
Decline to state	1	2

Academic Majors

The sample included several academic majors, the greatest number of participants declaring an education major (40%). The next largest group was comprised of liberal arts majors (10%). All other majors were below 7% of the sample. See Table 5.4 for a listing of majors within the sample.

Table 5.4

Percentages and Frequencies for Major within the Sample

Majors	Major-specific	
	n	percent
Biology	4	7
Business	7	10
Communications	1	2
Criminal Justice	2	3
Education	23	40
Health Science	4	7
Liberal Arts	6	10
Music	1	2
Nursing	1	2
Physical Education	1	2
Political Science	1	2
Psychology	3	5
Sign Language Studies	1	2
Sociology	2	3
Undecided	2	3

Academic Experience

The sample primarily consisted of students who had not received any training for online learning prior to taking the course (84%). The level of experience in online learning was more diverse, with most students having taken three to five classes online before enrolling in this course (34%). Over 27% had taken more than five classes online and 25% had completed one or two online classes. Only 13% of the sample stated this was their first online class. The participants experience in post-secondary education was more evenly distributed. Over 27% were in their first semester, 26% were in their second semester, 26% were in their third or fourth semester, and 13% were in their fifth or sixth semester. When asked to rate their computer skills, most students felt their computer literacy was average (64%) and 30% rated their computer skills above average. Over 96% of participants stated

they enjoyed the subject and content of the course. See Table 5.5 for specific demographic

data.

Table 5.5

*Percentages and Frequencies for Online Course Training, Online Learning Experience,
Semester in College, Computer Literacy Skills and Course Enjoyment.*

Variable	*n*	Percent
Online Course Training (hours)		
No training	51	83.6
1 to 4	5	8.2
4 to 8	3	4.9
8 or more	2	3.3
Online Learning Experience (online courses completed)		
First online course	8	13.1
1 to 2	15	24.6
3 to 5	21	34.4
5 or more	17	27.9
Semester in College		
First	17	27.9
Second	15	24.6
3 to 4 (2nd year)	16	26.2
5 to 6 (3rd year)	8	13.1
6 or more	5	8.2
Computer Literacy Skills		
Above average	18	29.5
Average	39	63.9
Below average	4	6.6
Course Enjoyment		
Enjoyed the content and subject of the course	59	96.7
Did not enjoy the content and subject of the course	2	3.3

Manuscript 3, Hypothesis 1: There are significant correlations between the

students' cognitive presence, social presence, teaching presences and their sub-

constructs, and the students' level of course satisfaction

The descriptive statistics for the CoI's cognitive, social and teaching presences and the

satisfaction construct are summarized in Table 5.6. The means of all three CoI presences are

similar, which is consistent with the findings of previous research (Shea & Bidjerano, 2009;

Garrison et al., 2010; Shea et al., 2011; Kozan & Richardson, 2014). The teaching presence

has the highest mean and the satisfaction construct has the lowest mean.

Table 5.6

Descriptive Statistics of CoI Constructs and Satisfaction Construct for Participants

Variable	Major-specific				
	n	*M*	*SD*	Min	Max
Cognitive Presence	61	4.24	0.79	1.25	5.00
Social Presence	61	4.13	0.74	1.77	5.00
Teaching Presence	61	4.46	0.77	1.46	5.00
Satisfaction	61	4.13	0.53	2.65	5.00

The descriptive statistics for the CoI sub-constructs of the cognitive, social and

teaching presences are shown in Table 5.7. The means and standard deviations of all 10 sub-

constructs are similar.

Table 5.7

Descriptive Statistics of CoI Sub-constructs for Participants

Variable	*n*	*M*	*SD*	Min	Max
Cognitive: Triggering Event	61	4.21	0.91	1.00	5.00
Cognitive: Exploration	61	4.09	0.87	1.00	5.00
Cognitive: Integration	61	4.33	0.81	1.00	5.00
Cognitive: Resolution	61	4.33	0.80	2.00	5.00
Social: Affective Expression	61	3.68	0.98	1.33	5.00
Social: Open Communication	61	4.50	0.74	2.00	5.00
Social: Group Cohesion	61	4.22	0.77	2.00	5.00
Teaching: Design & Organization	61	4.59	0.76	1.25	5.00
Teaching: Facilitation	61	4.42	0.78	1.33	5.00
Teaching: Direct Instruction	61	4.39	0.97	1.00	5.00

A Pearson product-moment correlation coefficient was calculated for each of the

paired associations between the CoI presences and the satisfaction construct. The data used

was an interval scale measure because it was an average of several values. For each pairwise

comparison, a significant correlation was found. The correlational values between the

cognitive presence, social presence, teaching presence and the satisfaction are shown in

Figure 5.1.

Figure 5.1

Correlational values between CoI presences and Satisfaction
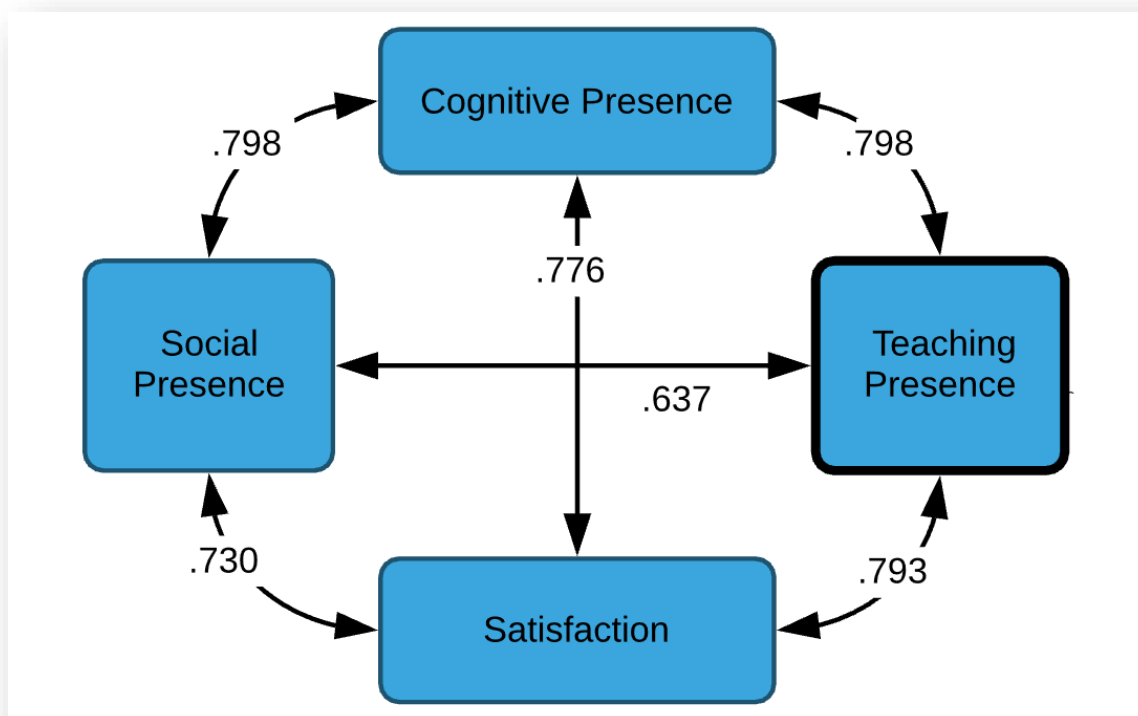
Analysis showed a significant, strong positive correlation between the teaching

presence ($M = 4.46$, $SD = 0.77$) and the satisfaction construct ($M = 4.13$, $SD = 0.53$), $r(60) =$

.793, $p < .001$. The cognitive presence ($M = 4.24$, $SD = 0.79$) showed a slightly less

significant, strong positive correlation to the satisfaction construct ($M = 4.13$, $SD = 0.53$),

$r(60) = .776$, $p < .001$. The social presence ($M = 4.13$, $SD = 0.74$) also displayed a significant,

strong positive correlation to the satisfaction construct ($M = 4.13$, $SD = 0.53$), $r(60) = .730$, p

$< .001$. Higher levels of perceived teaching presence, cognitive presence and social presence

are associated with higher levels of student satisfaction. The Pearson product-moment

correlation coefficients are shown in Table 5.8.

Table 5.8

Pearson Product-moment Correlations Coefficients for CoI Presences and the Satisfaction Construct

Variable	*Social*	*Teaching*	Satisfaction
Cognitive	$r(60) = .798, p < .001$	$r(60) = .798, p < .001$	$r(60) = .776, p < .001$
Social	1.0	$r(60) = .637, p < .001$	$r(60) = .730, p < .001$
Teaching		1.0	$r(60) = .793, p < .001$

The CoI presences' sub-constructs were also examined. A Pearson product-moment

correlation coefficient was calculated for each of the paired associations between the CoI sub-

constructs and the satisfaction construct. The data used was an average of several values,

producing an interval scale measure. For each pairwise comparison, a significant correlation

was found. The two strongest associations occurred between the teaching presence's sub-

construct facilitation ($M = 4.42$, $SD = 0.78$) and satisfaction ($M = 4.13$, $SD = 0.53$), $r(60) =$

.787, $p < .001$; and the cognitive presence's sub-construct resolution ($M = 4.33$, $SD = 0.80$)

and satisfaction ($M = 4.13$, $SD = 0.53$), $r(60) = .777$, $p < .001$. The correlational values are

shown in Table 5.9.

Table 5.9

Pearson Product-moment Correlations Coefficients for CoI Sub-constructs & Satisfaction

Variable	*Satisfaction*	*Teaching: Facilitation*	Cognitive: Resolution
Satisfaction	1.0	$r(60) = .787$, $p < .001$	$r(60) = .777$, $p < .001$
Teaching: Facilitation		1.0	$r(60) = .742$, $p < .001$
Cognitive: Resolution			1.0

Manuscript 3, Hypothesis 2: The CoI presences and their sub-constructs are

significant predictors of the satisfaction construct.

