Spring 2015

Incorporating Asynchronous Video Discussion Prompts to Observe Community of Inquiry Within Online Undergraduate Courses

Bonnie J. Covelli
Governors State University

Incorporating asynchronous video discussion prompts to observe community of inquiry within online undergraduate courses

Bonnie J. Covelli

Submitted in Partial Fulfillment of the Requirements

for the Degree of
Doctorate of Education, Ed.D.
Interdisciplinary Leadership, Higher Education Concentration

Governors State University
University Park, IL 60484

April 20, 2015

Committee:

Stephen H. Wagner, Ph.D., Chair, Governors State University

John W. Cook, Ph.D., Governors State University

David M. Gordon, Ph.D., University of St. Francis

Acknowledgements

My journey toward this degree has included numerous compassionate colleagues, professors, students, friends and family. I would like to specifically thank recent mentors: Dr. Michael Vinciguerra, Dr. Arvid Johnson, Dr. Frank Pascoe, Dr. Lyle Hicks, Dr. Joy Thompson and USF's Cabinet. I appreciate your encouragement and support in the pursuit of this degree, and I commit to the constant quest to add value. I would like to thank my professors and guides, especially committee members Dr. John Cook and Dr. David Gordon for their time and commitment to this project and to Dr. Lynette Danley and Dr. Becky Nugent for their contributions to the design of this study. I extend a special thank you to my committee chair, Dr. Stephen Wagner, for his continuous encouragement and guidance in helping me find meaning and depth in the data and the future goals of research. I would also like to thank my fellow cohort members for their friendship and advice and the instructor and students who participated in this study for taking the extra time to assist a graduate student. Thank you to the numerous colleagues, instructors, teachers, Ms. Mary Kate Bertane, neighbors, friends, who have listened, mentored, supported, guided and believed in me.

To my parents, siblings, extended family and in-laws, thank you for your confidence in me. To my children, Elizabeth, Michael, Megan and Frank Jr., thank you for listening to my stories, forgiving my distractions, tolerating the "kitchen" office, being present with me and for keeping me grounded. I love you each as individuals - to the moon and back! To my husband, Frank, thank you for your unconditional support and unwavering commitment to our family and to me and for being my partner with the Lord on this journey and in our lives. And to all lifelong learners, keep going. You can do it!

Governors State University

Doctor of Interdisciplinary Leadership Program

Table of Contents

List of Tables

List of Appendices

Abstract

Distance education, including online learning and e-learning, continues to increase in higher education. Research indicates that online learning supports a constructivism (or student-centered, collaborative) approach to learning, and the sense of community is important to students in the online setting. The Community of Inquiry (CoI) framework further defines a sense of community as satisfaction in the teaching presence, social presence, and cognitive presence of learning. Using the constructivist approach and the CoI framework, online instructors have the ability to use different techniques and tools with asynchronous discussion prompts to foster a sense of community in the online learning setting. Discussion prompts are typically text-based in an online classroom. A quantitative study was designed to gather data to compare asynchronous text-based discussion prompts with video-based discussion prompts in online undergraduate higher education courses. The results indicated the video discussion prompt, alone, does not impact the sense of community within an online course. In this study, in courses with "non-traditional" students, the text-based discussion prompts were preferred over video-based prompts.

Keywords: online learning, constructivist theory, Community of Inquiry (CoI) framework, online discussion board.

Chapter 1. Introduction to the Project

The use of distance education, including online learning and e-learning continues to increase in higher education. Both traditional and non-traditional student populations are gravitating towards flexibility in education, and online learning provides a vehicle for both asynchronous and synchronous learning opportunities. Within the field, however, there remains much debate over whether or not the modality can support learning outcomes in the same way that face-to-face instruction can. Are there online teaching techniques that foster students' ability to feel connected to the class, the teacher, their classmates and the educational institution? Can online learning mirror or mimic the face-to-face interaction achieved in a traditional classroom? How can a sense of community be achieved in an e-learning format?

Much of the research does indicate that online learning supports constructivism (or student-centered, collaborative) learning, which can be seen as a positive approach to teaching and learning (Campbell & Schwier, 2014; Carwile, 2007; Conceição, 2007; Conole, 2014; Conrad, 2014; Grandzol & Grandzol, 2006). The sense of community is also important to students in the online setting even though this community may have a different emotional feel than a traditional classroom. The Community of Inquiry (CoI) framework defines a sense of community as satisfaction in the teaching presence, social presence, and cognitive presence of the classroom (Garrison, Anderson, & Archer, 2000). Instructors looking to use best practices in the online setting must implement techniques to support student-centered learning and a high sense of community within the various domains of learning. Discussion boards are a common tool for adding interaction within the online classroom, and instructors have the ability to use different techniques within

the discussion board to promote learning outcomes and goals. Asynchronous discussion prompts are the most common way to encourage conversation, promote communication and encourage dialogue within the online classroom and can foster a sense of community in the online learning setting.

1.1 Statement of research problem

Connecting students to learning within the online environment presents challenges not present in the face-to-face format due to disconnections in both time and space. In a face-to-face format, students and teachers share curriculum together in a classroom at the same time and thus build community during classroom instruction and other interactions before and after class. In the asynchronous online learning environment, these same conditions are not present. The separation causes a natural disruption in the ability to interact, to create and to feel community. The disconnection can hinder the opportunity to achieve a student-centered learning focus.

The primary means of interaction within online learning is through the discussion board (Andresen, 2009). The discussion board creates an environment for dialogue among students and between students and the instructor. Discussion boards are typically text-based environments where students and the instructor type back and forth and a transcript is created (Andresen, 2009). There are advantages to this type of discussion over a face-to-face dialogue since participants do not need to meet at the same time or place, and they have more time to think about their response (Andresen, 2009). Some have argued, though, that text-based dialogue does not match the communication preferences of the younger generation (Shea & Bidjerano, 2009), and as the age gap closes, the text-based environment will not be preferred by students. By studying the

asynchronous discussion board in more depth, further information can be understood about what occurs during the online discussion that may or may not promote a sense of community online.

Numerous studies have been conducted on online learning from a constructivist standpoint, and the Community of Inquiry (CoI) framework has received much validation as a model for understanding online learning. Discussion boards have also been studied to better understand how the discussion board area can be effectively used to foster cognitive learning. Much of the research has been qualitative in nature and ignores measuring specific techniques to enhance the online learning community. It is critical to quantitatively measure what specific tools and techniques are effective rather than using personal opinion or preference of an instructor to engage the online classroom.

This research study sought to compare and contrast different types of asynchronous discussion prompts and identify whether or not the type of prompt influences the student's sense of community within the online classroom.

The research questions were:

- Does the use of asynchronous video discussion prompts impact the sense of community within online undergraduate courses?
- In what way is the social presence impacted by the use of video discussion prompts versus text discussion prompts?
- In what way is the cognitive presence impacted by the use of video discussion prompts versus text discussion prompts?
- In what way is the teaching presence impacted by the use of video discussion prompts versus text discussion prompts?

1.2 Statement of the purpose of the study

The purpose of this study was to conduct a quasi-experiment to study the effect of text-based and video-based asynchronous discussion prompts on sense of community in the online learning environment. The study sought to further the research on constructivist theory within online learning, specifically through the Community of Inquiry (CoI) framework. The study sought to add to the body of literature on best practices in online learning and best practices in asynchronous online discussion boards.

The research design was a quantitative survey research study using a one-time post-test delivered via surveymonkey.com near the end of four undergraduate courses. In an effort to control elements of the study, the courses studied were at one institution, taught by the same instructor in the same semester in courses at the same academic level. The validated survey Community of Inquiry (CoI) questionnaire was used, measuring 34 indicators in three categories, ten subcategories using a five point Likert scale (Garrison, Cleveland-Innes, & Vaughan, 2014). Additional qualifying and demographic questions were added to analyze external factors that may or may not have influenced the study. The study involved two groups. One control group experienced the text-based asynchronous discussion prompts whereas a second quasi-experiment group experienced video-based asynchronous discussion prompts.

The independent variables were text-based discussion prompts and video-based discussion prompts. The dependent variables came from the Community of Inquiry (CoI) framework categories: teaching presence (design & organization, facilitation, direct instruction), social presence (affective expression, open communication, group cohesion), and cognitive presence (triggering event, exploration, integration, resolution) (Arbaugh,

2008; Akyol, Vaughan, & Garrison, 2011; deNoyelles, Zydney, & Chen, 2014). Additional measurable variables included: age, gender, race and whether or not the student previously had the instructor.

Prior to the end of the course, the instructor posted a link to the survey within the online classroom. Students completed the survey as the basis of data collection for this study. Data was downloaded into SPSS 22 predictive analytics software for analysis and interpretation using standard statistical measures to understand the data and the predictors.

Hypothesis 1: Students in the courses with video asynchronous discussion prompts demonstrate a greater sense of community than those in courses with text-based discussion prompts.

Hypothesis 2: Students in the courses with video asynchronous discussion prompts demonstrate higher scores in the areas of teaching presence (design & organization, facilitation, direct instruction), social presence (affective expression, open communication, group cohesion), and cognitive presence (triggering event, exploration, integration, resolution) than those in courses with text-based discussion prompts.

The study was conducted at a four-year public university in the Midwestern region of the country. The university has a total enrollment of approximately 5,700 students and offers 130 courses online or as distance learning programs. The institution has a history of serving low to middle income minority students. Fifty-three percent of the institution's students are of racial and/or ethnic minorities. The institution also has a history of serving non-traditional aged students, having served as a transfer and upper division institution for the majority of its history.

1.3 Operational definitions

- **Online Learning**- Broad term used to describe distance learning whereby students and teacher are separated by distance and interact via the internet (Barr & Miller, 2013).
- **Teaching Presence**- "design, facilitation, and direction of cognitive and social processes for purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson, Rourke, Garrison, & Archer, 2001, p. 5). Teaching presence is categorized into: design & organization, facilitation and direct instruction as outlined on the CoI survey (Garrison et al., 2014).
    - **Design & organization** is present when instructors establish curriculum content, learning activities, and timelines (Garrison et al., 2010).
    - **Facilitation** is the creation of an environment of collaboration and reflection within the learning space (Garrison et al., 2010).
    - **Direct instruction** are those elements that ensure "that the community reaches the intended learning outcomes by diagnosing needs and providing timely information and direction" (Garrison et al., 2010, p. 32).
- **Social Presence**- "the ability of participants in a community of inquiry to project themselves socially and emotionally, as "real" people (i.e. their full personality), through the medium of communication being used" (Garrison et al., 2000, p. 94). Social presence is categorized into: affective expression, open communication and group cohesion as outlined on the CoI survey (Garrison et al., 2014).

- **Affective expression** (or emotional expression) "includes self-disclosure, humor, and the expression of feelings related to learning" (Borup, West, & Graham, 2012).
- **Open communication** is the two-way communication between class participants in a comfortable environment (Borup et al., 2012).
- **Group cohesion** relates to the participants feeling a sense of commitment and camaraderie from others in the classroom (Borup et al., 2012).

- **Cognitive Presence**- "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison & Arbaugh, 2007, p. 89). Cognitive presence is categorized into: triggering event, exploration, integration, resolution as outlined on the CoI survey (Garrison et al., 2014).
  - The **triggering events** occur when the students' recognize issues and define problems, tasks and course activities within the class (Garrison et al., 2010; Borup et al., 2012).
  - **Exploration** is students' discovery of relevant information (Garrison et al., 2010).
  - **Integration** is "making sense of and integrating ideas" (Garrison et al., 2010, p. 32).
  - **Resolution** is when students' test and apply solutions to course problems (Garrison et al., 2010).
- **Asynchronous Discussion**- Discussion that is separated by space and time (Andresen, 2009) but that which occurs within a defined time frame.

- **Discussion Prompt**- The question, case study or problem posed by the instructor as the first post to an asynchronous discussion.
    - **Text-based Discussion Prompt**- A discussion prompt posted in an online discussion board with text only.
    - **Video-based Discussion Prompt**- A discussion prompt posted in an online discussion board via video that includes audio and visuals.

Chapter 2. Review of the Literature

Recent data collected by the Babson Survey Research Group and Quahog Research Group, LLC funded by the Sloan Consortium, Sloan Foundation and Pearson consistently reports an increase in online enrollment in higher education (Allen & Seaman, 2014). The latest study presents data that the pace of online enrollment has slowed, but the overall number of students experiencing online learning continues to grow (Allen & Seaman, 2014). Higher education is also seeing an increase in the population of students considered to be non-traditional and these populations often have a need for and are comfortable in the online learning environment (Barr & Miller, 2013). Non-traditional students might include adults older than a traditional aged college student, working students, those who are married, have children, or are caring for an aging parent (Barr & Miller, 2013). Exploring the nature of interaction in the online learning community has been the subject of much research since the onset of the educational medium (Andresen, 2009; Conrad, 2014). Conole (2014) indicated there is a shift from a behaviorist, individualistic approach of online learning to a constructivist approach, building on prior knowledge and focusing on the social learning between others. This research suggested educators need to move towards a more active user

engagement in the online learning environment and more research should be conducted on how teacher communication and collaboration changes with the introduction of technology (Conole, 2014). Creating the substance behind effective digital learning environments is the next step in education (Conole, 2014) The need for student-centered, interactive, collaborative learning that occurs in numerous domains is the subject of both constructivist theory studies in online learning and studies looking at the Community of Inquiry (CoI) framework (Conrad, 2014). The next step in digital learning research is developing insights into how strategies are employed to further enhance the online environment and the students' connection to learning and to others.

2.1 Themes: Online Learning

2.1.1 Student-centered learning and constructivist theory.

Online learning has numerous benefits for students and teachers. Students are afforded the opportunity to be self-directed and to use self-discipline to embrace their own learning (Barr & Miller, 2013). Online learning transcends time and space requirements and opens up new markets and opportunities for teachers and students to interact (Barr & Miller, 2013). Instructors are able to teach without the need to visit campus thereby reducing commuting times, parking fees and interruptions to class due to weather or other emergencies (Barr & Miller, 2013). In the online setting, instructors can use a variety of techniques to deliver content to students with different learning styles and can combine multiple tools within the same course or even the same module (Conceição, 2007). Online learning communities have been found to provide advantages for individuals to further their knowledge and discussion and apply theory to practice while

collaborating with peers (Holmes, 2013). For these and other reasons, online learning provides advantages for the 21st century learner and instructor.

Online learning also has disadvantages that are not present in the face-to-face classroom. Students who are not self-directed or motivated may feel alone and isolated from their instructors and classmates (Barr & Miller, 2013; Borup et al., 2012). This isolation is partly due to the lack of time spent in the social domain of class as a result of less student-to-student and student-to-instructor interactions (Barr & Miller, 2013). Instructors often struggle to personalize the classroom and provide supportive components for those who might be experiencing difficulty in class (deNoyelles et al., 2014). The literature also indicates that some online learning fails to achieve higher-order cognitive outcomes for students as a result of the lack of student interaction (deNoyelles et al., 2014). Identifying teaching strategies that meet the learner where they are at is difficult in the online setting (Conceição, 2007). Online learning is also a challenge for instructors since feedback must be individualized and can often be misinterpreted via text exchanges (deNoyelles et al., 2014).

Best practices in online learning support maximizing the benefits and mitigating the weaknesses of the medium. Barr and Miller (2013) suggested establishing a nurturing environment, maintaining constant and effective communication, incorporating active learning and using cooperative learning opportunities to enhance the educational environment. Conceição (2007) further indicated that the learner-centered approach is a best practice in online instructional design. In other words, the user's experience in the online course is an important element in delivering quality online education (Conceição, 2007). Stodel, Thompson, and MacDonald (2006) recommended that online dialogue be

robust; instructors should allow and include spontaneous interaction, and students and instructors should get to know one another. Setting clear goals and expectations for students is also important as is frequent and constant feedback (Grandzol & Grandzol, 2006). "Consistency, cohesiveness, and assessment" are the most important factors in an online classroom (Grandzol & Grandzol, 2006, p. 1). As best practices continue to unfold, it is clear that understanding the environment from the student perspective is an important factor to consider in the approach to online learning.

The student-centered, interactive, collaborative or constructivist perspective has indeed become increasingly noted in the literature of online learning (Campbell & Schwier, 2014; Carwile, 2007; Conceição, 2007; Conole, 2014; Conrad, 2014; Grandzol & Grandzol, 2006). Constructivism is a foundational theory that describes a process of active learning through interaction that builds knowledge rather than passively receiving messaging and where students and teachers are active participants in the learning (Levine, 2007). Constructivist theory helps identify the need to create community in online learning (Akyol et al., 2011; Barr & Miller, 2013; Conrad, 2014; Garrison & Arbaugh, 2007) and is often considered vital to student success (Carwile, 2007).

There are numerous ways online instructors can build student-centered learning and the sense of community. Rovai (2002) suggested that instructors increase dialogue, encourage mutual awareness and interaction, provide small group experiences, facilitate group tasks, use differentiated instructional practices and manage community size. The students' sense of community with fellow classmates is also important to their success in the online classroom (Rovai, 2002). Fuller, Risner, Lowder, Hart, and Bachenheimer (2014) studied an online doctorate program and suggested that building a sense of

community can be enhanced by holding orientation sessions, carefully designing courses with the student in mind, and adding in components of self-reflection.

How does student-centered learning take place in a digital format? Weller (2002) stated that constructivism is a popular approach with online courses, and "a course that adopts some element of constructivism will incorporate structured discussion" (p. 65). Garrison and Anderson (2003) argued the idea of the unique or distinctive potential of online discussion, and then challenged the online educator to capitalize on this uniqueness.

> Discourse goes to the core of the e-learning experience in that interaction is where the strength of e-learning lies and is the essence of an educational experience as evidenced by a collaborative inquiry-based process. Facilitation of the learning experience is the greatest challenge facing teachers in an e-learning environment. (Garrison & Anderson, 2003, pp. 83–84)

The discussion becomes a key element in the ability of an instructor to foster communication and community. The discussion board becomes central to an online classroom as the "face" of the learning process and the primary area where students learn and instructors teach.

2.1.2 Online discussion boards.

There are numerous online teaching tools to facilitate the learning experience, promote student-centered learning and to build a sense of community. These tools include providing professional development and networking forums for instructors, social media interactions, chat boards and group activities (Barr & Miller, 2013). As the use of social networks and social media has increased, building the sense of online

community through shared social experiences has become more accepted as aiding in the student's learning process (Holmes, 2013). As mentioned, one of the most common tools for students and instructors to interact within the online learning environment is the online discussion board (Barr & Miller, 2013; deNoyelles et al., 2014; Ice, Reagan, Phillips, & Wells, 2007; Levine, 2007). The nature of communication in the online learning environment is different than in a face-to-face classroom, but communication remains one of the most important elements in the students' performance in class (Barr & Miller, 2013). Discussion boards have the potential to make online learning "powerful and dynamic" (Levine, 2007, p. 68). Levine (2007) cautioned, however, that online discussion boards can be used effectively or ineffectively. Online discussion boards without consistent use of best practices and tools to support constructivist theory are not useful nor do they support higher-order thinking or the development of a learning community (Conceição, 2007).

Among the conditions for effective use of discussion boards, Levine (2007) suggested that the online discussion board should create an environment for learning, outline rules and a guide to the threaded discussion, pose meaningful questions and problems, allow individualization without isolation, stimulate participation, encourage reflection and summarize key ideas. To foster a sense of community and participation, it is the instructor's role to reinforce, recognize and reward students in the online classroom (Snyder, 2009). These suggestions are constructivist in nature. The following review of several studies demonstrates the support for the use of these and other constructivist techniques within online discussion boards.

Murphy, Mahoney, Chen, Mendoza-Diaz, and Yang (2005) presented a case study where instructors use mentoring, coaching and facilitating within the online discussion board. The study used the theoretical perspective of social constructivism whereby students who bring meaning to their experience create knowledge (Murphy et al., 2005). The constructivist discussion model developed by the research team demonstrated that effective use of student facilitation, through mentoring and coaching, added active learning value to the classroom (Murphy et al., 2005).

Carwile (2007) identified numerous techniques to use online discussion boards to support constructivist practices including open ended questions, requiring students to respond to one another, asking students to research and respond and providing an area for collaborative interaction between students and instructors.

Already mentioned, Levine (2007) provided ten conditions to support effective use of the online discussion board. Levine (2007) contended that the online discussion board, when viewed from the constructivist perspective, has the potential to provide higher level cognitive knowledge for the student that could not otherwise be achieved in the face-to-face classroom.

Moore (2011) identified that the "effective collaborative discussion" is the most relevant factor to an effective online course (p. 19). Moore (2011) called for an increase in professional development for instructors to be able to learn techniques to facilitate more productive online discussion boards.