In addition to conducting a basic paired-correlation analysis, the CoI presences and

sub-constructs were examined using multiple linear regression analysis to further investigate

the strengths of the associations between these variables and student satisfaction. The multiple

linear regression analysis included all the CoI presences as possible predictor variables and

the satisfaction construct as the dependent variable. The results from the analysis indicated

two presences were significant predictors. The teaching and social presences explained 70%

of the variability of the satisfaction construct, $F(1, 58) = 17.35$, $p < .001$, $R^2 = .704$. See Table

5.10 for the results of the linear regression analysis. In comparing the two presences, the

teaching presence will have the most effect on the students' level of course satisfaction. The

results of Table 5.10 can be represented in the linear regression model equation:

Satisfaction = 1.296 + .382 (Teaching Presence) + .274 (Social Presence)

Table 5.10

Linear Regression results for Teaching Presence and Social Presence as Predictors for the Satisfaction Construct.

Variable	β	Beta	t	p
constant	1.296		5.422	.000
Teaching Presence	0.382	.551	6.053	.000
Social Presence	0.274	.379	4.166	.000

A multiple linear regression analysis was subsequently conducted using the CoI sub-constructs as the possible predictor variables and the satisfaction construct as the dependent variable. In this model, the teaching presence sub-construct facilitation ($M = 4.42$, $SD = 0.78$) and the cognitive presence sub-construct resolution ($M = 4.33$, $SD = 0.80$) were significant predictors, explaining approximately 70% of the variance of satisfaction, $F(1, 58) = 16.26$, $p < .000$, $R^2 = .702$. See Table 5.11 for the results of the linear regression analysis. The results of Table 5.11 are shown in the in the linear regression model equation:

Satisfaction = 1.456+ .323 (Teaching: Facilitation) + .289 (Cognitive: Resolution)

Table 5.11

Linear Regression results for Teaching: Facilitation and Social: Resolution Sub-constructs as Predictors for the Satisfaction Construct.

CoI Sub-construct	β	Beta	t	p
constant	1.456		6.264	.000
TP: Facilitation	.323	.467	4.375	.000
SP: Resolution	.2289	.431	4.032	.000

Manuscript 3, Hypothesis 3: There are significant differences between students'

level of course satisfaction based on demographic and background characteristics.

A one-way analysis of variance (ANOVA) was calculated for most of the demographic items and the satisfaction construct. The demographic items included: gender,

age, amount of training received prior to course, number of semesters in college, number of

online courses completed prior to class, level of computer skills and enjoyment of the course.

The demographic item ethnicity was not examined due to the lack of variability within the

data set. A one-way ANOVA was selected due to its ability to compare the means of two or

more groups of participants. A *t*-test was not selected because it would require a *t* test for each

pairwise comparison within the demographic item, subsequently inflating the family-wise

error rate (Type I) and increases the chance of an incorrect conclusion. The ANOVA

compensates for running multiple comparisons, providing a single answer that demonstrates

whether any of the groups are different from any of the other groups (Cronk, 2014).

Only one significant difference was found between the demographic items and the

satisfaction construct. The demographic item Level of Computer Skills Results was

statistically significant. Students who felt more confident with their computer skills were

more satisfied with the course. However, results from post hoc tests Tukey HSD, Scheffe,

LSD and Bonerroni showed no statistical significance. See Table 5.12 for ANOVA results. If

ANOVA and post hoc tests had shown statistically significant results, additional analysis

using the CoI presences and the identified demographic item would have been conducted.

Table 5.12

One-way ANOVA for Demographic Items.

Variable	df	F	p
Gender	1, 59	0.757	.338
Age	3, 57	0.143	.934
Amount of Training Received Prior to Course	3, 57	1.826	.153
Number of Semesters in College	4, 56	0.218	.927
Number of Online Courses Completed Prior to Class	3, 57	1.032	.385
Level of Computer Skills	2, 58	3.145	.050
Enjoyment of the Course	1, 59	1.892	.174

Limitations

In this manuscript, the use of a convenience sample is the greatest threat to external validity. The lack of a random sample precludes the study results from being generalized to an external population through strictly statistical means. However, in similar instructional settings, the findings of this study could be beneficial.

External validity concerns include the influences of sub-groups within the sample. Community college students are diverse in their academic abilities, technical skills, English-language competency, and socio-economic levels. Additionally, these students may have undiagnosed learning disabilities. The range of abilities, financial resources, access to current technology and academic skills could pose a threat to validity.

With technology changing rapidly, there are concerns regarding the hardware and software available to both instructors and students. Differences in the home computers or software used by students could impact data results.

Internal instructor training and pre-course technical training for students could also affect the validity of this study. Instructors more versed in technology may employ better online pedagogy and course design and results could be skewed. Students who attend pre-

course training to better function in the online course environment may provide imprecise data due to their familiarity with the course interface and functionality.

Bias

A study is susceptible to bias at a variety of stages in its development. One concern with manuscript 3 is selection bias. Because this study includes participants from only education and general education courses, participants academic skills, motivation and subject interest may not be reflective of the greater population of two-year online students. This study presents an example of under-coverage bias, if the intent is to extend the findings to a general community college student population.

Issues related to volunteer bias may occur since students are not compensated for participation. Response bias may occur if the sample population has difficulty comprehending the survey questions. Survey length could generate a nonresponse bias if participants perceive it as too long. If an item focuses on an aspect of the class the student feels he or she did not experience, the participant may not answer the question, causing a non-response bias.

The students will not earn extra credit or any compensation for participation, possibly creating a selection bias. This may occur if only one type of student completes the survey.

Delimitations

This study uses a convenience sampling method that affects the ways to consider generalizability. The findings could be applicable to instructors teaching in a similar online environment. The findings of manuscript 3 contribute to the broader knowledge of post-secondary instruction specific to online education provided in a community college setting.

Selection maturation, selection history, selection mortality, and social threats are potential threats to internal validity. All data was self-reported and may not be reflective of

actual course engagement. Diversified data gathering methods such as peer and instructor interactions, frequency of engagement in asynchronous online meetings or attendance in synchronous meetings could provide insight for refining online instruction.

The survey instrument for this study was based on the CoI questionnaire, which uses a 5-point Likert scale. In using only one method of data collection, there are limitations to what the findings show.

Student participants are believed to have completed the survey using truthful and accurate answers. Steps to safeguard confidentiality were outlined within the survey to provide a sense of security and motivate honesty within students' responses.

Discussion

The findings from this study identified the strength of the associations between the CoI presences and a satisfaction construct in a community college online setting. Two of the three CoI sub-constructs were found to be significantly associated with, and significant predictors of the satisfaction construct. These findings, when aligned to sub-construct indicators, provide insight into how instructional choices can strengthen particular aspects of the CoI framework. Subsequently, online instructors have a clearer idea how specific teaching strategies may improve student satisfaction when teaching in similar circumstances.

Descriptive Statistics & Correlations of CoI Presences and Satisfaction

The descriptive statistics for the CoI presences, sub-constructs and the satisfaction construct all had similar means and standard deviations. These findings are consistent with previous research, demonstrating consistency between the application of the CoI framework in this study and previous research (Archibald, 2010; Rockinson-Szapkiw et al, 2016, Kozan & Richardson, 2014; Shea & Bidjerano, 2009; Garrison, 2010).

Within the realm of academic achievement, constructs such as perceived learning, knowledge, self-efficacy, self-regulation, motivation, student attitudes, cooperation, satisfaction, continuous academic-related online performance, online readiness, student and academic achievement have been evaluated for possible correlation with the CoI constructs. In most cases, the student satisfaction construct is evaluated alongside other academic achievement constructs, but not alone (Liu & Yang, 2014; Shea et al., 2013; Wladis & Samuels, 2016; Francescato et al., 2006; Kaynar & Sümerlı, 2010; Wighting, Liu, & Rovai, 2008; Rockinson-Szapkiw et al., 2016; and Choy & Quek, 2016). Only in 2011, did researchers Akyol & Garrison examine correlations between all three CoI presences and a satisfaction construct among students enrolled in blended and online courses. This 2011 study found the CoI presences were significantly correlated with satisfaction. Similarly, for this current study the associations between the four constructs (cognitive presence, social presence, teaching presence and satisfaction) were also found to be significantly positively correlated.

Correlation: Teaching Presence & Satisfaction

Many studies have shown a strong association between the teaching presence and student satisfaction (Babb, Stewart, & Johnson, 2010; Garrison & Cleveland-Innes 2005; Picciano, 2003; Shea, Fredericksen, Pickett, & Pelz, 2003; Cho & Tobias, 2016; Fung, 2016). The findings of this study confirm this association within the community college setting. In this study, participants' data showed a significant, strong positive correlation between the teaching presence ($M = 4.46$, $SD = 0.77$) and the satisfaction construct ($M = 4.13$, $SD = 0.53$), $r(60) = .793$, $p < .001$.

Correlation: Cognitive Presence & Satisfaction

There is limited empirical research analyzing the association between cognitive presence and satisfaction. Akyol and Garrison (2011) found a correlation among their participants' perceived level of cognitive presence, perceived learning and satisfaction in a blended course. In *Modelling Relationships Between Students' Academic Achievement and Community of Inquiry in an Online Learning Environment for a Blended Course*, researcher Jeanette Lyn Fung Choy and Choon Lang Quek (2016) used quantitative data analysis to describe the correlations and mediated relationships among the constructs. Using a modified version of the CoI instrument, the authors confirmed the relationships among the three CoI constructs and students' learning-related outcomes, including sub-constructs satisfaction, continues academic-related online performance, and academic achievement. Only the cognitive presence had a direct relationship with continuous academic-related online performance and satisfaction constructs (final semester grades).