A study by deNoyelles et al. (2014) outlined that online discussion boards are more effective when the teaching presence, social presence, and cognitive presence is engaged in the asynchronous discussion board. Their position paper pointed to best

practices such as "prompt but modest feedback, peer facilitation, protocol discussion prompts, and providing audio feedback" as effective ways to engage students (deNoyelles et al., 2014, p. 153).

2.2 Practice model/s guiding the study: Community of Inquiry

As noted in the review of constructivist theory, students in the online learning environment need to feel a sense of connectedness and common goals (Rovai, 2002). The Community of Inquiry (CoI) framework helps to further define this sense of community noting effective online learning occurs within three interconnected lenses: teaching presence, social presence and cognitive presence (Garrison et al., 2000). The CoI model was originally developed by Garrison et al. (2000) and since then has gained in popularity as a framework for examining and understanding the online learning environment and how students assemble knowledge (Garrison & Arbaugh, 2007). Jézégou (2010) and others view the framework as "the most advanced to date" of the models put forth to examine presence in online learning (p. 48). The fundamental philosophical foundation of the CoI framework is that of constructivist learning (Garrison, Cleveland-Innes, & Fung, 2010) in that the student should be central to the learning process and the process is collaborative in nature. Akyol et al. (2011) indicated that the framework can be used as a set of guidelines for building effective learning communities.

Since 2000, numerous studies have been conducted to begin to validate areas of Community of Inquiry (CoI) study primarily through qualitative research. Studies by Richardson and Swan (2003), Garrison et al. (2010), Arbaugh (2008), Shea and Bidjerano (2008), Swan et al. (2009) began to shape a survey instrument to test the three presences

(Arbaugh, 2008). In 2008, a multi-institutional quantitative study was conducted by Arbaugh, Cleveland-Innes, Diaz, Garrison, Ice, Richardson, and Swan (2008) that measured and validated a survey instrument with 34 indicators measuring teaching presence, social presence and cognitive presence. A survey instrument in version 14 with the 34 indicators was further validated by additional research studies (Garrison et al., 2014) and is available to researchers via public download (Garrison et al., 2014). Shea et al. (2013) recently used the tool in a study using quantitative content analysis and social network analysis to examine a potential fourth element of the model, students' learning presence in the classroom in class discussions and learning journals. Fuller et al. (2014) recently used the tool to examine an online doctorate program and make recommendations to those designing distance learning programs.

The first of the three presences of the Community of Inquiry framework (CoI) is teaching presence. The teaching presence is the degree to which the teacher designs, organizes, facilitates and provides direct instruction that advances the outcomes of the learning experience (Akyol et al., 2011; Anderson et al., 2001; Arbaugh, 2008; deNoyelles et al., 2014; Fuller et al., 2014; Garrison & Arbaugh, 2007; Holmes, 2013; Ice et al., 2007; Jézégou, 2010; Shea & Bidjerano, 2009; Shea et al., 2010; Shea et al., 2013; Stodel et al., 2006; Swan et al., 2009, Swan & Ice, 2010). The model measures teaching presence through the three subcategories of: design & organization, facilitation and direct instruction (Garrison et al., 2014). Design & organization is present when instructors establish curriculum content, learning activities, and timelines (Garrison et al., 2010). Facilitation involves the instructor creating and encouraging an environment of collaboration and reflection within the learning space (Garrison et al., 2010). Direct

instruction are those elements that ensure "that the community reaches the intended learning outcomes by diagnosing needs and providing timely information and direction" (Garrison et al., 2010, p. 32).

The second presence, cognitive presence, outlines the student's ability to develop meaning from the course material (Akyol et al., 2011; Anderson et al., 2001; Arbaugh, 2008; deNoyelles et al., 2014; Fuller et al., 2014; Garrison & Arbaugh, 2007; Holmes, 2013; Ice et al., 2007; Jézégou, 2010; Shea & Bidjerano, 2009; Shea et al., 2010; Shea et al., 2013; Stodel et al., 2006; Swan et al., 2009, Swan & Ice, 2010). The model measures cognitive presence through the four subcategories of: triggering events, exploration, integration and resolution (Garrison et al., 2014). The triggering events occur when the students recognize issues and define problems, tasks and course activities within the class (Garrison et al., 2010; Borup et al., 2012). Exploration is students' discovery of relevant information (Garrison et al., 2010). Integration is "making sense of and integrating ideas" (Garrison et al., 2010, p. 32). Resolution is when students test and apply solutions to course problems (Garrison et al., 2010).

Finally, the Community of Inquiry (CoI) framework defines social presence as the fundamental concept of the student feeling connected in a humanizing way to the other people in the classroom (Akyol et al., 2011; Anderson et al., 2001; Arbaugh, 2008; deNoyelles et al., 2014; Fuller et al., 2014; Garrison & Arbaugh, 2007; Holmes, 2013; Ice et al., 2007; Jézégou, 2010; Shea & Bidjerano, 2009; Shea et al., 2010; Shea et al., 2013; Stodel et al., 2006; Swan et al., 2009, Swan & Ice, 2010). The model measures social presence through the three subcategories of: affective expression, open communication and group cohesion (Garrison et al., 2014). Affective expression (also called emotional

expression in past versions of the model) "includes self-disclosure, humor, and the expression of feelings related to learning" (Borup et al., 2012). Open communication ensures two-way communication between class participants in a comfortable environment (Borup et al., 2012). Group cohesion relates to the participants feeling a sense of commitment and camaraderie from others in the classroom (Borup et al., 2012).

Following a period of validation of these areas of presence in the online environment, Community of Inquiry (CoI) studies have shifted to examining specific strategies that can be used to enhance the sense of presence. In Garrison et al.'s (2000) original discussion of the Community of Inquiry (CoI) framework, they pointed to the differences in text-based and oral-based communication in education and computer conferencing and how these differences in communication are related to higher order thinking. Lewis and Abdul-Hamid (2006) conducted interviews of faculty teaching online and found that creative strategies are needed for the online instructor to make an impact on students' engagement. They found that fostering interaction, providing feedback, facilitating learning and maintaining enthusiasm, and organization are essential for the online instructor to add value to the online classroom (Lewis & Abdul-Hamid, 2006). Lewis and Abdul-Hamid (2006) mentioned that in their study, some instructors used voice technology, learning objects, video clips and digital resources to achieve desired student outcomes. Some of the research conducted since then has begun to look more closely at how audio, text and visual elements aid in fostering the sense of community in online learning.

Ice et al. (2007) conducted a mixed method case study to examine the use of asynchronous audio feedback as related to the teaching presence. While Ice et al. (2007)

did not specifically use the Community of Inquiry (CoI) framework, they did find the use of audio feedback to enhance the students' sense of community in the online environment. Two-thirds of the students studied preferred audio to text feedback and this enhanced their sense of community in the online classroom based on the measures studied (Ice et al., 2007).

Dringus, Snyder, and Terrell (2010) conducted a pilot study that tested using mini audio presentations in online forums to measure the effect on teaching presence. The data indicated that audio did support the students' sense of teaching presence in the course (Dringus et al., 2010). Borup, West, and Graham (2012) conducted a qualitative study embedding video throughout courses and then conducted a cross-case design by interviewing students. They found that video helped humanize the instructors and the students felt a greater sense of community, per the Community of Inquiry (CoI) framework (Borup et al., 2012). deNoyelles et al. (2014) wrote a position paper by examining the breadth of studies using the CoI framework to understand the various lenses at work. They suggested that the CoI framework can be an effective tool to design online discussions in a purposeful way in an effort to promote online engagement (deNoyelles et al., 2014).

2.3 Conclusions drawn from the literature

As educational opportunities within the online environment grows, educators are learning more about best practices to create an effective online classroom. The literature is moving towards supporting a constructivist approach to online learning, and the Community of Inquiry (CoI) framework has been popularized as a model to explain and promote online teaching presence, social presence and cognitive presence. The

discussion boards are a primary area within the online classroom for these presences and sense of community to occur.

While much research has been conducted supporting the use of constructivist theory and the Community of Inquiry (CoI) framework in online learning, additional research is needed to continue to refine the craft and strategy of teaching in the online environment and effectively using online discussion boards to promote sense of community. Numerous authors indicate that further research is needed in the areas of building community within online learning. Lewis and Abdul-Hamid (2006) suggest that additional studies on oral expression in online learning are important. Garrison and Arbaugh (2007) identify that numerous studies have been conducted both validating and extending the CoI framework; however, they call for continued studies that are quantitative, cross-disciplinary and further develop the relationship between the framework and online course outcomes. While some research exist that review audio and video in online learning, these studies are primarily qualitative in nature and few apply the use of audio to facilitating discussion threads nor directly test the use of video (with audio) using the CoI framework. Garrison et al. (2010) suggest that additional quantitative studies and those studies that look to see the interactions between all three presences are needed. Dringus, Snyder, and Terrell (2010) further contend that additional research is needed to learn about "specific facilitation strategies within the asynchronous discussion forum" (Dringus et al., p. 77). Borup et al. (2012) suggest that further research is needed in examining all three presences of the CoI framework and additional empirical studies are needed. Ice et al. (2007) suggest that additional research is needed

to more generalize findings regarding the use of asynchronous interaction in the online classroom.

Quantitative studies that measure specific techniques for creating a robust online learning community will help contribute definitive research and have the potential to add best practices to the profession of online teaching.

Chapter 3. Methods

3.1 Research Design

It has been established that quantitative studies are needed to continue to add to the literature on Community of Inquiry (CoI) framework and to test specific strategies and tools that can be used to enhance the constructivist approach to online learning. The CoI framework defines the teaching presence, social presence and cognitive presence of the online learner.

A validated survey tool was available as a CoI questionnaire, measuring 34 indicators in three categories, ten subcategories using a five point Likert scale (Garrison et al., 2014). The survey tool has been previously tested and was found to be reliable with Cronbach's Alpha values of $\alpha = 0.91$ for teaching presence, $\alpha = 0.91$ for social presence and $\alpha = 0.95$ for cognitive presence (Arbaugh et al., 2008). For this research study, five additional questions were added to the instrument as qualifying questions and to measure the potential effects of demographic categories within the CoI framework. The questions were: a qualifying question (which course were the students in); has the student previously had the instructor before; and optional demographic questions related to gender, race, age.

The research design was a quasi-experimental quantitative survey research study using a one-time post-test delivered via surveymonkey.com near the end of four undergraduate psychology courses at a Midwestern public university. Four courses were chosen based on scheduling purposes and desired research parameters. Two courses were chosen that had two sections (four total courses) available at one institution, at the same course level (undergraduate), in the same academic department, taught by the same instructor in the same semester. The learning management system for all four courses was Blackboard, and the general style of instruction was similar across all the courses.

The study involved two groups. Section one of each course was used as the control group. The discussion boards in the control group experienced text-based asynchronous discussion prompts. Section two of each course was the quasi-experiment group. The discussion boards in the quasi-experiment group experienced video-based asynchronous discussion prompts.

The sample size was determined by enrollment in the courses. The researcher did not interfere with the enrollment process for the courses. Students self-selected their courses through the standard process of course selection at the university.

The independent variable was the type of discussion prompt. The dependent variables were: teaching presence (subdivided into: design & organization, facilitation, direct instruction), social presence (subdivided into: affective expression, open communication, group cohesion) and cognitive presence (subdivided into: triggering event, exploration, integration, resolution) (Akyol et al., 2011; Arbaugh, 2008; deNoyelles et al., 2014). The subdivision of the presence variables were coded for ease of interpretation and are summarized in Table 1.

Table 1

Coding of Community of Inquiry Variables

CoI Presence	Subdivision	Code
Teaching	Design & Organization	TDO
Teaching	Facilitation	TF
Teaching	Direct Instruction	TDI
Social	Affective Expression	SA
Social	Open Communication	SOC
Social	Group Cohesion	SG
Cognitive	Triggering Event	CT
Cognitive	Exploration	CE
Cognitive	Integration	CI
Cognitive	Resolution	CR

Additional measurable variables included: has the student previously had the instructor before, age, gender and race. Methods of analysis included standard statistical interpretation of the data set.

The research questions were:

- Does the use of asynchronous video discussion prompts impact the sense of community within online undergraduate courses?
- In what way is the social presence impacted by the use of video discussion prompts versus text discussion prompts?
- In what way is the cognitive presence impacted by the use of video discussion prompts versus text discussion prompts?
- In what way is the teaching presence impacted by the use of video discussion prompts versus text discussion prompts?

The research questions, hypotheses, variables and methods of analysis are summarized in Table 2.

Table 2

Research Questions and Methods of Analysis

Research Questions	Hypothesis	IV	DV	Type of Statistical Analysis	Specific Procedures Utilized
Does the use of asynchronous video discussion prompts impact the sense of community within online undergraduate courses?	Students in the courses with video asynchronous discussion prompts demonstrate a greater sense of community than those in courses with text-based discussion prompts.	Type of Discussion Prompt	TDO TF TDI SA SOC SG CT CE CI CR	Descriptive Inferential	Means Frequencies T-test
In what way is the teaching presence, social presence, cognitive presence impacted by the use of video discussion prompts versus text discussion prompts?	Students in the courses with video asynchronous discussion prompts demonstrate higher scores in the areas of teaching presence (TDO, TF, TDI), social presence (SA, SOC, SG), and cognitive presence (CT, CE, CI, CR) than those in courses with text-based discussion prompts.	Type of Discussion Prompt	TDO TF TDI SA SOC SG CT CE CI CR Previously had instructor age gender race	Descriptive Inferential	Means Frequencies T-test Factorial analysis of variance Pearson-r

In accordance with Institutional Review Board (IRB) standards, the first screen of the web survey included an informed consent form. To continue with the survey, the

students needed to confirm they were at least 18 years old and were willing to participate in the survey (See Appendix 9.6). The students completing the survey received extra credit points in their course. If a student was under 18 years old or chose not to participate in the study, they were able to complete an alternative assignment to receive extra credit points. Following the informed consent, the first question asked students to self-identify which course they were taking. The final question of the survey asked students to reconfirm that they would like to send their responses to the research study.

3.2 Description of participants

- **Inclusion criteria:** There were two groups in the study, a control group utilizing text-based asynchronous discussion prompts and a quasi-experiment group utilizing video-based asynchronous discussion prompts. The online undergraduate courses to be studied were: psyc1605-01 (control), psyc1605-02 (quasi-experiment), psyc1606-01 (control) and psyc1606-02 (quasi-experiment) at a public university in the Midwestern United States. All courses were taught by the same university lecturer in the field of psychology. During the research time period, the control courses included standard text discussion prompts posted in the online discussion area. For the quasi-experiment courses, the instructor posted videos of the same discussion prompt in the online discussion area.
- **Exclusion criteria:** Students who were under the age of 18 were excluded from the study. Individuals who were not taking one of the four selected courses within the research semester were excluded from the study.

3.3 Measures

The survey instrument included 34 questions related to the instructor and the online environment of the course. These 34 questions used a 5 point Likert scale. The 34 questions came from a validated Community of Inquiry (CoI) survey (Garrison et al., 2014). Five additional questions were asked. A qualifying question asked participants to identify which course the participant was enrolled in for purposes of separating the students into the control group or quasi-experimental group and identified sample. The students were asked if they have had a class previously taught by the instructor for purposes of understanding whether or not a previous course might influence the statistics within the presences. Three optional demographic questions were asked regarding identification of gender, age and race. The demographic questions were asked since there has been research indicating that the online experience varies across age, gender and race categories (Pfieffelmann, Wagner, & Libkuman, 2010). The race categories were modeled from the categories provided by the United States Census Bureau (2014).

Data was downloaded from surveymonkey.com into excel for coding and then uploaded into SPSS 22 for analysis. Reliability analysis was conducted to verify whether or not any questions were reverse coded. Means analysis, frequencies and appropriate statistical tests such as *t* tests were conducted to compare the variables. Factorial analysis of variance and Pearson-r value was conducted to test for correlations within demographic categories and the question asking whether or not the student had a course previously taught by the instructor.

Hypothesis 1: Students in the courses with video asynchronous discussion prompts demonstrate a greater sense of community than those in courses with text-based discussion prompts.

Hypothesis 2: Students in the courses with video asynchronous discussion prompts demonstrate higher scores in the areas of teaching presence (design & organization, facilitation, direct instruction), social presence (affective expression, open communication, group cohesion), and cognitive presence (triggering event, exploration, integration, resolution) than those in courses with text-based discussion prompts.

3.4 Procedures

Four online courses were chosen for the study by identifying four courses in the university's course schedule that were: at the same course level (undergraduate), within the same academic department, offered two sections of the same course in the same semester taught by the same instructor.

Section one of each course was identified as the control group. Section two of each course was identified as the quasi-experiment group. During the research time period, the instructor posted the same narrative discussion prompts into each section of the courses. In section one of the courses, the instructor posted the narrative as a text-based discussion prompt. In section two of the courses, the instructor posted the narrative as a video recording as a video-based discussion prompt.

The sample size was determined by enrollment in the courses. The researcher did not interfere with the enrollment process for the courses. Students self-selected their courses through the standard process of course selection at the university.

Surveymonkey.com was used as the medium to deliver the survey. The researcher turned off the toggle to gather IP address within surveymonkey.com as an additional measure to ensure anonymity of the survey participants.

Prior to the end of the course, the instructor posted a link within the Blackboard learning management system to a surveymonkey.com survey (See Appendix 9.1) as well as an alternative assignment. The first screen of the surveymonkey.com survey was the informed consent form.

The survey was optional for the students to complete. The students were provided extra credit points for completing the research survey. If the participant chose not to participate in the study or they were under 18 years old, they were able to complete an alternative assignment to receive extra credit points.

The survey was closed at the end of the semester. The data was downloaded into excel for coding and then downloaded into SPSS 22 for analysis.

3.5 Data Analysis

Using SPSS 22, the data was viewed in one data set (two control courses and two quasi-experiment courses). Variables were coded for ease of interpretation. Control courses were coded as zero (0) and test courses were coded as one (1). Age was coded into two categories using the median age as the splitting point. The race category was coded as minority (Asian, Black or African American, American Indian or Alaska Native, Asian, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, More than one race) and non-minority (White). The CoI survey instrument includes the subdivision into the three presence categories and ten subcategories. See Appendix 9.2 for the CoI

survey instrument version 14 with the categories listed. Table 3 lists the coding for the variables.

Table 3

Variable Coding

Variable	Scale	Code
CoI Likert Scale	Strongly Agree	5
CoI Likert Scale	Agree	4
CoI Likert Scale	Neutral	3
CoI Likert Scale	Disagree	2
CoI Likert Scale	Strongly Disagree	1
Gender	Male	1
Gender	Female	2
Race	Minority	1
Race	White	2
Course	Control courses	0
Course	Test courses	1
Previously Had Instructor	Yes	1
Previously Had Instructor	No	2
Age	27 and younger	1
Age	28 and older	2
CoI subcategory	Design & Organization	TDO
CoI subcategory	Facilitation	TF
CoI subcategory	Direct Instruction	TDI
CoI subcategory	Affective Expression	SA
CoI subcategory	Open Communication	SOC
CoI subcategory	Group Cohesion	SG
CoI subcategory	Triggering Event	CT
CoI subcategory	Exploration	CE
CoI subcategory	Integration	CI
CoI subcategory	Resolution	CR

Data analysis included numerous measures. Descriptive statistics were first reviewed. A scale reliability analysis was conducted measuring the Cronbach's Alpha. A comparative means test was performed with type of discussion prompt as the independent list and the 34 Community of Inquiry (CoI) Likert presence questions as the dependent variables. Additional descriptive statistics included gathering frequencies within the data set.

An independent sample *t* test was performed on the data. A comparative means test and independent sample *t* test were also performed with type of discussion prompt as the independent list and the ten subdivided presence categories as the dependent list: teaching-design & organization, teaching-facilitation, teaching-direct instruction, social-affective expression, social-open communication, social-group cohesion, cognitive-triggering event, cognitive-exploration, cognitive-integration, cognitive-resolution.

A factorial analysis of variance and Pearson-r test were performed analyzing the effect, if any, from demographic categories.

Chapter 4. Results

4.1 Descriptive data

Seventy-two students responded to the survey; however, one student chose to withdraw from the study at the final question. Therefore, the N = 71.

In the control courses (section one), there were 43 participants: four (9%) males and 39 (91%) females. Of the 43 participants in the control courses, 19 (44%) had previously had the instructor; 27 (63%) participants were minority and 16 (37%) participants were white.

In the test courses (section two), there were 28 participants: four (15%) males and 22 (85%) females. (Two students did not respond to the gender question). Of the 28 participants in the test courses, eight students (29%) had previously had the instructor; 15 (54%) were minority and 13 (46%) participants were white.

Overall, the average age of the participants in the study was 32 years old with a range of 20-58 years old. The median age was 27 years old. Minority students constituted 59% of the participants, and white students constituted 41% of the

participants. Baseline descriptive data are listed in Table 4 and Table 5 while more specific frequencies are listed in Appendix 9.3.