Researchers also found the continuous academic-related online performance construct functioned as a mediator between the cognitive and academic achievement constructs. Summary findings included a hypothesized model accounting for 46% of variance in students' online course satisfaction and 62% of the variance in students' academic achievements. The study employed structural equation modeling to depict relationships among each survey question and the constructs, as well as relationships between the constructs as defined by standard regression weights. For the current study, the findings showed a significant, strong positive correlation between the cognitive presence ($M = 4.24$, $SD = 0.79$) and the satisfaction construct ($M = 4.13$, $SD = 0.53$), $r(60) = .776$, $p < .001$.

Correlation: Social Presence & Satisfaction

Previous research has emphasized the association between social presence and

satisfaction, but conclusions are unclear (Richardson & Swan, 2003; Picciano, 2003; Shea,

Pickett, & Pelz, 2004; Swan & Shih, 2005; Gunawardena & Zittle, 1997; Hostetter & Busch,

2006; Fung, 2016). In this study, participants' data showed a significant, strong positive

correlation between the social presence ($M = 4.13$, $SD = 0.74$) and the satisfaction construct

($M = 4.13$, $SD = 0.53$), $r(60) = .730$, $p < .001$.

So and Brush (2008) found no relationship between social presence and course

satisfaction using data from 48 graduate students attending a blended-format course in health

education. Conversely, in 2003 Richardson & Swan found high correlations between social

presence, learning and course satisfaction in a study of these three constructs across 17 under-

graduate online courses. Furthermore, Swan & Shih found that perceived social presence was

highly correlated with perceived learning and course satisfaction (Swan & Shih, 2005).

In *Should Instructors Require Discussion in Online Courses? Effects of Online*

Discussion on Community of Inquiry, Learner Time, Satisfaction, and Achievement,

researchers Moon-Heum Cho and Scott Tobias (2016) embarked on an experimental research

approach. Over three semesters, an online instructor taught the same course modifying the use

of online discussions. The first semester course omitted online discussion, the second

semester employed discussions without instructor participation, and in the final semester the

instructor and students engaged in online discussions. The findings from the 2016 study

showed no significant difference in cognitive, teaching presence and satisfaction, but a

significant difference was found in social presence between the semesters. This would

indicate no association was present between the social presence and satisfaction did not. (Cho & Tobias, 2016).

Correlation: CoI Presences' Sub-constructs & Presence & Satisfaction

Previous research analyzing the correlations of the CoI presences' sub-constructs and the satisfaction construct is limited. Recently the sub-constructs of the teaching presence have been re-examined for reliability and validity (Nasir et al., 2018). Nasir et al. examined how the CoI teaching presence and its sub-constructs are experienced in a MOOC online learning environment. Additionally, a study in 2010 by Garrison, Cleveland-Innes & Fung evaluated the dimensionality and dynamics within the presences and sub-constructs to better understand the relationships among the CoI presences (Garrison, Cleveland-Innes & Fung, 2010). No current research evaluating the interactions of the CoI presences' sub-constructs with a satisfaction construct was found. For the current study, all 10 sub-constructs were positively correlated with the satisfaction construct. The teaching presence's sub-construct facilitation ($M = 4.42$, $SD = 0.78$) had the strongest correlation to satisfaction ($M = 4.13$, $SD = 0.53$), $r(60) = .787$, $p < .001$. The second strongest association occurred between the cognitive presence's sub-construct resolution ($M = 4.33$, $SD = 0.80$) and satisfaction ($M = 4.13$, $SD = 0.53$), $r(60) = .777$, $p < .001$. This would indicate purposeful adoption of teaching strategies to improve the teaching presence sub-construct facilitation (instructor's ability to motivate and engage students) and cognitive presence sub-construct resolution (resolution of a problem or dilemma) would result in an improvement of student satisfaction.

Multiple Linear Regression of CoI Presences and Satisfaction

Research analyzing the predictive nature of the CoI presences is more plentiful than studies focusing on the CoI presences' sub-constructs. Studies focusing on the CoI presences

and sub-constructs ability to influence specifically a satisfaction construct are limited and inconclusive (Fung, 2016). A recent study of 335 undergraduate students found the CoI framework explained 36% of the variance in the satisfaction construct (Enightolla, Fraser & Brunton, 2014). Earlier, a 2008 study of 656 students enrolled in an online Master of Business Administration program used hierarchical regression analysis to show 22% of the variance in delivery medium satisfaction was predicted by the CoI presences. Only the teaching and social presence were shown to be significant predictors of delivery medium satisfaction (Arbaugh, 2008). In 2011, Joo et al., found only the teaching and cognitive presence were significant predictors of satisfaction.

The current study's multiple regression model indicated the teaching and social presences explained 70% of the variability of the satisfaction construct, $F(1, 58) = 17.35, p < .001, R^2 = .704$. These results are represented in the linear regression model equation: Satisfaction = 1.296 + .382 (Teaching Presence) + .274 (Social Presence). The teaching presence more strongly effects the satisfaction construct

In 2010, researchers Garrison, Cleveland and Fung stated there is growing evidence to support the belief that the teaching presences is a significant determinate of student satisfaction, perceived learning, and sense of community (Akyol & Garrison, 2008; Arbaugh, 2008; Shea, Li, Swan, & Pickett, 2005; Garrison 2007). Yet, several other studies have shown social presence has a strong influence on students' satisfaction in an online environment, as well as their perception of learning (Picciano, 2003; Shea, Pickett, & Pelz, 2004; Swan & Shih, 2005; Richardson & Swan, 2003). In a study of 17 under-graduate online courses, researchers using regression analysis showed social presence explained 46% of students' perceived learning and 35% of perceived course and instructor satisfaction (Richardson &

Swan, 2003). Another study of 112 undergraduate online students, using an ordinary least squares regression test, concluded social presence was responsible for 40% of the variance in the students' satisfaction scores (Hostetter & Busch, 2006).

The findings of this research study suggest that in order to positively influence student satisfaction, instructors should focus on enhancing the CoI teaching and social presences within their online environments. To review, the teaching presence is described as the design, facilitation and direction of cognitive and social process to create personally meaningful and educational learning achievements (Shea, Vickers & Hayes, 2008). Indicators of the teaching presence include: setting curriculum, sharing personal meaning and focusing discussions. The social presence is defined as the ability of learners to project their personal characteristics into the online environment to present themselves as real people. This presence is indicated by the use of emoticons, students feeling confident to share 'risk-free' expression, and the encouragement of collaboration in the online classroom (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

Instructional choices that strengthen the CoI teaching presence are divided into three steps or responsibilities, according to a 2010 study by Garrison, Cleveland-Innes and Fung. The first responsibility requires online instructors to establish curriculum content, learning activities and timelines. Secondly, instructors should focus on monitoring and managing purposeful collaboration and reflection. Lastly, instructors need to ensure that students complete the course outcomes by identifying needs and providing timely information and direction.

To strengthen the CoI social presence, previous research has identified the need for online instructors to facilitate participants' ability to identify with the community. A stronger

social presence is felt by students when instructors communicate purposefully in a trusting environment, as well as encourage the development of inter-personal relationships among students by enabling students to project their individual personalities (Garrison, 2016; Swan, Garrison, & Richardson, 2009, Garrison, Cleveland-Innes, & Fung, 2010).

Multiple Linear Regression of CoI Presences' Sub-constructs and Satisfaction

Multiple linear regression analysis using the satisfaction construct as the outcome variable and the 10 CoI sub-constructs as the possible predictor variables was conducted. The resulting stepwise regression model indicated an association between the satisfaction construct and the teaching presence sub-construct facilitation and the cognitive presence sub-construct resolution. The two sub-constructs model explains 70% of the variance of satisfaction.

The teaching presence is defined as the design, facilitation and direction of cognitive and social processes with the goal of comprehending meaningful and educational learning outcomes (Shea, Vickers, & Hayes, 2008). The teaching presence sub-construct facilitation is defined as the strength of how students perceive what the instructor does to maintain the interest, motivation, and engagement of students in active learning. Research by Bangert (2009) supports a strong association between satisfaction and the teaching sub-construct facilitation. Bangert's research showed formative feedback is essential to creating an effective online learning environment. Other previous research shows the quality of teacher-student interactions is a significant determinant of students' perceived satisfaction (Garrison & Cleveland-Innes, 2005; Shea, 2006; Shea et al., 2004)

According to Garrison (2007), the cognitive presence is defined as the extent to which online students are able to construct meaning through continuous communication. The current

study showed the satisfaction construct was most significantly affected when students focused on the resolution of a problem or dilemma and exploration (cognitive: resolution).

The list of indicators aligned to each CoI presence sub-construct specify key ideas to consider when making instructional choices. To strengthen the teaching presence sub-construct facilitation includes motivating and engaging students, including sharing personal meaning of the course content. Development of the cognitive presence sub-construct resolution focuses upon applying new ideas.

For a more detailed explanation of instructional choices that align to teaching presence sub-construct facilitation and the cognitive sub-construct resolution, see Table 5.13. From this table, instructors teaching in similar environments may consider pedagogical choices to increase the motivation and interest of students, to support engagement and share personal anecdotes (teaching: facilitation). To promote a feeling of resolution within the student experience, other pedagogical choice may focus on developing curriculum to provide challenges that require the generation of new ideas and use of new knowledge to solve, within a framework of clear expectations.

Table 5.13

Satisfaction Construct aligned CoI Presences Sub-constructs Indicators (Garrison et al., 2000; Garrison & Arbaugh, 2007; Garrison, 2007; Garrison, 2016).