Table 4

Survey Participants by Course

Course	Code	n	Age *m*	Race *White*	Race *Minority*	Gender *Female*	Gender *Male*
Psyc 1605-01 (control)	0	23	32	39%	61%	91%	9%
Psyc 1605-02 (test)	1	13	36	31%	69%	77%	23%
Psyc 1606-01 (control)	0	20	31	65%	35%	90%	10%
Psyc 1606-02 (test)	1	15	28	60%	40%	60%	40%
Summary		71	32	41%	59%	82%	18%

Table 5

Survey Participants Summary

Course	Code	n	Age *m*	Race *White*	Race *Minority*	Gender *Female*	Gender *Male*
Control combined	0	43	32	37%	63%	91%	9%
Test combined	1	28	32	46%	54%	85%	15%
Summary		71	32	41%	59%	82%	18%

An initial descriptive means test was performed with type of discussion prompt as the independent list and the 34 Likert presence questions as the dependent variables for the data set. Within the Community of Inquiry (CoI) factors of teaching, social and cognitive presence, the survey participants reported overall high scores with a mean range for the 34 CoI factors in all four courses of $m = 3.71 - 4.51$ demonstrating a positive sense of community in all four courses (text-based and video-based).

The range of means for test, video-based courses was $m = 3.71 - 4.29$, and the range for control, text-based courses was slightly higher at $m = 3.77 - 4.51$.

Overall, students scored the control, text-based courses higher than the video-based courses in each category. See Appendix 9.4 for the results of the descriptive means analysis for the 34 individual CoI factors.

The CoI survey questionnaire is divided into three presences with ten subcategories of variables. A more detailed descriptive means test was performed with type of discussion prompt as the independent list and the ten subcategories as the dependent variables for the data set. When viewing the means by combined subcategories, the survey participants reported even higher scores with a mean range for the ten CoI subcategories in all four courses of $m = 3.76 - 4.43$.

The range for test, video-based courses was $m = 3.76 - 4.15$, and the range for control, text-based courses was slightly higher at $m = 3.92 - 4.43$. Recalling that the Likert scale was a five-point scale with five representing strongly agree and one representing strongly disagree, the means test also demonstrated that students scored the control, text-based courses higher than the video-based courses in each category. Table 6 summarizes the means for the ten subdivided categories.

Table 6

Means from Subdivided Categories of Community of Inquiry (CoI) Questionnaire

CoI Presence	Subcategory of Variable	Code	0			1		
			n	*m*	*sd*	n	*m*	*sd*
Teaching	Design & Organization	TDO	43	4.43	.98	28	4.15	1.51
Teaching	Facilitation	TF	43	4.23	.96	28	3.97	1.39
Teaching	Direct Instruction	TDI	43	4.33	.91	28	3.99	1.43
Social	Affective Expression	SA	43	3.92	1.1	28	3.76	1.20
Social	Open Communication	SOC	43	4.40	.94	28	3.98	1.34
Social	Group Cohesion	SG	43	4.30	.91	28	3.87	1.23
Cognitive	Triggering Event	CT	43	4.29	.99	28	3.99	1.28
Cognitive	Exploration	CE	43	4.30	.85	28	3.99	1.24
Cognitive	Integration	CI	43	4.37	.86	28	4.00	1.32
Cognitive	Resolution	CR	43	4.36	.82	28	3.95	1.30

4.2 Inferential data

In this study, the scale reliability analysis for the survey indicated a Cronbach's Alpha $\alpha = 0.99$ for the 34 Likert scale items on the Community of Inquiry (CoI) survey suggesting a high level of consistency for the scale. Within the three CoI categories, the Cronbach's Alpha values were $\alpha = 0.97$ for teaching presence, $\alpha = 0.93$ for social presence and $\alpha = 0.98$ for cognitive presence. See table 7 for the alpha for each subcategory. The high scores support the previous study by Arbaugh et al. (2008) that indicated a high level of reliability using Cronbach's Alpha.

Table 7

Cronbach's Alpha for Ten CoI Subcategories

CoI Presence	Subcategory of Variable	Code	α
Teaching	Design & Organization	TDO	.98
Teaching	Facilitation	TF	.98
Teaching	Direct Instruction	TDI	.93
Social	Affective Expression	SA	.93
Social	Open Communication	SOC	.98
Social	Group Cohesion	SG	.91
Cognitive	Triggering Event	CT	.96
Cognitive	Exploration	CE	.92
Cognitive	Integration	CI	.97
Cognitive	Resolution	CR	.95

An independent sample *t* test was performed with type of discussion prompt as the independent list and the ten subdivided presence categories as the dependent variables: teaching-design & organization, teaching-facilitation, teaching-direct instruction, social-affective expression, social-open communication, social-group cohesion, cognitive-triggering event, cognitive-exploration, cognitive-integration, cognitive-resolution. Table 8 summarizes the data.

Table 8

Independent Samples t-test Comparing Control versus Test for Ten CoI Subcategories

	Equal variances assumed or not assumed	Levene's Test for Equality of Variances		*t*-test for Equality of Means						
						Sig. 2-tailed	*m* Diff.	Std. Error Diff.	95% conf.	
		F	Sig.	t	df				Lower	Upper
TDO	Not assu.	5.35	0.02	-0.87	41.88	0.39	0.28	0.32	-0.37	0.93
TF	Not assu.	4.76	0.03	-0.87	43.64	0.39	0.26	0.30	-0.34	0.87
TDI	Not assu.	7.05	0.01	-1.14	41.40	0.26	0.35	0.30	-0.27	0.96
SA	Eq. var.	0.21	0.65	-0.58	69.00	0.57	0.16	0.28	-0.40	0.72
SOC	Eq. var.	3.17	0.08	-1.58	69.00	0.12	0.43	0.27	-0.11	0.97
SG	Eq. var.	2.77	0.10	-1.71	69.00	0.09	0.43	0.25	-0.07	0.94
CT	Eq. var.	0.60	0.44	-1.10	69.00	0.27	0.30	0.27	-0.24	0.84
CE	Eq. var.	3.13	0.08	-1.27	69.00	0.21	0.31	0.25	-0.18	0.81
CI	Not assu.	4.63	0.04	-1.32	41.89	0.20	0.37	0.28	-0.20	0.94
CR	Not assu.	5.73	0.02	-1.41	39.29	0.17	0.41	0.29	-0.18	1.00

The *t* test revealed little significance between the variables across the control versus test courses. Social presence-group cohesion (SG) was the closest to significant in a 2-tailed test. The *t* test for social presence-group cohesion (SG) was the nearest to a statistically reliable difference between the mean of video-based ($m = 3.87$, $sd = 1.23$) versus text-based ($m = 4.30$, $sd = 0.91$), $t\ (69) = -1.71$, $p = 0.09$, $\alpha = .05$.

Correlations between demographic variables and the CoI subcategories were analyzed via a bivariate correlation test measuring the Pearson-r value. Age was the only factor that correlates with some significance at the .05 level (2-tailed). Table 9 summarizes the correlation data . A weak negative relationship was demonstrated for:

- Teaching-facilitation (TF) (r = -.26)
- Social presence-open communication (SOC) (r = -.27)
- Cognitive presence-triggering event (CT) (r = -.24)
- Cognitive presence-exploration (CE) (r = -.24)

Table 9

Correlation of Demographic Variables

		Gender	Age	Race	Have you previously had a class taught by this instructor?
TF	Pearson Correlation	.03	**-.26***	.09	-.02
	Sig. (2-tailed)	.81	.03	.45	.86
	n	69	70	71	71
SOC	Pearson Correlation	-.01	**-.27***	.15	-.11
	Sig. (2-tailed)	.92	.02	.21	.35
	n	69	70	71	71
CT	Pearson Correlation	-.09	**-.24***	-.03	.06
	Sig. (2-tailed)	.49	.05	.79	.63
	n	69	70	71	71
CE	Pearson Correlation	-.06	**-.24***	-.03	.10
	Sig. (2-tailed)	.64	.05	.79	.41
	n	69	70	71	71

*Correlation is significant at the 0.05 level (2-tailed).

A univariate analysis of variance was conducted to further test potential interactive effects from the demographic variables. Once again, the same four subcategories (teaching-facilitation (TF), social presence-open communication (SOC), cognitive presence-triggering event (CT) and cognitive presence-exploration (CE) were found to have some significance for age. Table 10 illustrates summary statistics. See Appendix 9.5 for the data tables of analysis for the other factors.

Table 10

Univariate Analysis of Variables: Tests of Between-Subjects Effects

Dependent Variable	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
TF	Age	6.38	1	6.38	5.11	**.03**	.07
SOC	Age	6.33	1	6.33	5.30	**.02**	.07
CT	Age	4.98	1	4.98	4.12	**.05**	.06
CE	Age	4.28	1	4.28	4.19	**.05**	.06

The data file was then split to further test the age factor, and an independent sample *t* test was conducted to compare the control versus test groups. No further significance was found.

The treatment does not appear to be effected by the other demographic variables in a significant manner.

The data file was also subdivided to view data within each course (1605 course and 1606 course). No further significance was found via *t* tests comparing the groups.

Chapter 5. Discussion

5.1 Discussion related to findings of the study

The purpose of this study was to conduct a quasi-experiment to measure the effect of asynchronous text-based and video-based discussion prompts on sense of community in the online learning environment which could then be used to add to the body of literature on constructive theory within online learning and the Community of Inquiry (CoI) framework. The goal was to add to the research and aid in developing best practices in an effort to continually improve tools within online learning and asynchronous online discussion boards. The study investigated the online discussion board prompt through the lens of the three presences of the CoI framework: teaching, social and cognitive within the ten subcategories of teaching-design & organization, teaching-facilitation, teaching-direct instruction, social-affective expression, social-open communication, social-group cohesion, cognitive-triggering event, cognitive-exploration, cognitive-integration, cognitive-resolution.

A quantitative survey research study commenced using a one-time post-test delivered via surveymonkey.com near the end of four undergraduate courses. The

validated survey Community of Inquiry (CoI) questionnaire was administered, measuring 34 indicators in three categories using a five point Likert scale (Garrison et al., 2014). Additional qualifying and demographic questions were asked to analyze external factors that may or may not have influenced the study. The study involved two groups. One group experienced the text-based asynchronous discussion prompts while the quasi-experiment group experienced video-based asynchronous discussion prompts.

When examining the results of the primary *t* test comparing video-based versus text-based discussion prompts within the context of the Community of Inquiry (CoI) ten subcategories, a *t* test failed to reveal a statistically reliable difference between the mean for text-based discussion prompts and the video-based discussion prompts, $\alpha = .05$ for all variables. Therefore, hypothesis one was rejected. (Hypothesis 1: students in the courses with video asynchronous discussion prompts demonstrate a greater sense of community than those in courses with text-based discussion prompts.)

The hypothesis had qualitative support from the literature review that included studies from Lewis and Abdul-Hamid (2006), Ice et al. (2007), Dringus et al. (2010), and Borup et al., (2012) and others that suggested sense of community was important and deliberate use of tools (such as video) and techniques should be employed to develop this sense of community. The research indicated positive results when delivering audio and visual within the online learning classroom that impacted the factors of the Community of Inquiry (CoI) framework. While the literature supported the general idea that video adds value to the online classroom, this study revealed that there may be different uses of video that may or may not contribute to the overall sense of community. A video discussion prompt did not lead to a significant difference in the student's sense of

community. There could be many reasons for this result. A video discussion prompt does not promote interaction between the student and instructor. The prompt merely provides the teacher's visual face and audio to the student. In addition, there may be something about the prompt itself that the student reacts to (regardless of whether or not the prompt was video-based or text-based). For example, problem-based, project-based and debate prompts have been shown to effect the student's interaction with higher levels of cognitive function in the discussion board (deNoyelles et al., 2014). An informational prompt may have a different effect than a more interactive prompt. The academic grade level of the student (graduate versus undergraduate) may also make a difference in a student's cognitive interpretation of a discussion prompt delivered in a text-based or video-based format. The mannerisms of the instructor, the tone, facial expressions, body language may positively or negatively impact the student's interpretation of the video. Finally, the student's technological access to the video (whether via a public computer, private computer, tablet, phone, etc.) and the speed of the internet connection might affect how the student connects with the content on the video, and this in turn may influence the student's opinion of the video.

When examining the results of the comparative means of the video-based versus text-based scores within the context of the Community of Inquiry (CoI) presences, the text-based courses scored higher than the video-based courses. Therefore, hypothesis two was rejected. (Hypothesis 2: students in the courses with video asynchronous discussion prompts demonstrate higher scores in the areas of teaching presence (design & organization, facilitation, direct instruction), social presence (affective expression, open

communication, group cohesion), and cognitive presence (triggering event, exploration, integration, resolution) than those in courses with text-based discussion prompts.)

This study sought to find the effect on video-based discussion prompts on the sense of community in the online classroom. The type of prompt (video-based versus text-based) did not specifically effect the sense of presence.

Once again, hypothesis two had qualitative support from the literature review that included Community of Inquiry (CoI) studies from Shea et al. (2013), deNoyelles et al. (2014) and Fuller et al. (2014) and others. The literature demonstrated that by adding in purposeful tools (such as video) and techniques to the online learning environment, the students' sense of community increased.

One of the reasons behind this study's results may be related to the controls put forth in the set-up of the study. Recall that the research design held numerous elements constant in an effort to capture pure data on what was occurring between video and text-based discussion prompts rather than be influenced by erroneous variables such as the skill set of the instructor, the technical prowess of the instructor or institutional and other outside factors. The instructor was held constant. The university was held constant. The learning management system was held constant. The type of courses within one academic department was held constant. These constants helped narrowly study whether or not the video-based versus text-based prompts made a difference. It was found that the video alone did not significantly factor into the scores related to sense of community.

In this study, the mean scores were high in both types of courses. It is plausible to state this particular instructor may offer a unique ability to create a sense of community in both text-based and video-based environments (as demonstrated by the mean scores).

If this were the case, a more general difference between the two types of prompts may not be evident in the data based on the set up of this study. Also, there may be factors within the learning management system that contribute to fostering community or the type of courses (psychology) that contribute to students' sense of community.

As discussed in the review of literature, there are other conditions for effective use of discussion boards that involve more than simply the initial prompt. This study sought to specifically measure the effect of the prompt rather than measuring multiple effects. This study revealed that the prompt media (video/text) does not make a significant difference. Other factors that may lead to a greater sense of community within online discussion boards might be: outlining rules, a how-to guide to threaded discussion, stimulating participation, encouraging reflection and summarizing key ideas (Levine, 2007) along with the use of video, text or other tools. The students' use of video, rather than just the instructor in the discussion board may also make a difference. Measuring these and other types of techniques was outside the scope of this study.

Of note in this study was that the participants were primarily categorized as "non-traditional" students with an average age of 32 years old with a range from 20 years old to 58 years old. Forty-six percent of the participants who responded to the age question indicated they were age 30 or older; 23% of the participants were age 40 or older. The median age was 27 years old. Reaction to video-based discussion prompts may have been influenced by age presuming that older students may have less time in their day, are possibly working or juggling family and other personal responsibilities. Varying levels of access to technology, or the 'digital divide' between age groups (Campbell & Schwier, 2014; Pfieffelmann et al., 2010) may effect a student's reaction to video-based versus

text-based asynchronous discussion prompts or even their approach and reaction to online learning. The courses studied in this research quasi-experiment were housed at an institution that traditionally has served an older, more "non-traditional" population of students.

The fact that both text-based courses and video-based courses scored high reveals that the media of a discussion prompt does not have a statistically significant impact on the student's sense of community. Therefore, other techniques should be explored to continuously measure the specific tools that impact the online experience.

5.2 Strengths and limitations

This study supported the validity of the Community of Inquiry (CoI) survey instrument and provided information on the use of video-based discussion prompts. Through quantitative analysis, it was found that a video-based discussion prompt, alone, does not affect the students' sense of community within the online classroom. Future research should broaden the scope of the study to analyze whether or not varying types of video discussion prompts, along with other types of video interaction, might affect the presences in a more statistically significant manner.

This study was restricted to undergraduate psychology students at one institution using one instructor. The findings may be limited in scope due to conditions that occur at this institution, with this instructor or within the sample's demographic population. These parameters may have limited the study and potentially artificially narrowed the results to show this particular instructor's ability to promote a sense of community within the online classroom. For example, perhaps the instructor's use of text and video were both effective (as evidenced within the means data). The study's results were strong within

both categories possibly demonstrating strong general teaching strategies rather than an effect from the tools employed. The instructor who participated in this study has received institutional accolades for strength in online teaching.

This study resulted in a sample size of 71 participants. For the purposes of this study, the sample size was deemed significant; however, a larger sample size may add greater validity to the data as more participants would add value to randomizing the data.

For future studies, the process of assigning students to the courses should be considered. Randomizing a survey sample is often a challenge. In this study, it was assumed that the enrollment process would sufficiently randomize the desired sample. However, most institutions fill section one of a course prior to filling section two of a course. This creates a potentially smaller sample size in section two, and may unnaturally fill the sections with students who possess uniform traits (i.e. those who tend to register early versus those who tend to register later). It is suggested that future studies seek to further randomize the sample, if possible, by shuffling students within the sections in a more random manner.

5.3 Future directions

The study added to the body of research on the Community of Inquiry (CoI) framework, constructivist theory in online education and strategies in online instructional design within the online discussion board. Future research should continue to focus on uncovering specific teaching tools that can affect the sense of community within the online classroom. For example, does the use of video discussion prompts and video feedback within the discussion boards influence the students' sense of community? Does the use of video feedback within the grading process of the course have an effect on

specific subcategories within the CoI framework? How does age factor into the students' sense of community and reaction to video in the online classroom? As digital natives begin to greater populate the online classroom, what is the effect of the use of video and audio techniques on the CoI framework factors? Does the instructor's level of experience (number of years teaching online) impact the CoI framework factors?

Additional quantitative research should be conducted to specifically measure the use of video tools. Expanding on this study might also lead to continued research on the use of audio tools within the online discussion board and the combined use of audio and visual tools. It would also be interesting to note the use of these tools by students and whether or not the student use of video within discussion boards has an effect on the sense of community within the classroom. Replicating this study by expanding it to a multi-university, multiple instructor study would further test whether or not these factors had an impact on the data found in this study.

Finally, further research should be conducted to study the type of discussion prompt and to measure whether or not the type (i.e. case study, ice-breaker, reflective, problem-based, project-based, debate, open-ended, closed-ended, required) and the media (video/text) correlates to creating a greater sense of community.

Chapter 6. Conclusions

Online learning has become an important modality in education. As such, research to enhance the pedagogical techniques of delivering online education is vital to the future success of online students and educational pathways and degree programs. Engaging online students in a student-centered, interactive, collaborative, constructivist manner is essential to aid in their sense of community and support the learning process.

The Community of Inquiry (CoI) framework remains a strong tool to understand how students interact in the online learning environment. The tool helps to measure students' sense of presence within the classroom and can aid in the study of online learning.

This study used a quantitative quasi-experiment to measure the effect on sense of community of text-based and video-based discussion prompts in the online learning environment, specifically the asynchronous online discussion board. The study investigated the three presences of the CoI framework: teaching, social and cognitive within the ten subcategories of teaching (design & organization, facilitation, direct instruction), social (affective expression, open communication, group cohesion), and cognitive (triggering event, exploration, integration, resolution).

The results failed to reveal a statistically reliable difference between the text-based discussion prompts and the video-based discussion prompts. The hypotheses had qualitative support from the literature as the use of video has been found to have positive effects within the online classroom. Furthering this study and using video in multiple ways within a discussion board may reveal positive aspects for the online learner, their connection to the online classroom and their sense of community. This study was weighted with non-traditional aged students, and the students' age may impact their opinions on video-based tools and online learning.

Additional research should explore other specific tools and techniques within online asynchronous discussion boards and how these tools impact the sense of community. The emphasis on quantitative research is suggested as the statistical data aids in the discussion of which specific techniques work or do not work, rather than

superlatives and generalizations about tools used to improve online learning. Video tools may add to the sense of community, but this study provided data that the discussion prompt may not be the best technique.

While this study was limited in scope, it demonstrated that a video-based discussion prompt alone will not produce a greater sense of teaching presence, social presence or cognitive presence in a course.

Chapter 7. Implications to Practice

Online learning continues to increase and remains a relevant, expanding modality for learning in both formal and informal educational settings. On a professional level, this study added to the ongoing research in online learning, constructivist theory, the Community of Inquiry (CoI) framework and the use of asynchronous online discussion boards. Garrison et al. (2014) maintain ongoing records of research being conducted using the CoI framework and seek to continually refine the tool and framework to contribute to best practices in developing online and blended learning courses, environment and the inter-connection of the teaching, social and cognitive presences. Studies of this sort contribute to the body of literature and provide evidence-based support for implications of the framework.