Construct	Associated Sub-constructs	Indicators
Satisfaction	Teaching: Facilitation	Maintain interest, motivation, engagement and share personal meaning
	Cognitive: Resolution	Solve challenges with clear expectations and application of new knowledge, apply new ideas

Correlations of Demographic Items & Satisfaction

In some studies, demographic factors have been shown to influence a student's level of course satisfaction. The demographic item 'gender' has been inconsistent in its association with satisfaction, and contradictory results have been reported (González-Gómes, Guardiola, Rodríguez, & Alonso, 2012; Lu & Chiou, 2012). According to Haverila (2011), prior online learning experience has been positively correlated to satisfaction. Lastly, in a review of business students, undergraduate students were less satisfied than graduate students (Begiri et al, 2010).

For the current study, the demographic items analyzed included: gender, age, amount of training received prior to course, number of semesters in college, number of online courses completed prior to class, level of computer skills and enjoyment of the course. No significant difference was found between the demographic items and the satisfaction construct.

Recommendations & Conclusion

It is recommended that future studies seek to support the suggestions outlined within the areas of policy, educational leadership, practice and research. The use of the CoI theoretical framework and instrument can provide evidence to support trends as online pedagogy adapts to meet the needs of future learners in an ever-changing online teaching environment.

Policy

This study showed the CoI teaching and social presences had the strongest association with the satisfaction construct. Additionally, two CoI presence sub-constructs facilitation (teaching presence) and resolution (cognitive presence) had the strongest correlation to the satisfaction construct. State Boards of Education and governors should consider providing

funds to enhance the teaching skills of online instructors in these specific areas. If funds were available to support the improvement of online pedagogy in these areas, students may report higher levels of course satisfaction. Additionally, two-year institutions may see an overall increase in online course retention and improved learning within the online environment.

Educational Leadership & Practice

Within the community college online environment, instructors should be encouraged to reflect and use the CoI instrument as a tool for course assessment. Results may provide instructors with greater awareness of the students' online experience. Using the data collected, instructors and their leadership could evaluate potential improvements to pedagogy to strengthen the effectiveness of their online course offerings.

Research

In future research, improved methods for increasing response rate would enhance the applicability of the data results. The survey may be better received if the estimated time requirement was stated at the start of the survey, along with an interactive progress bar and more use of interactive questions styles like rating scales and sliders (25 Ways to Increase Survey Response Rates, 2014).

Additional research using a larger sample from both four-year and two-year institutions to evaluate associations between online course satisfaction and demographic items would further refine this aspect of online learning. Studies with participants from multiple post-secondary institutions are scarce. Most studies were conducted in one institution, occasionally a study will use a sample from two institutions. Leading scholars acknowledged and addressed this issue in a 2008 study of four institutions located in the United States and Canada. The study stated multi-institutional samples provide increased external validity of the

findings (Arbaugh, et al., 2008). Shea and Bidjerano addressed the lack of CoI research across multiple institutions in their 2009 research using 30 public institutions representing community colleges and four-year colleges. While valuable, this research provides insight into online teaching in general, not within a disciple or specific post-secondary setting (Shea & Bidjerano, 2009). A study to evaluate the same course offered online from multiple institutions may show interesting trends across geographic areas.

A majority of CoI research is descriptive in nature. Experimental research using a variety of multimedia tools, instructional design or prescribed instructor interactions may provide insight for practical applications to improve online teaching techniques. Additionally, quasi-experimental studies testing for causal effects on cognitive presence would build upon current research that currently only provides a quantitative cross-sectional summary of a population (Befus, 2016).

Evaluation of the sub-constructs within the cognitive, social and teaching presences warrants future examination. The interaction between the cognitive, social and teaching presence has been studied. In 2014 Kozan & Richardson published an exemplary study of the interrelationships among the CoI elements. However, research to provide insights into the interconnectedness of the cognitive, social and teaching presence sub-constructs is still needed. The Kozan & Richardson study (2014) provides a history of evaluation techniques to consider applying when evaluating how the sub-constructs of the three presences relate. The interoperability of these sub-constructs may yield key information in online course design and instruction.

Lastly, studies using samples from K12 online schools are virtually absent. According to Befus (2016) of the 11 articles studying K12 populations, only two used CoI concepts on a research treatment level.

The findings of this research suggest strengthening the teaching presence and social presence will improve student satisfaction in online courses administered in a similar setting. By focusing on improving the course design, sharing personal meaning, directing discussions, using emoticons, increasing students' confidence in sharing 'risk free' expression and the encouragement of collaboration, the students' level of course satisfaction will increase. Additionally, improving the teaching presence sub-construct facilitation and the cognitive presence sub-construct resolution will yield an increase in online student course satisfaction. Purposeful instructional choices to enhance student motivation and engagement, as well as provide opportunities to focus on applying new ideas to resolve a problem, dilemma or further explore an aspect of the content area are specific techniques to improve online student course satisfaction in similar teaching environments.

Chapter Six: Dissertation Summary

The current breadth of research-based evidence to enhance and guide online pedagogy specific to a community college environment is limited. This dissertation researched how the CoI presences are experienced by online community college students enrolled in education and general education courses in an effort to inform teaching practices and improve online pedagogy.

Manuscript 1 researched community college students enrolled in multiple sections of an online education courses over several semesters. Participants were surveyed to gauge their perceptions of the CoI's cognitive, social and teaching presences. The data was evaluated and aligned to pedagogical practices used in the delivery of the courses. The comparison of the pedagogical benchmarks with indicators for each CoI presence and sub-construct identified teaching strategies that could be used to enhance deep and meaningful online learning for future teachers.

To investigate the differences in major-specific and general education online students' online learning experiences, manuscript 2 focused on student enrolled in a major-specific (education) online course and a second group enrolled in a general education (freshmen orientation) online course. The courses were taught by the same instructor using the same targeted instructional techniques. The CoI presences and sub-constructs were aligned to pedagogical benchmarks illuminating the need to teach each type of course differently to develop an effective community of inquiry within an online environment.

Lastly, manuscript 3 introduced a student satisfaction construct to the data analysis. This study examined correlations between students' perception of the CoI presences and a measurement of the student satisfaction construct. Participants from major-specific and

general education community college online courses taught by several instructors rated the CoI's social, teaching and cognitive presences and the level of satisfaction experienced. Associations between the CoI presences, sub-constructs and the satisfaction construct were examined to provide suggested best practices to improve online pedagogy and enhance student satisfaction within similar environments.

In all cases, the CoI presences and sub-constructs were highly correlated. With the satisfaction construct introduced, the strong associations persisted. In each study, further investigation using multiple linear regression identified two CoI sub-constructs most influential in the development of each CoI presence for each group of participants, as well as for the satisfaction construct in manuscript 3.

Because participants in manuscript 1 and 2 were enrolled in online courses taught by the same instructor with similar teaching strategies, alignment of the pedagogical benchmarks with the CoI sub-constructs was developed. Figure 6.1 provides an illustration of the CoI presences' sub-constructs as they are predictors of the CoI presences for Manuscripts 1 and 2.

Figure 6.1

The educational experience aligned to the CoI presences and their associated sub- constructs for each group, as identified using multiple linear regression.
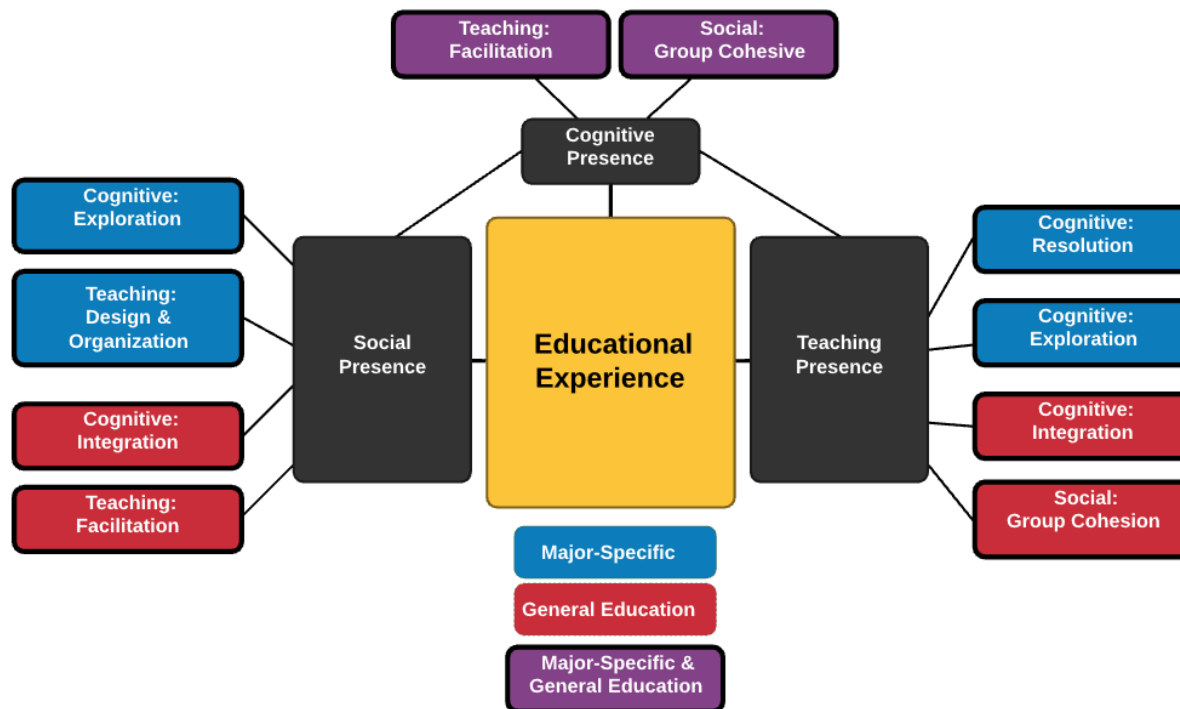
Once aligned to pedagogical benchmarks, the data showed how each group of participants identified expectations to be met by the instructor to support the development of each CoI presence. According to these findings, online instructors should support student learning differently depending on the type of course being taught to successfully develop an effective community of inquiry.