On an organizational level, this study added value to practitioners, faculty members and instructional designers seeking to include tools and techniques to online courses to improve the student experience, the student's sense of community and the student's connection to the institution and to his or her knowledge. There is often a general sense that certain techniques, such as video or audio additions will aid in the student experience, both in the face-to-face environment and the online environment.

However, little data specific to these techniques is often available, or the techniques are tested in mixed studies analyzing numerous factors within a course. This study sought to specifically measure one technique (video-based prompt) in one area of the online classroom (discussion boards). By controlling the conditions, the study also successfully accounted for extraneous variables to ensure the measurement of the video-based prompt versus the text-based prompt demonstrated results. While narrow in scope, the study provided data and proved through statistics, that a video-based discussion prompt, alone, does not impact the student's connection to the teaching, social or cognitive presence within the online classroom.

Institutions of higher education can use this data to explore varying teaching techniques such as incorporating video into other areas of the online classroom, in addition to the discussion board, and then measuring the effect. Organizations can also use this study as a model to test other types of manipulation with discussion prompts such as the use of audio, combinations of audio and video, use of visuals, photos, links to external feeds and more. The type of discussion prompt is also an important factor in the student's experience in the online discussion board, and institutions can encourage instructional designers and instructors to vary their type of discussion prompt and measure the results. The organizational goal should be to improve online learning and provide greater outcomes for students.

On the personal level, this study adds data and discussion surrounding the student's experience with online learning. The sense of community is an important factor in learning, and the online classroom is no different. Promoting opportunities for students to feel a greater sense of community within the teaching, social and cognitive

presence in the online classroom aids in the individual improvement of learning. Interactive and collaborative online learning is at the core of constructivist theory. Discovering tools to contribute to a student-centered online classroom is a worthy pedagogical goal. This study has continued the dialogue and encourages future research to reach the goal.

8. References

Akyol, Z., Vaughan, N., & Garrison, D. R. (2011). The impact of course duration on the development of a community of inquiry. *Interactive Learning Environments, 19* (3), 231-246.

Allen, I. E., & Seaman, J. (2014, January). Grade change: Tracking online education in the United States. *Babson Survey Research Group and Quahog Research Group, LLC.*

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.

Andresen, M. A. (2009). Asynchronous discussion forums: success factors, outcomes, assessments, and limitations. *Educational Technology & Society*, *12* (1), 249–257.

Arbaugh, J. B. (2008). Does the community of inquiry framework predict outcomes in online MBA Courses?. *International Review Of Research In Open And Distance Learning, 9*(2), 1-21.

Arbaugh, J. B., Cleveland-Innes, Diaz, S., Garrison, D. R., Ice, P., Richardson, J., & Swan, K. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *Internet and Higher Education, 11*, 133-136.

Barr, B. A., & Miller, S. F. (2013). Higher Education: The Online Teaching and Learning Experience. *Online Teaching and Learning.*

Borup, J., West, R., & Graham, C. (2012). Improving online social presence through asynchronous video. *Internet and Higher Education, 15*, 195-203.

Campbell, K., & Schwier, R. (2014). Major movements in instructional design. In Zawacki Richter, O. & Anderson, T. (Eds.), *Online Distance Education: Towards a Research Agenda.* Edmonton, AB: AU Press.

Carwile, J. (2007). A constructivist approach to online teaching and learning. *Inquiry, 12*(1), 68-73.

Conceição, S. O. (2007). Setting directions for the future of online and adult education. *New Directions For Adult & Continuing Education, (113)*, 87-91.

Conole, G. (2014). The use of technology in distance education. In Zawacki-Richter, O. & Anderson, T. (Eds.), *Online Distance Education: Towards a Research Agenda.* Edmonton, AB: AU Press.

Conrad, D. (2014). Interaction and communication in online learning communities: Toward an engaged and flexible future. In Zawacki-Richter, O. & Anderson, T. (Eds.), *Online Distance Education: Towards a Research Agenda.* Edmonton, AB: AU Press.

deNoyelles, A., Zydney, J., & Chen, B. (2014). Strategies for creating a community of inquiry through online asynchronous discussions. *Journal Of Online Learning & Teaching, 10*(1), 153-165.

Dringus. L., Snyder, M., & Terrell, S. (2010). Facilitating discourse and enhancing teaching presence: Using mini audio presentations in online forums. *Internet and Higher Education, 13*, 75-77.

Fuller, J., Risner, M., Lowder, L., Hart, M., & Bachenheimer, B. (2014). Graduates' reflections on an online doctorate in educational technology. *Techtrends: Linking Research & Practice To Improve Learning, 58*(4), 73-80.

Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21st Century*. London: Routledge Falmer.

Garrison, D. R., Anderson, T, & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*: 87–105.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*(3), 157-172.

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring casual relationships among teaching, cognitive and social presence: Study perceptions of the community of inquiry framework. *The Internet and Higher Education, 13,* 31-36.

Garrison, D. R., Cleveland-Innes, M., & Vaughan, N. (2014). CoI survey. Retrieved from: https://coi.athabascau.ca/coi-model/coi-survey/

Grandzol, J. R., & Grandzol, C. J. (2006). Best practices for online business education. *International Review Of Research In Open & Distance Learning, 7*(1), 1-18.

Holmes, B. (2013). School teachers' continuous professional development in an online learning community: Lessons from a case study of an e twinning learning event. *European Journal of Education, 48*(1), 97-112.

Ice, P., Reagan, C., Phillips, P., & Wells, J. (2007). Using asynchronous audio feedback to enhance teaching presence and students' sense of community. *Online Learning Consortium, 11*(2), 3-25.

Jézégou, A. (2010). Community of Inquiry in e-learning: Concerning the Garrison and Anderson Model. *Journal Of Distance Education, 24*(3), 47-52.

Levine, S. (2007). The online discussion board. *New Directions For Adult & Continuing Education,(113)*, 67-74.

Lewis, C., & Abdul-Hamid, H. (2006, May 26). Implementing effective online teaching practices: Voices of exemplary faculty. *Innovative Higher Education, 31* (2), 83-98.

Moore, D. (2011). Using collaborative online discussion effectively for teaching. *Journal of Applied Learning Technology, 1*(4), 19-23.

Murphy, K. L., Mahoney, S. E., Chen, C., Mendoza-Diaz, N. V., & Yang, X. (2005). A constructivist model of mentoring, coaching, and facilitating online discussions. *Distance Education, 26*(3), 341-366.

Pfieffelmann, B., Wagner, S., & Libkuman, T. (2010, March). Recruiting on corporate web sites: Perceptions of fit and attraction. *International Journal of Selection and Assessment,18*(1), 40-47.

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).

Rovai, A. P. (2002). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *Internet and Higher Education, 5*, 319-332.

Shea, P., & Bidjerano, T. (2009). 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.

Shea, P., Hayes, S., Smith, S., Vickers, J., Bidjerano, T., Gozza-Cohen, M., Jian, S. B., Pickett, A., Wilde, J., & Chi-Hua, T. (2013). Online learner self-regulation: Learning presence viewed through quantitative content- and social network analysis. *International Review Of Research In Open & Distance Learning, 14*(3), 427-461.

Shea, P., Vickers, J., & Hayes, S. (2010). Online instructional effort measured through the lens of teaching presence in the community of inquiry framework: A re-examination of measures and approach. *International Review Of Research In Open & Distance Learning, 11*(3), 127-153.

Snyder, M. M. (2009). Instructional-design theory to guide the creation of online learning communities for adults. *TechTrends, 53*(1), 48-56.

Stodel, E. J., Thompson, T., & MacDonald, C. J. (2006). Learners' perspectives on what is missing from online learning: Interpretations through the community of inquiry framework. *International Review Of Research In Open And Distance Learning,7*(3), 1-24.

Swan, K., Garrison, D. R., & Richardson, J. C. (2009). A constructivist approach to online learning: the Community of Inquiry framework. In Payne, C. R. (Ed.) *Information Technology and Constructivism in Higher Education: Progressive Learning Frameworks*. Hershey, PA: IGI Global, 43-57.

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.

Appendices

9.1 Appendix: Informed consent and survey instrument

Informed Consent

The purpose of this research project is to analyze sense of community in online undergraduate courses. This is a research project being conducted by Bonnie J. Covelli, doctoral student at Governors State University working under the supervision of Stephen H. Wagner, Ph.D., Associate Professor at Governors State University. You are invited to participate in this research project because you are a student in one of the following courses: psyc1605-01, psyc1605-02, psyc1606-01, psyc1696-02 at xxxx University Fall 2014 semester.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdrawal from participating at any time, you will not be penalized.

The procedure involves filling an online survey that will take approximately 10-15 minutes. Your responses will be confidential and we do not collect identifying information such as your name or email address. The survey questions will be about the instructor and the online environment of the course. We will do our best to keep your information confidential. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only.

The final screen of the survey will include a code to provide to your instructor as evidence that you completed the survey. The code is in no way tied to your specific survey or your responses to the survey. There is minimal risk to completing the survey. You may also choose to complete an alternative assignment to receive extra credit points.

If you have questions regarding this survey or the research project, you may contact Bonnie J. Covelli at bcovelli@student.govst.edu or the College of Education at Governors State University at 708-534-5000. This research has been reviewed according to Governors State University IRB procedures for research involving human subjects.

By proceeding with the survey, you are giving your consent to participate. At any point in time, you may opt out of the survey.

ELECTRONIC CONSENT: Please select your choice below.
Clicking on the "agree" button below indicates that:
• you voluntarily agree to participate
• you are at least 18 years of age
If you do not wish to participate in the research study, please decline participation by clicking on the "disagree" button.

The final format for the survey was inputted into a surveymonkey.com template.

Qualifying Question:
Which course are you currently enrolled in:
psyc1605-01
psyc1605-02
psyc1606-01
psyc1606-02

Scale for all questions:
1 = strongly disagree
2 = disagree
3 = neutral
4 = agree
5 = strongly agree

1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive dialogue.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses.
13. The instructor provided feedback in a timely fashion.
14. Getting to know other course participants gave me a sense of belonging in the course.
15.I was able to form distinct impressions of some course participants.
16. Online or web-based communication is an excellent medium for social interaction.
17. I felt comfortable conversing through the online medium.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable interacting with other course participants.
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.

21. I felt that my point of view was acknowledged by other course participants.
22.Online discussions help me to develop a sense of collaboration.
23. Problems posed increased my interest in course issues.
24. Course activities piqued my curiosity.
25.I felt motivated to explore content related questions.
26. I utilized a variety of information sources to explore problems posed in this course.
27. Brainstorming and finding relevant information helped me resolve content related questions.
28. Online discussions were valuable in helping me appreciate different perspectives.
29. Combining new information helped me answer questions raised in course activities.
30. Learning activities helped me construct explanations/solutions.
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.
32. I can describe ways to test and apply the knowledge created in this course.
33. I have developed solutions to course problems that can be applied in practice.
34. I can apply the knowledge created in this course to my work or other non-class related activities.