Specifically, these findings suggest a major-specific course for pre-service teachers should focus on enabling students to exchange information (Cognitive: Exploration), applying new ideas (Cognitive: Resolution), setting clear curriculum and methods (Teaching: Design & Organization), sharing personal meaning (Teaching: Facilitation), and encouraging

collaboration (Social: Group Cohesion). These students are more self-directed and desire to fully understand, share and apply the course content.

Students in the general education identified some of the same instructional areas to enhance, including sharing personal meaning (Teaching: Facilitation), and encouraging collaboration (Social: Group Cohesion). However, these students also indicated a desire for instruction that would assist in connecting ideas (Cognitive: Integration). Where major-specific students want to connect the course content ideas independently, the general education students prefer more support. The general education students also do not value exchanging information with their peers (Cognitive Exploration) and applying the course content (Cognitive: Resolution) as much as the major-specific students. Finally, online general education students are not as concerned with how the online course is organized (Teaching: Design & Organization).

Manuscript 3 introduced the satisfaction construct to better understand the relationships between the satisfaction construct on the CoI's cogitative presence, social presence, teaching presence and the CoI's sub-constructs. The same students from the education (major-specific) and freshman orientation (general education) online courses were surveyed. A Pearson product-moment correlation coefficient was calculated for each of the paired associations between the CoI presences and the satisfaction construct. The data used was an interval scale measure because it was an average of several values. Analysis showed a significant, strong positive correlation between the teaching presence and the satisfaction construct. An additional Pearson product-moment correlation coefficient was calculated for each of the paired associations between the CoI sub-presences and the satisfaction construct. For each pairwise comparison, a significant correlation was found. The two strongest

associations occurred between the teaching presence's sub-construct facilitation and satisfaction; and the cognitive presence's sub-construct resolution and satisfaction.

When multiple linear regression was conducted, the results indicated the teaching and social presences explained 70% of the variability of the satisfaction construct. In overarching terms, to increase students' satisfaction online instructors should focus on using emoticon, creating an environment where students feel they can express their ideas confidently, encouraging collaboration, developing an easy-to-navigate online course design and logical organization of the content, sharing personal meaning and focusing online discussions.

To further specify teaching strategies to enhance student satisfaction, a multiple linear regression was conducted to identify the CoI sub-constructs most associated with the satisfaction construct. In this model, the teaching presence sub-construct facilitation and the cognitive presence sub-construct resolution were significant predictors, explaining 70% of the variance of the satisfaction construct, see Figure 6.2. The results show instructional techniques focusing on sharing personal meaning (Teaching Facilitation) and supporting the students' ability to apply new ideas (Cognitive: Resolution) will improve the students' level of course satisfaction.

Figure 6.2

The satisfaction construct as predicted by the CoI sub-constructs.

Conclusion

One goal of online instructors is to provide a meaningful learning experience that allows students to grow and reach their full potential. The explosion of online course offerings, especially at two-year institutions only serves to amplify the importance of using research-based, effective, pedagogical choices to best serve online students. This dissertation provides insight into how CoI is perceived by students in education and general education online courses offered in a community college setting. It contributes to the understanding of correlations between the CoI and satisfaction constructs. The unique alignment of pedagogical benchmarks with CoI indicators for associated sub-constructs identifies potential teaching strategies to strengthen specific CoI presence for a particular online course, as well as improve students' course satisfaction.

Developed specifically to inform community college online instruction, this dissertation provides insight for improving the creation and maintenance of an effective online learning environment. In similar teaching scenarios, the application of the pedagogical suggestions provided will help increase the students' perceptions of a community of inquiry and their overall course satisfaction.

References

25 Ways to Increase Survey Response Rates (2014) Retrieved from

    https://www.snapsurveys.com/blog/25-ways-increase-survey-response-rates/

Akyol, Z., & Garrison, D. R. (2008). the Development of a Community of Inquiry Over Time

    in an Online Course: Understanding the Progression and Integration of Social,

    Cognitive and Teaching Presence. *Online Learning*, *12*(3), 3–23.

    https://doi.org/10.24059/olj.v12i3.66

Akyol, Z., & Garrison, D. R. (2011). Understanding cognitive presence in an online and

    blended community of inquiry: Assessing outcomes and processes for deep

    approaches to learning. *British Journal of Educational Technology*, *42*(2), 233–250.

    https://doi.org/10.1111/j.1467-8535.2009.01029.x

Akyol, Z., & Garrison, D. (2013). *Educational communities of inquiry : Theoretical*

    framework, research, and practice. Hershey, PA: Information Science Reference.

Allen, I. E., & Seaman, J. (2017). *Distance Education Enrollment Report 2017 infographics*.

    https://doi.org/10.1108/IJEM-02-2014-0018

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing Teaching

    Presence in a Computer Conferencing Context. *Journal of Asynchronous Learning*

    Networks, *5*(2), 1–17.

Arbaugh, J. B. (2005). Is There an Optimal Design for. *Academy of Management Learning &*

    Education, *4*(2), 135–149.

Arbaugh, J. B. (2008). Does the community of inquiry framework predict outcomes in online

    MBA courses? *The International Review of Research in Open and Distance Learning*,

9(2), Retrieved September 9, 2008 from http://www.irrodl.org/index.
php/irrodl/article/view/490/1045

Arbaugh, J. B., Bangert, A., & Cleveland-Innes, M. (2010). Subject matter effects and the Community of Inquiry (CoI) framework: An exploratory study. *Internet and Higher Education*, *13*(1–2), 37–44. https://doi.org/10.1016/j.iheduc.2009.10.006

Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and Higher Education*, *11*(3–4), 133–136. https://doi.org/10.1016/j.iheduc.2008.06.003

Arbaugh, J. B., & Hwang, A. (2006). Does "teaching presence" exist in online MBA courses? *Internet and Higher Education*, *9*(1), 9–21. https://doi.org/10.1016/j.iheduc.2005.12.001

Archibald, D. (2010). Fostering the development of cognitive presence: Initial findings using the community of inquiry survey instrument. *The Internet and Higher Education*, *13*(1–2), 73–74. https://doi.org/10.1016/J.IHEDUC.2009.10.001

Armellini, A., & De Stefani, M. (2015). Social presence in the 21st century: An adjustment to the Community of Inquiry framework. *British Journal of Educational Technology*. https://doi.org/10.1111/bjet.12302

Astin, A. W. (1993). What matters in college. *Liberal Education*, *79*(4), 4–15.

Babb, S., Stewart, C., & Johnson, R. (2010). Constructing communication in blended learning environments: Students' perceptions of good practice in hybrid courses. *Journal of*

Online Learning and Teaching, 6(4), 735–753. Retrieved from

http://jolt.merlot.org/vol6no4/babb_1210.htm

Bangert, A. (2008). The influence of social presence and teaching presence on the quality of

online critical inquiry. *Journal of Computing in Higher Education, 19*(2), 34-61.

Biggs, J. (2002). A revision of the Study Process Questionnaire. *Higher Education Research

and Development*, *21*(1), 73-92.

Bangert, A. W. (2009). Building a validity argument for the community of inquiry survey

instrument. *The Internet and Higher Education*, *12*(2), 104–111.

https://doi.org/10.1016/J.IHEDUC.2009.06.001

Befus, M. (2016). *Kineshanko (Befus) Ed.D. Dissertation Thematic Synthesis of CoI Research

2000-2014*. (February).

Bolliger, Doris U., & Halupa, Colleen. (2012). Student perceptions of satisfaction and anxiety

in an online doctoral program. *Distance Education, 33*(1), 81-98.

Bolliger, Doris U., & Wasilik, Oksana. (2012). Student satisfaction in large undergraduate

online courses. *Quarterly Review of Distance Education, 13*(3), 153-165.

Bolliger, D. U., Halupa, C., Cho, M., Tobias, S., Rubin, B., Fernandes, R., Gallego-Arrufat,

M. J. (2013). The effects of technology on the community of inquiry and satisfaction

with online courses. *Internet and Higher Education*, *17*(1), 48–57.

https://doi.org/10.1016/j.iheduc.2012.09.006

BouJaoude, S. (2016). Thinking collaboratively : learning in a community of inquiry.

International Review of Education, *62*(1), 123–125. https://doi.org/10.1007/s11159-

016-9538-9

Bushweller, K. C. (2017). Classroom Technology: Where Schools Stand. Technology Counts. *Education Week*, *36*(35).

Carlon, S., Bennett-Woods, D., Berg, B., Claywell, L., Leduc, K., Marcisz, N., Zenoni, L. (2012). The community of inquiry instrument: Validation and results in online health care disciplines. *Computers and Education*, *59*(2), 215–221. https://doi.org/10.1016/j.compedu.2012.01.004

Catalano, A. (2018). *Measurements in Distance Education: A Compendium of Instruments, Sales, and Measures for Evaluating Online Learning*. New York, NY: Routledge.

Cho, M., & Tobias, S. (2016). Should Instructors Require Discussion in Online Courses? Effects of Online Discussion on Community of Inquiry, Learner Time, Satisfaction, and Achievement. *International Review of Research in Open and Distributed Learning, 17*(2), 123-140.