The following questions were optional:
35. What is your age? _____
36. What is your gender? Male Female
37. What is your race?

White
Black or African American
American Indian or Alaska Native
Asian
Hispanic or Latino
Native Hawaiian or Other Pacific Islander
More than one race

9.2 Appendix: Community of Inquiry Survey Instrument v14 Categories

Teaching Presence

Design & Organization
1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.

Facilitation
5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive dialogue.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.

Direct Instruction
11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses.
13. The instructor provided feedback in a timely fashion.

Social Presence

Affective expression

14. Getting to know other course participants gave me a sense of belonging in the course.
15. I was able to form distinct impressions of some course participants.
16. Online or web-based communication is an excellent medium for social interaction.

Open communication
17. I felt comfortable conversing through the online medium.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable interacting with other course participants.

Group cohesion
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.
21. I felt that my point of view was acknowledged by other course participants.
22. Online discussions help me to develop a sense of collaboration.

Cognitive Presence

Triggering event
23. Problems posed increased my interest in course issues.
24. Course activities piqued my curiosity.
25. I felt motivated to explore content related questions.

Exploration
26. I utilized a variety of information sources to explore problems posed in this course.
27. Brainstorming and finding relevant information helped me resolve content related questions.
28. Online discussions were valuable in helping me appreciate different perspectives.

Integration
29. Combining new information helped me answer questions raised in course activities.
30. Learning activities helped me construct explanations/solutions.
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.

Resolution
32. I can describe ways to test and apply the knowledge created in this course.
33. I have developed solutions to course problems that can be applied in practice.
34. I can apply the knowledge created in this course to my work or other non-class related activities.

5 point Likert-type scale
1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

(Garrison et al., 2014)

9.3 Appendix: Table: Data Frequencies - Descriptive Frequency Data

Descriptive Frequency Data - Statistics

	Which course are you currently enrolled in?	Have you previously had a class taught by this instructor?	Age	Gender	Race
N Valid	71	71	70	69	71
Missing	0	0	1	2	0
Mean	.39	1.62	31.54	1.88	1.41
Std. Deviation	.49	.49	10.15	.32	.50
Variance	.24	.24	102.98	.10	.25
Range	1	1	38	1	1

Which course are you currently enrolled in?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	43	60.6	60.6	60.6
	1	28	39.4	39.4	100.0
	Total	71	100.0	100.0	

Have you previously had a class taught by this instructor?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	27	38.0	38.0	38.0
	2	44	62.0	62.0	100.0
	Total	71	100.0	100.0	

Survey Participants by Course

Course	Code	n	Have you previously had the instructor	
			n Yes	*n* No
Psyc 1605-01 (control)	0	23	5	18
Psyc 1605-02 (test)	1	13	1	12
Psyc 1606-01 (control)	0	20	14	6
Psyc 1606-02 (test)	1	15	7	8
Summary		71	27	44

Age Frequency

	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20	2	2.8	2.9	2.9
	21	4	5.6	5.7	8.6
	22	5	7.0	7.1	15.7
	23	5	7.0	7.1	22.9
	24	9	12.7	12.9	35.7
	25	3	4.2	4.3	40.0
	26	4	5.6	5.7	45.7
	27	5	7.0	7.1	52.9
	29	1	1.4	1.4	54.3
	30	2	2.8	2.9	57.1
	31	2	2.8	2.9	60.0
	32	2	2.8	2.9	62.9
	33	1	1.4	1.4	64.3
	35	3	4.2	4.3	68.6
	36	2	2.8	2.9	71.4
	37	4	5.6	5.7	77.1
	41	3	4.2	4.3	81.4
	42	1	1.4	1.4	82.9
	43	2	2.8	2.9	85.7
	44	2	2.8	2.9	88.6
	46	1	1.4	1.4	90.0
	47	1	1.4	1.4	91.4
	48	1	1.4	1.4	92.9
	51	1	1.4	1.4	94.3
	54	1	1.4	1.4	95.7
	56	1	1.4	1.4	97.1
	57	1	1.4	1.4	98.6
	58	1	1.4	1.4	100.0
	Total	70	98.6	100.0	
Missing	System	1	1.4		
Total		71	100.0		

Gender Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	11.3	11.6	11.6
	2	61	85.9	88.4	100.0
	Total	69	97.2	100.0	
Missing	System	2	2.8		
Total		71	100.0		

Race Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	42	59.2	59.2	59.2
	2	29	40.8	40.8	100.0
	Total	71	100.0	100.0	

9.4 Appendix: Table - Descriptive Means Analysis

Comparative Means Results – Teaching Presence

Factor/Course	Course	*n*	*m*	*sd*	Std. Error Mean
TDO1	0	43	4.49	0.96	0.15
	1	28	4.11	1.52	0.29
TDO2	0	43	4.40	1.03	0.16
	1	28	4.18	1.54	0.29
TDO3	0	43	4.33	1.11	0.17
	1	28	4.04	1.58	0.30
TOD4	0	43	4.51	0.96	0.15
	1	28	4.29	1.49	0.28
TF5	0	43	4.26	1.00	0.15
	1	28	3.96	1.48	0.28
TF6	0	43	4.35	0.10	0.15
	1	28	4.04	1.45	0.27
TF7	0	43	4.21	1.08	0.17
	1	28	4.07	1.41	0.27
TF8	0	43	4.28	0.98	0.15
	1	28	3.96	1.45	0.27
TF9	0	43	4.19	1.08	0.16
	1	28	3.93	1.46	0.28
TF10	0	43	4.12	1.07	0.16
	1	28	3.86	1.41	0.27
TDI11	0	43	4.33	1.02	0.16
	1	28	3.96	1.53	0.29
TDI12	0	43	4.30	1.12	0.17
	1	28	3.96	1.45	0.27
TDI13	0	43	4.37	1.00	0.15
	1	28	4.04	1.40	0.27

Comparative Means Results – Social Presence

Factor/Course	Course	*n*	*m*	*sd*	Std. Error Mean
SA14	0	43	3.86	1.23	0.19
	1	28	3.71	1.33	0.25
SA15	0	43	3.77	1.27	0.19
	1	28	3.71	1.21	0.23
SA16	0	43	4.14	1.06	0.16
	1	28	3.86	1.33	0.25
SOC17	0	43	4.40	0.98	0.15
	1	28	4.00	1.31	0.25
SOC18	0	43	4.40	0.96	0.15
	1	28	3.96	1.37	0.26
SOC19	0	43	4.42	0.96	0.15
	1	28	3.96	1.37	0.26
SG20	0	43	4.40	0.90	0.14
	1	28	3.93	1.36	0.26
SG21	0	43	4.35	1.04	0.16
	1	28	3.96	1.23	0.23
SG22	0	43	4.16	1.11	0.17
	1	28	3.71	1.30	0.25

Comparative Means Results – Cognitive Presence

Factor/Course	Course	*n*	*m*	*sd*	Std. Error Mean
CT23	0	43	4.23	1.04	0.16
	1	28	3.89	1.26	0.24
CT24	0	43	4.35	1.02	0.16
	1	28	4.00	1.33	0.25
CT25	0	43	4.28	1.01	0.15
	1	28	4.07	1.41	0.27
CE26	0	43	4.26	0.98	0.15
	1	28	3.79	1.45	0.27
CE27	0	43	4.26	0.93	0.14
	1	28	3.89	1.29	0.24
CE28	0	43	4.40	0.93	0.14
	1	28	4.29	1.18	0.22
CI29	0	43	4.37	0.87	0.13
	1	28	4.04	1.32	0.25
CI30	0	43	4.35	0.92	0.14
	1	28	3.96	1.35	0.25
CI31	0	43	4.40	0.88	0.13
	1	28	4.00	1.41	0.27
CR32	0	43	4.37	0.90	0.14
	1	28	3.86	1.43	0.27
CR33	0	43	4.30	0.94	0.14
	1	28	3.89	1.42	0.27
CR34	0	43	4.42	0.82	0.13
	1	28	4.11	1.45	0.27

9.5 Appendix: Table - Univariate Analysis of Variance –

Significant Outputs for Age

Tests of Between-Subjects Effects - TF

Dependent Variable: TF

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6.38[a]	1	6.38	5.11	.03	.07
Intercept	182.99	1	182.99	146.63	.00	.68
Age	6.38	1	6.38	5.11	.03	.07
Error	84.86	68	1.25			
Total	1292.67	70				
Corrected Total	91.24	69				

a. R Squared = .070 (Adjusted R Squared = .056)

Tests of Between-Subjects Effects - SOC

Dependent Variable: SOC

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6.33[a]	1	6.33	5.30	.02	.07
Intercept	190.42	1	190.42	159.54	.00	.70
Age	6.33	1	6.33	5.30	.02	.07
Error	81.16	68	1.19			
Total	1350.44	70				
Corrected Total	87.49	69				

a. R Squared = .072 (Adjusted R Squared = .059)

Tests of Between-Subjects Effects - CT

Dependent Variable: CT

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.98[a]	1	4.98	4.12	.05	.06
Intercept	177.60	1	177.60	146.75	.00	.68
Age	4.98	1	4.98	4.12	.05	.06
Error	82.29	68	1.21			
Total	1305.33	70				
Corrected Total	87.28	69				

a. R Squared = .057 (Adjusted R Squared = .043)

Tests of Between-Subjects Effects - CE

Dependent Variable: CE

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.28[a]	1	4.28	4.19	.05	.06
Intercept	174.15	1	174.15	170.56	.00	.72
Age	4.28	1	4.28	4.19	.05	.06
Error	69.43	68	1.02			
Total	1297.33	70				
Corrected Total	73.71	69				

a. R Squared = .058 (Adjusted R Squared = .044)

9.4 Appendix: IRB Approval

To: Dr. Stephen Wagner & Bonnie Covelli
From: Drs. David Rhea and Dale Schuit – IRB Co-Chairs
CC: Fatmah Tommalieh
Date: September 16, 2014
Re: Community of Inquiry in Online Undergraduate Courses

Project Number: #14-09-05

Governors State University grants exempt approval for your project.

Please be advised that if you make any substantive changes in your research protocols, you must inform the IRB and have the new protocols approved. Please refer to your GSU project number when communicating with us about this research.