Fung Choy, J. L., & Quek, C. L. (2016). Modelling relationships between students' academic achievement and community of inquiry in an online learning environment for a blended course. *Australasian Journal of Educational Technology*, *32*(4), 106–124. https://doi.org/10.14742/ajet.2500

Christensen, Laura J., & Menzel, K. E. (1998). The Linear Relationship between Student Reports of Teacher Immediacy Behaviors and Perceptions of State Motivation, and of Cognitive, Affective, and Behavioral Learning. *Communication Education*, *47*(1), 82–90.

Cronk, B. (2014). *How to Use SPSS Statistics: A Stop-by-step Guide to Analysis and interpretation*. Glendale: Pyrczak Publishing.

Dewey, J. (1938). *Experience and education*. New York: Collier Books.

Duffy, T. M., Dueber, B., & Hawley, C. L. (1998). Critical thinking in a distributed environment, *Environment*, (5), 5–98.

Eggins, S., & Slade, D. (1997). *Analysing Casual Conversation*. London, UK: Equinox Publishing Ltd.

Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. (2017). How important are high response rates for college surveys? *Review of Higher Education*, *40*(2), 245–265. https://doi.org/10.1353/rhe.2017.0003

Freddolino, P. P., & Sutherland, C. A. (2000). Assessing the comparability of classroom environments in graduate social work education delivered via interactive instructional television. *Journal of Social Work Education*, *36*(1), 115–129.

Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Student satisfaction and perceived learning with online courses: Principles and examples from the SUNY learning network. *Journal of Asynchronous Learning Networks*, *4*(2). Retrieved March 9, 2006, from http://www. aln.org/publications/jaln/ v4n2/ index.asp/

Garrison, D., & Vaugh, N. D. (2008). *Blended learning in higher education: Framework, principles, and guidelines (1.ed.)*. San Francisco, CA: Jossey-Bass.

Garrison, D., Anderson, T., & Archer, W. (1999). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, *2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D., Anderson, T., & Archer, W. (2000). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, *2–3*, 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online

learning: Interaction is not enough. *The American Journal of Distance Education,*

19(3), 133–148. http://dx.doi.org/10.1207/s15389286ajde1903_2

Garrison, R., Cleveland-Innes, M., & Vaughan, N. (2016). Community of Inquiry: Welcome.

Retrieved October 10, 2017, from https://coi.athabascau.ca

Garrison, D. (2016). Thinking collaboratively : learning in a community of inquiry.

International Review of Education, *62*(1), 123–125. https://doi.org/10.1007/s11159-

016-9538-9

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships

among teaching, cognitive and social presence: Student perceptions of the community

of inquiry framework. *Internet and Higher Education*, *13*(1–2), 31–36.

https://doi.org/10.1016/j.iheduc.2009.10.002

Garrison, D. Randy. (2007). Online Community of Inquiry Review : Social , Cognitive , and

Teaching Presence Issues. *Journal of Asynchronous Learning Networks*, *11*(1), 61–72.

https://doi.org/10.1128/JB.05513-11

Garrison, D. Randy, Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence,

and computer conferencing in distance education. *American Journal of Distance*

Education, *15*(1), 7–23. https://doi.org/10.1080/08923640109527071

Garrison, D. Randy, Anderson, T., & Archer, W. (2010). The first decade of the community

of inquiry framework: A retrospective. *Internet and Higher Education*, *13*(1–2), 5–9.

https://doi.org/10.1016/j.iheduc.2009.10.003

Garrison, D. Randy, & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education*, *10*(3), 157–172. https://doi.org/10.1016/j.iheduc.2007.04.001

Garrison, D.R. (2016). *E-learning in the 21st Century: A Framework for Research and Practice*. London, UK: Routledge.

Garrison, R. & Rourke, L. (2007). The Community of Inquiry Model. *Journal of Distance Education / Revue de l ' enseignement à distance, 2001*(14), 1-18.

Gorham, J., & Zakahi, W. (1990). A comparison of teacher and student perceptions of immediacy and learning: Monitoring process and product. *Communication Education*, *39*(4), 354–368.

Gorham, J. (1988). The Relationship between Verbal Teacher Immediacy Behaviors and Student Learning. *Communication Education*, *37*(1), 40–53.

Graziano, K., & Bryans-Bongey, S. (2018). Surveying the National Landscape of Online Teacher Training in K–12 Teacher Preparation Programs. *Journal of Digital Learning in Teacher Education*, 1–19.

Gunawardena, N. C., & Zittle, F. (1997). Social presence as a predictor of satisfaction within a computer mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8–26.

Gutierrez-Santiuste, E., & Gallego-Arrufat, M. (2013). Internal structure of virtual communications in communities of inquiry in higher education: Phases, evolution and participants' satisfaction. *British Journal of Educational Technology, 46*(6), 1295-1311.

Gutiérrez-Santiuste, E., Rodríguez-Sabiote, C., & Gallego-Arrufat, M.-J. (2015, June 9).

    Cognitive presence through social and teaching presence in communities of inquiry: A

    correlational–predictive study. *Australasian Journal of Educational Technology*, (Vol.

    31). https://doi.org/10.14742/ajet.v0i0.1666

Hosler, K. a, & Arend, B. D. (2012). The importance of course design, feedback, and

    facilitation: student perceptions of the relationship between teaching presence and

    cognitive presence. *Education Media International*, *49*(3), 217–229.

    https://doi.org/10.1080/09523987.2012.738014

Hostetter, C., & Busch, M. (2006). Measuring up online: The relationship between social

    presence and student learning satisfaction. *Journal of Scholarship of Teaching and

    Learning, 6*(2), 1–12. Retrieved from http://josotl.indiana.edu/article/view/1670/1668

Hsieh Chang, S.-H., & Smith, R. A. (2008). Journal of Research on Technology in Education

    Effectiveness of Personal Interaction in a Learner- Centered Paradigm Distance

    Education Class Based on Student Satisfaction. *Journal of Research on Technology in

    Education*, *404*(4), 407–426. https://doi.org/10.1080/15391523.2008.10782514

Ishitani, T. T. (2005). Studying educational attainment among first-generation students in the

    United States. *45th Annual Forum of the Association for Institutional Research*.

Kitchel, A., Cannon, J., & Duncan, D. (2011). Program Management Educational Needs of

    Idaho Business and Marketing Teachers. *Career and Technical Education Research*,

    34(3), 175–189. https://doi.org/10.5328/cter34.3.175

Knapczyk, D., Chapman, C., Rodes, P., & Chung, H. (2001). Teacher Preparation in Rural

    Communities through Distance Education. *Teacher Education and Special Education:*

The Journal of the Teacher Education Division of the Council for Exceptional Children, *24*(4), 402–407. https://doi.org/10.1177/088840640102400415

Kozan, K. (2016). The incremental predictive validity of teaching, cognitive and social presence on cognitive load. *The Internet and Higher Education*, *31*, 11–19. https://doi.org/10.1016/J.IHEDUC.2016.05.003

Kozan, K., & Caskurlu, S. (2018). On the N th presence for the Community of Inquiry framework. *Computers and Education*. https://doi.org/10.1016/j.compedu.2018.03.010

Kozan, K., & Richardson, J. C. (2014a). Interrelationships between and among social, teaching, and cognitive presence. *Internet and Higher Education*, *21*, 68–73. https://doi.org/10.1016/j.iheduc.2013.10.007

Kozan, K., & Richardson, J. C. (2014b). New exploratory and confirmatory factor analysis insights into the community of inquiry survey. *The Internet and Higher Education*, *23*, 39–47. https://doi.org/10.1016/J.IHEDUC.2014.06.002

Lim, J., Kim, M., Chen, S. S., & Ryder, C. E. (2008). An Empirical Investigation of Student Achievement and Satisfaction in Different Learning Environments. *Journal of Instructional Psychology*, *35*(2), 113–120. https://doi.org/10.1093/oxfordhb/9780199934898.001.0001

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling Nonresponse In Social Science Research. *Journal of Agricultural Education*, *42*(4), 43–53. https://doi.org/10.5032/jae.2001.04043

Lipman, M. (1991). *Thinking in Education*. New York: Cambridge: University Press.

Miller, M., & Tuttle, C. (2007). Building Communities: How Rural Community Colleges Develop Their Communities and the People Who Live in Them. *Community College Journal of Research and Practice*, *31*(2), 117.

Moore-Adams, B. L., Jones, W. M., & Cohen, J. (2016). Learning to teach online: a systematic review of the literature on K-12 teacher preparation for teaching online. *Distance Education*, *37*(3), 333–348. https://doi.org/10.1080/01587919.2016.1232158

Moore, M. (2013). *Handbook of Distance Education (3rd ed.)*. New York: Routledge.

Nomi, T. (2005). Faces of the Future : A Portrait of First-Generation Community College Students. *American Association of Community Colleges*.

Onyesolu, M., Nwasor, V., Ositanwosu, O., I. O. (2013). Pedagogy: instructivism to socio-constructivism through virtual reality. *International Journal of Advanced Computer Science and Applications*, *4*(9), 40–47.

Pawan, F., Paulus, T. M., Yalcin, S., & Chang, C.-F. (2003). Online Learning: Patterns of Engagement and Interaction among In-Service teachers. *Language Learning & Technology*, *7*(3), 119–140. https://doi.org/10.1016/S1474-4422(15)70018-9

Peytchev, A. (2013). Consequences of Survey Nonresponse. *Annals of the American Academy of Political and Social Science*, *645*(1), 88–111. https://doi.org/10.1177/0002716212461748

Picciano, A. G. (2003). Beyond student perceptions: Issues of interaction, presence and performance in an online course. *Journal of Asynchronous Learning Networks, 6*(1), 21–40.

Privitera, G. (2012). *Statistics for the Behavioral Sciences*. Thousand Oaks: SAGE.

Radhakrishna, R., & Doamekpo, P. (2008). Strategies for generalizing findings in survey research. *Journal of Extension*, *46*(2).

Randolph, J. J., & Crawford, L. M. (2013). Factorial Validity and Reliability of the Sense of Community in Online Courses Scale. *Journal of Interactive Online Learning, 12*(2), 53–69.

Reeves, C. (2005). *Rural Teacher Recruitment and Retention Practices : A Review of the Research Literature , National Survey of Rural Superintendents , and Case Studies of Programs in Virginia*. (December).

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Computers in Human Behavior Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior*, *71*, 402–417. https://doi.org/10.1016/j.chb.2017.02.001

Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, *7*(1), 68–88.

Richardson, J. & Ice, P. (2009). Assessing the integration of new technologies in online learning environments with the community of inquiry framework. *The 5th International Scientific Conference 'eLearning and Software Education,'* 01, 39-48.

Rockinson-Szapkiw, A. J., Wendt, J., Wighting, M., & Nisbet, D. (2016). The predictive relationship among the community of inquiry framework, perceived learning and online, and graduate students' course grades in online synchronous and asynchronous courses. *International Review of Research in Open and Distance Learning*, *17*(3), 18–35. https://doi.org/10.19173/irrodl.v17i3.2203

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001a). Assessing Social Presence In Asynchronous Text-based Computer Conferencing Résumé The Community of Inquiry Model. *Journal of Distance Education*, *14*(2), 50–71. https://doi.org/Article

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001b). Methodological Issues in the Content Analysis of Computer Conference Transcripts. *International Journal of Artificial Intelligence in Education*, *12*(July 2000), 8–22. https://doi.org/10.1145/1518701.1518791

Rourke, L., & Kanuka, H. (2007). Barriers to online critical discourse. *International Journal of Computer-Supported Collaborative Learning*, *2*(1), 105–126. https://doi.org/10.1007/s11412-007-9007-3

Rubin, Beth, Fernandes, Ron, & Avgerinou, Maria D. (2013). The effects of technology on the community of inquiry and satisfaction with online courses. *Internet and Higher Education, 17*, 48-57.

Sanders, J., & Wiseman, R. (1990). The effects of verbal and nonverbal teacher immediacy on perceived cognitive, affective, and behavioral learning in the multicultural classroom. *Communication Education*, *39*(4), 341–353.

Schrire, S. (2004). Interaction and cognition in asynchronous computer conferencing. *Instructional Science*, *32*(6), 475–502.

Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade Increase: Tracking Distance Education in the United States*. Retrieved from https://files.eric.ed.gov/fulltext/ED580852.pdf

Shaw, M., & Witt, S. (2015). Employment Status , Teaching Load , and Student Performance in Online Community College Courses. *Online Journal of Distance Learnining*, (2007), 1–15.

Shea, P., & Bidjerano, T. (2008). Measures of Quality in Online Education: An Investigation of the Community of Inquiry Model and the Net Generation. *Journal of Educational Computing Research*, *39*(4), 339–361. https://doi.org/10.2190/EC.39.4.b

Shea, P., & Bidjerano, T. (2009). Community of inquiry as a theoretical framework to foster "epistemic engagement" and "cognitive presence" in online education. *Computers and Education*, *52*(3), 543–553. https://doi.org/10.1016/j.compedu.2008.10.007

Shea, P., Fredericksen, E. E., Pickett, A., & Pelz, W. (2003). A preliminary investigation of "teaching presence" in the SUNY learning network. *Elements of Quality Online Education: Practice and Direction,* 4, 279–312. Retrieved from http://cpd.suny.edu/files/teachingpresence.pdf

Shea, P., Gozza-Cohen, M., Uzuner, S., Mehta, R., Valtcheva, A. V., Hayes, S., & Vickers, J. (2011). The community of inquiry framework meets the SOLO taxonomy: A process-product model of online learning. *Educational Media International*, *48*(2), 101–113. https://doi.org/10.1080/09523987.2011.576514

Shea, P. J., Pickett, A. M., & Pelz, W. E. (2004). Enhancing student satisfaction through faculty development: The importance of teaching presence. In J. Bourne & J. C. Moore (Eds.), *Elements of quality online education: Into the mainstream, Vol. 5 in the Sloan C Series*. (pp. 39–59). Needham, MA: Sloan Center for Online Education.

Shea, P., Vickers, J., & Hayes, S. (2008). *Lens of Teaching Presence in the Community of Measures and Approach*. *2008*(3).

So, H.-J., & Brush, T. A. (2008). Student perceptions of collaborative learning, social

    presence and satisfaction in a blended learning environment: Relationships and critical

    factors. *Computers & Education, 51*(1), 318–336.

    http://dx.doi.org/10.1016/j.compedu.2007.05.009

Stenbom, S. (2018). A systematic review of the Community of Inquiry survey. *Internet and*

    Higher Education. https://doi.org/10.1016/j.iheduc.2018.06.001

Summers, J. J., Waigandt, A., & Whittaker, T. a. (2005). A Comparison of Student

    Achievement and Satisfaction in an Online Versus a Traditional Face-to-Face

    Statistics Class. *Innovative Higher Education*, *29*(3), 233–250.

    https://doi.org/10.1007/s10755-005-1938

Swan, K., & Ice, P. (2010). The community of inquiry framework ten years later: Introduction

    to the special issue. *Internet and Higher Education*, *13*(1–2), 1–4.

    https://doi.org/10.1016/j.iheduc.2009.11.003

Swan, K. P., Richardson, J. C., Ice, P., Garrison, D. R., Cleveland-innes, M., & Arbaugh, J.

    Ben. (2008). Validating a measurement tool of presence in online communities of

    inquiry. *E-Mentor*, *2*(2), 1–12. https://doi.org/7

Swan, K., & Shih, L. F. (2005). On the nature and development of social presence in online

    course discussions. *Journal of Asynchronous Learning Networks*, *9*(3), 115−136.

Szeto, E. (2015). Community of Inquiry as an instructional approach: What effects of

    teaching, social and cognitive presences are there in blended synchronous learning and

    teaching? *Computers & Education*, *81*, 191–201.

    https://doi.org/10.1016/J.COMPEDU.2014.10.015Tabachnick, B. G., & Fidell, L. S.

    (2013). *Using multivariate statistics (6th ed.).* Boston: Pearson.

Tibbetts, Y., Priniski, S. J., Hecht, C. A., Borman, G. D., & Harackiewicz, J. M. (2018). Different institutions and different values: Exploring first-generation student fit at 2-year colleges. *Frontiers in Psychology*, *9*(APR), 1–19. https://doi.org/10.3389/fpsyg.2018.00502

Wighting, M. J., Liu, J., & Rovai, A. P. (2008). Distinguising sense of community and motivation characteristics between online and traditional college students. *Sense of Community*. *9*(757), 285–295.

Winter, J C F De. (2013). Using the Student' s t -test with extremely small sample sizes. *Practical Assessment, Research & Evaluation, 18.* 1-12.

Winter, Joost C F De, & Dodou, D. (2012). Five-Point Likert Items : t test versus Mann-Whitney-Wilcoxon. *Practical Assessment, Research & Evaluation, 15*(11).

Wladis, C., & Samuels, J. (2016). Do online readiness surveys do what they claim? Validity, reliability, and subsequent student enrollment decisions. *Computers and Education*, *98*, 39–56. https://doi.org/10.1016/j.compedu.2016.03.001

Yu, T., & Richardson, J. C. (2015). An Exploratory Factor Analysis and Reliability Analysis of the Student Online Learning Readiness (SOLR) Instrument. *Online Learning*, *19*(5), 120–141. Retrieved from http://jproxy.lib.ecu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=112466581&site=ehost-live

Appendix A: IRB

University of Idaho IRB Approval:
Hi Carol,

Your protocol has been certified.

Take care,
Jen

From: irb@uidaho.edu [mailto:irb@uidaho.edu]
Sent: Thursday, December 03, 2015 11:49 AM
To: Kitchel, Allen (akitchel@uidaho.edu) <akitchel@uidaho.edu>
Cc: University of Idaho - Institutional Review Board (irb@uidaho.edu) <irb@uidaho.edu>
Subject: Exempt Certification for IRB project 15-1049
Importance: Loww

University *of* Idaho
Office of Research Assurances
Institutional Review Board
875 Perimeter Drive, MS 3010
Moscow ID 83844-3010
Phone: 208-885-6162
Fax: 208-885-5752
irb@uidaho.edu

To:	Allen Kitchel
From:	Jennifer Walker
	IRB Coordinator, University of Idaho Institutional Review Board
	University Research Office
	Moscow, ID 83844-3010
Date:	12/3/2015 11:48:55 AM
Title:	Community of Inquiry: Evaluation of Teacher Presence in Online Courses
Project:	15-1049
Certified:	Certified as exempt under category 2 at 45 CFR 46.101(b)(2).

On behalf of the Institutional Review Board at the University of Idaho, I am pleased to inform you that the protocol for the above-named research project has been certified as exempt under category 2 at 45 CFR 46.101(b)(2).

This study may be conducted according to the protocol described in the Application without
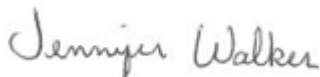
further review by the IRB. As specific instruments are developed, modify the protocol and upload the instruments in the portal. Every effort should be made to ensure that the project is conducted in a manner consistent with the three fundamental principles identified in the Belmont Report: respect for persons; beneficence; and justice.

It is important to note that certification of exemption is NOT approval by the IRB. Do not include the statement that the UI IRB has reviewed and approved the study for human subject participation. Remove all statements of IRB Approval and IRB contact information from study materials that will be disseminated to participants. Instead please indicate, 'The University of Idaho Institutional Review Board has Certified this project as Exempt.'

Certification of exemption is not to be construed as authorization to recruit participants or conduct research in schools or other institutions, including on Native Reserved lands or within Native Institutions, which have their own policies that require approvals before Human Subjects Research Projects can begin. This authorization must be obtained from the appropriate Tribal Government (or equivalent) and/or Institutional Administration. This may include independent review by a tribal or institutional IRB or equivalent. It is the investigator's responsibility to obtain all such necessary approvals and provide copies of these approvals to ORA, in order to allow the IRB to maintain current records.

As Principal Investigator, you are responsible for ensuring compliance with all applicable FERPA regulations, University of Idaho policies, state and federal regulations.

This certification is valid only for the study protocol as it was submitted to the ORA. Studies certified as Exempt are not subject to continuing review (this Certification does not expire). If any changes are made to the study protocol, you must submit the changes to the ORA for determination that the study remains Exempt before implementing the changes. Should there be significant changes in the protocol for this project, it will be necessary for you to submit an amendment to this protocol for review by the Committee using the Portal. If you have any additional questions about this process, please contact me through the portal's messaging system by clicking the 'Reply' button at either the top or bottom of this message.

Jennifer Walker

Jennifer Walker
To enrich education through diversity, the University of Idaho is an equal opportunity/affirmative action employer

College of Western Idaho, operating under the College of Idaho's IRB

May 5, 2017

Carol Billing
College of Western Idaho

Dear Carol,

I am pleased to inform you that your proposal for research with human subjects titled "Community of Inquiry & Student Satisfaction in Online Community College Courses" has been reviewed and meets the criteria for exemption. The file for this study was assigned the number 1268.2.

Please use this title and number when referring to this study in future correspondence.

The following conditions are required to meet the federal guidelines for conducting research with human subjects:
If any change is made in the procedures or sample, it should be reported to and approved by the IRB office prior to implementing the change (See pp. 17-18, IRB Handbook)
It is your responsibility to retain all records including, but not limited to, signed consent forms and data for a period of three years after the study has been completed.

Thank you.

Sincerely,

Ann Koga, Chair
College of Idaho Institutional Review Board
akoga@collegeofidaho.edu
(208) 459-5040

College of Western Idaho, operating under College of Southern Idaho

CWI
College of Western Idaho

CWI Institutional
Review Board
5500 East Opportunity Drive
Nampa, ID 83653

.

Nicole Frank, Chair
NicoleFrank@cwidaho.cc
208-532-3469

Committee Members
Doug Depriest
Charles Dickenson, M.A.
Steve Lysne, Ph.D.
Kim Reed
Heather Schoenherr

.

February 3, 2016

To: Carol Billing

From: Nicole Frank, IRB Chair

RE: IRB Application Review: Pilot: Evaluating Instructor Presence in online CWI classes

The CWI Institutional Review Board has reviewed your application titled: "Pilot: Evaluating Instructor Presence in online CWI classes" and has approved your application.

Finally, the IRB of record on any published work is your home intuition's (UI).

Thank you for submitting your application,

Nicole Frank, IRB Chair

phone 208.562.3500
fax 208.562.3535
www.cwidaho.cc

Appendix B: Survey Instrument

Community of Inquiry/Student Satisfaction Survey

Evaluation of Community of Inquiry

The purpose of this survey is to assess your sense of community experienced in your online CWI course this semester. We hope to learn from your responses how to improve the effectiveness of our online instruction.

The survey should be completed by a CWI student enrolled in an online CWI course. The survey should take approximately five (5) minutes to complete. In includes questions to determine your impressions of your online instructor's social, cognitive and teaching presence. Additional demographic questions are included to paint a picture of the potential program participants and accurately describe those who participated in this study. We ask for your student ID so we can compare your final course grade with trends in the answers to your thoughts on the instructor's online presence. We may also use your student ID to retrieve general demographic data.

No risks or discomforts are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip that question or withdraw from the study altogether. Completion of this survey is strictly voluntary; you may stop participation at any time. Choosing to participate has no effect, positive or negative, on your grade for your CWI course. All individual information collected through this survey will be kept confidential and destroyed upon the completion of the project.

If you have any concerns or questions about this study, please contact Carol Billing at carolbilling@cwidaho.cc. Thanks for your help and feedback.

Carol Billing
Assistant Professor
Education Department
College of Western Idaho

I acknowledge that I have read the informed consent above and agree to participate in this research. I understand I am free to withdraw from participating at any time without penalty.

○ Yes

○ No

Q8 - I acknowledge that I have read the informed consent above and agree to participate in this research. I understand I am free to withdraw from participating at any time without penalty.

#	Answer
1	Yes
2	No

Q15 - Please select the online course you are enrolled in this semester:
<drop down menu of courses to select from>

Q16 - Enter your student ID here:
Enter your student ID here:
<text box>

Q2 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	1. Instructor clearly communicates important course topics.					
2	2. Instructor clearly communicates important course goals.					
3	3. Instructor provides clear instructions in how to do/participate in learning activities/assignments.					
4	4. Instructor clearly communicates important due dates/time frames for learning activities/assignments.					
5	5. Instructor identified areas of agreement & disagreement on course topics that helped me to learn.					
6	6. Instructor helped guide the class toward understanding course topics in a way that helped clarify my thinking.					
7	7. Instructor facilitated participation in productive dialog.					
8	8. Instructor helps keep the students on task in a way that helped me to learn.					

Q3 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	9. Instructor encouraged students to explore new concepts in the course.					
2	10. Instructor actions reinforced the development of a sense of community among the students in the class.					
3	11. Instructor focused the discussions on relevant issues in a way that helped me to learn.					

4	12. The instructor provided feedback that helped me understand my strengths & weaknesses.					
5	13. Instructor provided feedback in a timely manner.					
6	14. Getting to know other students in the class gave me a sense of belonging.					
7	15. I was able to form distinct impressions of some of my classmates.					
8	16. Online or web-based communication is an excellent medium for social interaction.					

Q4 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	17. I am comfortable conversing through the online medium.					
2	18. I am comfortable participating in the course discussions					
3	19. I am comfortable interacting with other course participants					
4	20. I am comfortable disagreeing with other course participants while still maintaining a sense of trust.					
5	21. I feel that my point of view was acknowledged by my classmates.					
6	22. Online discussions/group wikis help me to develop a sense of collaboration.					

Q5 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	23. Problems posed in class increased my interest in course issues.					
2	24. Course activities piqued my curiosity.					
3	25. I felt motivated to explore content related questions.					
4	26. I utilize a variety of information sources to explore problems posed in courses.					
5	27. Brainstorming and finding relevant information in collaboration with my classmates helped me resolve content-related questions.					
6	28. Online discussions were valuable in helping me appreciate different perspectives.					
7	29. Combining new information helped me answer questions raised in course activities.					
8	30. Learning activities helped me construct explanations/solutions.					

Q6 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	31. Reflection on course content & discussions helped me to understand fundamental concepts of the course.					
2	32. I can describe ways to test and apply the knowledge created in this course.					
3	33. I have developed solutions to course problems that can be applied in practice.					
4	34. I can apply the knowledge created in this course to my work or other non-class related activities.					

Q21 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	I am satisfied with the instructor's communication skills.					
2	I receive feedback on tests and other assignments in a timely manner.					
3	Course requirements were clearly communicated to me.					
4	I am dissatisfied with the use of Blackboard.					
5	The instructor is not accessible to me.					
6	The instructor is enthusiastic about the subject matter.					
7	I am satisfied with the scheduling flexibility within the course.					

Q22 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	I am comfortable in the online learning environment.					
2	I am satisfied with my ability to work on projects on my own.					
3	My level of self-directedness in this course is sufficient.					
4	I have access to reliable computer equipment to participate in my online course.					
5	I am dissatisfied with my performance in this course.					

Q24 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	Assignments (e.g., quizzes, tests) in the course are relevant.					
2	I am satisfied with the pacing of the course.					
3	I am satisfied with the level of effort this course requires.					
4	The organization of course content is logical.					

Q23 - Please respond to each of the following items. The five point response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

#	Question	1	2	3	4	5
1	I can apply what I have learned in this course					
2	My interest in the subject matter has increased because of this course					
3	I am satisfied with my learning in this course					
4	I will be happy with my final grade in the course					

Q9 To which gender identity do you most identify?

#	Answer
1	Male
2	Female

Q10 - What age group best describes you?

#	Answer
1	18-25
2	26-34
3	35-44
4	45-54
5	55 or older

Q19 - What is your ethnicity?

#	Answer
1	Hispanic or Latino
2	Caucasian
3	African American
4	Asian
5	American Indian
6	Pacific Islander
7	Decline to state

Q18 - What is your major?
What is your major?
<text box>

Q21 - How long have you been attending college?

#	Answer
1	This is my first semester
2	This is my second semester
3	3 to 4 semesters
4	5 to 6 semesters
5	6 or more semesters

Q20 - Have you received any training specific to learning in an online environment or online student study skills?

#	Answer
1	No training
2	1 to 4 hours of training
3	4 to 8 hours of training
4	More than 8 hours of training

Q20 - How many online college classes have you completed?

#	Answer
1	0, this is my first online course
2	1 to 2 online courses
3	3 to 5 online courses
4	5 or more online courses

Q22 - I feel my computer skills are:

#	Answer
1	Above average
2	Average
3	Below Average

Q23 - I enjoyed the content and subject of this course.

#	Answer
1	True
2	False

Final Question:

Thank you for taking the time to complete this survey. If you are interested in receiving future emails regarding this survey data analysis, please provide your email: