

ENHANCED ONLINE COURSE DESIGN  
AND ITS EFFECT ON THE PERCEIVED  
LEVEL OF COMMUNITY OF INQUIRY

By

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ITS EFFECT ON THE PERCEIVED LEVEL OF  
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Abstract:

Academic institutions increasingly have adopted the online platform due to its low delivery cost and ease of scalability to large numbers of students. The pressure to increase enrollment numbers without enhancements to online course design have created the problem of lower retention and completion rates which can effect institutional funding. The purpose of this study was to explore the effect of enhancements to course design as well as class size on the level of perceived Community of Inquiry (CoI) experienced by college students. The primary research question was; what effect does enhanced online course design have on the perceived level of CoI among college students? A secondary research question was; what effect does class size have on the perceived level of CoI among online college students? The theoretical framework that informed this study was Community of Inquiry developed by Garrison (2000). This study employed a quasi-experimental research design since subjects were already enrolled in course sections. Cluster random sampling method was employed to select both the non-enhanced and enhanced class sections. The researcher surveyed subjects using a 34 question 5-scale summated CoI instrument including teacher, social, and cognitive presence. The population from which the sample was derived consisted of undergraduate college students over the age of 18 years old of any gender enrolled in at least one completely online 16-week class at the OSU-OKC campus. The researcher employed One-Way MANOVA and Pearson  $r$  correlation inferential statistical analysis to test all research hypotheses. The findings indicate that there is no evidence of significant effect between enhanced course design and the perceived level of CoI among college students. The findings regarding correlation of CoI scores and class size however showed there was a strong negative correlation between *teaching presence*, a moderate positive correlation between *social presence*, and a weak negative correlation between *cognitive presence* and class size. Other factors such as teacher training, facilitation by the instructor, student readiness, and the type of course taught and its effect to perceived levels of CoI might be considered for future research.

## TABLE OF CONTENTS

| Chapter   | Page |
|---|------|
| I. INTRODUCTION.....                                      | 1    |
| Context of Study .....                                    | 3    |
| Statement of the Problem.....                             | 4    |
| Purpose of the Study .....                                | 5    |
| Limitations and Assumptions of the Study.....             | 6    |
| Research Questions and Hypotheses .....                   | 7    |
| Research Questions .....                                  | 7    |
| Hypotheses .....  | 7    |
| Theoretical and Conceptual Framework.....                 | 8    |
| Definition of Key Terms.....                              | 12   |
| Conceptual Definitions.....                               | 12   |
| Operational Definitions .....                             | 13   |
| II. REVIEW OF LITERATURE.....                             | 15   |
| History of Adult Education.....                           | 16   |
| The Knowledge Economy and its Effect on the Learner.....  | 19   |
| History of Online Course Design.....                      | 20   |
| Community of Inquiry .....                                | 23   |
| Role of the Teacher in Online Courses .....               | 26   |
| Social Presence in Online Courses.....                    | 28   |
| Cognitive Presence in Online Courses.....                 | 31   |
| Quality Matters and its connection to Cowboy Quality..... | 33   |

| Chapter  | Page |
|--|------|
| Connectivism Theory.....                           | 34   |
| III. METHODOLOGY .....                             | 37   |
| Context of Study .....                             | 37   |
| Research Design.....                               | 38   |
| Population and Sample .....                        | 39   |
| Population.....                                    | 39   |
| Sample .....                                       | 40   |
| Instrumentation .....                              | 41   |
| Validity .....                                     | 43   |
| Reliability.....                                   | 43   |
| Procedures.....                                    | 44   |
| Type of Sampling Method.....                       | 44   |
| Procedures used in Sampling.....                   | 44   |
| Desired Sample Size.....                           | 46   |
| Avoidance techniques for Sample Bias.....          | 46   |
| Data Analysis .....                                | 47   |
| Timeline for Conducting the Study.....             | 47   |
| Limitations and Assumptions of the Study.....      | 47   |
| Significance of the Study .....                    | 48   |
| IV. FINDINGS .....                                 | 49   |
| Overview of the Study .....                        | 49   |
| Data Collection Process.....                       | 49   |
| Data Storage Security .....                        | 51   |
| Data Analysis.....                                 | 52   |
| Descriptive Statistics for Sample Population ..... | 53   |
| Research Questions.....                            | 53   |

| Chapter  | Page |
|--|------|
| Research Question #1 .....                                 | 53   |
| Research Question #2 .....                                 | 56   |
| Summary of Findings.....                                   | 59   |
| V. CONCLUSION.....   | 60   |
| Summary of Study .....                                     | 60   |
| Findings and Implications.....                             | 63   |
| Research Question #1 .....                                 | 63   |
| Research Question #2 .....                                 | 71   |
| Implications and Recommendations for Further Research..... | 73   |
| Significance of Study .....                                | 75   |
| REFERENCES .....   | 77   |
| APPENDICES .....   | 82   |

## LIST OF TABLES

|  |    |
|--|----|
| Table 1: Relationship between CoI theory, CQR, and Connectivism theory ..... | 16 |
| Table 2: Participating Classes for Study .....                               | 51 |
| Table 3: Demographics of Study Participants .....                            | 53 |
| Table 4: Descriptive Statistics for RQ1 .....                                | 54 |
| Table 5: Pearson r Correlations between CoI scores and Class Size .....      | 57 |



## LIST OF FIGURES

|  |    |
|--|----|
| Figure 1: Theoretical Framework for Study (prepared by researcher) ..... | 9  |
| Figure 2: Correlation between Class Size and CoI Constructs .....        | 58 |

# **CHAPTER I**

## **INTRODUCTION**

Ever since the introduction of online learning, there has been a concern about the possible higher levels of student disengagement due to the inherent isolation of the individual learner from his or her fellow students and the instructor. Although disengaged students are present in face-to-face classroom environments, the level of disengagement can be more prevalent in online classrooms (Petrides, 2002). Students who are disengaged can become frustrated with the class to the point of dropping it (Wei, Chen, & Kinshuk, 2012).

As a result, conversations are taking place in numerous higher education institutions regarding the challenges students face when they participate in an online class (Garrison, Innes, & Fung, 2010). These conversations are leading to fervent discussion at all levels within academic institutions on how to enhance course design in the online environment.

The rapid adoption of online delivery at all levels of education and corporate training represents a disruptive innovation to the traditional face-to-face classroom. Online learning has experienced exponential growth over the last 30 years. Open University launched its first attempt in 1989 of a fully online learning environment

With 1,500 students (Harasim, 2000). A recent article by Reese (2015) indicated that in 2010, 30% of all higher education classes took place in an online classroom. The popularity of the digitally-mediated learning platform continues to grow since it offers flexibility to both students and instructors as well as enriches the diversity of the student populations. In addition, future jobs will be part of the knowledge economy, requiring learners to form connections between sources of information and grasp information patterns (Siemens, 2005). With this swift implementation has come major technological developments in learning management software (Earl, 2012). However, much more needs to be done to understand how to implement these useful tools best in the online class to enhance student engagement, social connection, and learning. A study by Wei (2012) illustrated that improving social presence in the online environment had profound effects on both instructor effectiveness and student learner efficacy, which increased student retention.

One effort to improve online instruction to be examined in this study is the Cowboy Quality certification initiative at Oklahoma State University at Oklahoma City (OSU-OKC). In 2010, a Title III grant was awarded to OSU-OKC for the purpose of improving their online course design. These efforts were driven by stagnant enrollment numbers at OSU-OKC in 2009. At this time, administrators and faculty believed that one way to improve enrollment numbers was to expand access to courses through online and hybrid courses. There was a belief that enhancing the quality of these courses would increase student engagement and ultimately enrollment. As part of these efforts, a task force of 11 administrators and faculty was created in FY2011 to help develop the Cowboy Quality Rubric (CQR) and guide the review process. This taskforce was under

the direction of the OSU-OKC VP of Academics (C. McKee, personal communication, September 16, 2016). This rubric is the primary tool used to evaluate online courses, wishing to receive the CQ certification. For purposes of this study, if a course receives CQ certification, then it is considered an “enhanced” online course.

The CQR was modeled after the Quality Matters Rubric originally developed by the Quality Matters (QM) program. This program was developed by the MarylandOnline not-for-profit consortium, using Department of Education funding over the three year period ending in 2006 (Shattuck & Colleagues, 2013). The goal of this program was to provide a tool that can be employed to review and improve the design of an online course. From these efforts, a rubric was developed as well as a process for evaluating a wide-variety of online courses. As of 2013, 825 educational institutions have formally reviewed 3,998 courses, and 28,756 online instructors have complete the QM professional development courses.

### **Context of Study**

Understanding the context of where this study is to be conducted is key when considering its results and conclusions. Since this study was to explore the effect of enhancements of an online class, the initial investigation of this study was to understand the types of tools and methods used to enhance an online course. This study was conducted at the OSU-OKC campus. OSU-OKC is primarily a two-year higher education institution that offers a variety of undergraduate degree programs to a diverse population of approximately 6,000 students (Oklahoma State University OKC, 2014). Further, OSU-OKC is an urban, two-year public college and has a substantially high minority student population of 35.5%. This population is consistent with the researcher’s

degree at Oklahoma State University specializing in Workforce and Adult Education (formally Occupational Education), which is focused on the adult population. The data for this study was gathered during spring 2016 semester. The sample population was online students over the age of 18 who are enrolled in at least one 16-week class. The CQR was developed by a team at OSU-OKC using the Quality Matters (Shattuck & Colleagues, 2013) rubric as a guide. Heretofore, this process has been funded by a nearly \$2 million five-year Title III grant, beginning on October 2011. Faculty and staff evaluate the quality of only those online courses for whom an OSU-OKC instructor requests CQ certification. The evaluators employ the CQR to determine if the online course will receive the CQ certification and thus classify as “enhanced” per this study.

### **Statement of the Problem**

From a small, two-course pilot test in 1986 at the University of Guelph in Ontario, Canada, the last 30 years have seen a rapid adoption of the use of online technology for the conveyance of instruction in both academic and corporate environments (Mason, 2000). According to Kanuka (2011), dramatic technology improvements in the internet, learning management software, and computers have led to course redesign. Academic institutions have been quick to adopt the online platform due to its low delivery cost and ease of scalability to large numbers of students. Recent budget woes by many states have led to cuts in both academic and administrative support staff and by the tendency to fill and exceed normal faculty-to-student ratios in course enrollments. Most institutions are funded and assessed based on positive retention as well as completion numbers. Possible negative ramifications, both to the student and the institution, could exist which are not

clearly understood, such as declines in the quality of instruction and reductions in the number of administrative and teaching staff.

This study acknowledges that there is an information gap of whether course design or other factors such as teacher facilitation, student readiness, and the type of course taught affects the level of student engagement. Very little research has been conducted to know if course design affects the level of student engagement as measured by the level of Community of Inquiry (CoI). Essentially, CoI is a theoretical framework that provides a collaborative-constructivist perspective to understand online learning and consists of three constructs: teaching presence, social presence, and cognitive presence (Arbaugh, et al., 2008). Teaching presence refers to the teacher's level of presence and facilitation, while social presence refers to how well each of the individual learners interact in a trusting environment. Finally, cognitive presence is the level that learners connect to the course content.

The problem that this study addresses can be seen as one of cause and effect. The nature of online classes is, all too often, one-dimensional, lackluster, and non-engaging. Because of this students become disengaged and may eventually drop the course. This leads to higher attrition numbers and lower completion rates for the institution which can ultimately impact its reputation and funding.

### **Purpose of the Study**

The purpose of this study was to determine the effects of online course design and class size on the level of CoI. CoI consists of three constructs of teaching presence, social presence, and cognitive presence. The CoI framework and each of its three constructs date back to the Garrison et al. (2000) research group that worked at the University of

Alberta from 1996 to 2001. These researchers wanted to connect human concerns online, text-based communication, online teaching problems, and cognitive goals for graduate programs. Eventually three overlapping constructs were developed, using John Dewey's idea that inquiry was a social activity for using online communications media – social presence, cognitive presence, and teaching presence (Garrison, Anderson, & Archer, 2000). The findings of this study will potentially increase the knowledge base for current and future online course enhancements, but since higher teaching presence leads to higher levels of social presence that positively effects student performance (Wei et al., 2012), perhaps provide justification for these improvements in course design.

### **Limitations and Assumptions of the Study**

As the researcher began the study, it became clear that there were numerous limitations inherent in this work. First, the researcher is employed currently at OSU-OKC as an instructor of accounting and economics. This position was obtained after a 25-year career in accounting, finance, entrepreneurship, and sales positions. The researcher was biased in two ways: 1) his position at the institution where the data were collected, and 2) his relationships with faculty and students at OSU-OKC. The differences in the demographic characteristics of the study's sample and the characteristics of public and private college students in Oklahoma may limit external validity of the study's results.

A primary assumption was that students were honest when answering the CoI questionnaire. To assist with this issue, the results of the questionnaires were not be shared with the online class instructors. Students only provided their instructor proof (i.e., screenshot of Qualtrics final page) of completing the CoI questionnaire in order to

gain any offered extra credit in the class. Since the study's sample was of online college students at OSU-OKC, who are made up of a cross-section of traditional (aged 18 to 22) colleges students as well as non-traditional (aged 23 and over), it should be a reasonably good representation of students enrolled in online classes in Oklahoma public and private colleges. An additional assumption was that students had access to the internet as well as access to hardware necessary to complete the online study questionnaire. Finally, the criteria for determining whether a course has been enhanced or not is by the passing the CQR and obtaining the CQ certification. The assumption is that classes that did not receive CQ certification were not subjected to CQ enhancements.

### **Research Questions and Hypotheses**

Bearing these assumptions in mind, the guiding questions and hypotheses of this study are:

#### *Research Questions*

**RQ1:** What effect does enhanced online course design have on the perceived level of Community of Inquiry (CoI) among college students?

**RQ2:** What effect does class size have on the perceived level of Community of Inquiry (CoI) among online college students?

#### *Hypotheses*

**H1:** College students who attend an enhanced online course will have a significantly higher level of perceived Community of Inquiry (CoI) than those who attend a non-enhanced course.

**H2:** The level of perceived Community of Inquiry (CoI) will be significantly different for online students based on the class size.



## **Theoretical and Conceptual Framework**

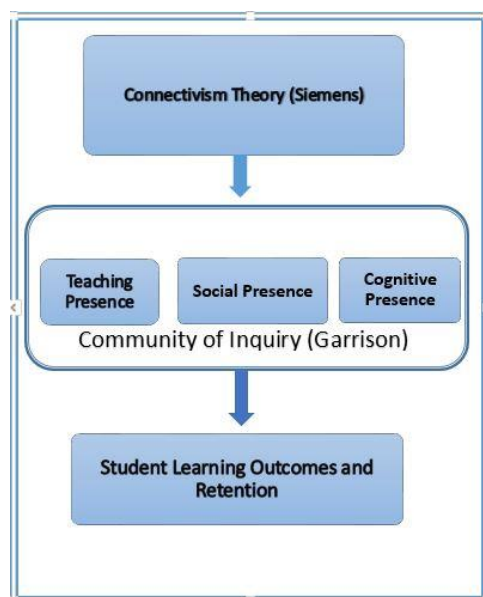
The theoretical framework that will inform this study is Community of Inquiry (CoI) theory developed by Garrison (2000). The CoI theory will be viewed through the lens of connectivism theory that states learning is considered an internal and individualistic activity and most learning theories are based on that reality (Siemens, 2005). Connectivism theory was developed in response to explore a more social learning environment than experienced by current learners. In addition, this innovative theory was developed in response to existing learning theories' lack of relevance for online learning environments (Reese, 2015). The essence of connectivism theory provides explanations of how connections are formed by learners, the importance of technology's role, and what is transferred between learners in a digitally mediated learning environment (Dunaway, 2011). According to Dunaway, the principles of connectivism are influenced by the early theories of Downes' connective knowledge and Vygotsky's social constructivism. The primary tenets of connectivism theory are

- Learning requires a diversity of opinions.
- Learning is a process of connecting nodes or communities of learners.
- Learning may be mediated by non-human appliances.
- The capacity to know more is more important than what is currently known.
- Nurturing connections is a necessary part of the learning process.
- Visualizing connections is a core skill.
- Having up-to-date knowledge is the goal.
- Deciding what to learn is key to keep up with a shifting reality (Siemens, 2005).

Although the connectivism theory has relevance to all levels of education, the focus of this study will be its relevance to higher education. Due to this study's focus on the online classroom environment, the relevance of this theory is narrowed further to the digitally- mediated or online learning environments.

Further, connectivism theory states that the online classroom might be enhanced with Web 2.0 technologies that provide learners with spaces to communicate, connect with others, and create new content (Dunaway, 2011). Instructional design of these enhanced online classrooms could promote the development of personal learning networks which, according to connectivism theory, will strengthen student learning by supporting connections to nodes and communities of learning. In other words, the current knowledge economy and students demand that online course design evolve from a delivery system of knowledge to a constructivist activity where learners engage in building knowledge through peer-to-peer interaction and original content creation (Siemens, 2005).

*Figure 1: Theoretical Framework for Study (prepared by researcher)*



Many of the enhancements necessary to receive the Cowboy Quality (CQ) certification are concerned with the principles of CoI Theory. For instance, the concept of social presence which the interactions of learners in a trusting environment is addressed in how a CQ certified course might include numerous opportunities for instructor-student and student-student interaction via facilitated discussions. Another CQ enhancement is the inclusion of a help desk and an online OSU-OKC Student Orientation link, as well as high contrast font and background colors to assist students who are visually challenged. These enhancements will improve a learner's ability to easily connect with the course material which a key component of cognitive presence and one of the constructs CoI Theory. In addition, clear and concise navigation tools could be employed in a CQ online course to support the student with the critical goal of maintaining up-to-date knowledge. Finally, CoI Theory advocates for an active teacher presence. This is especially important in an online class that does not have the instructor physically present. The CQ course will address this by providing opportunities for instructor-developed self-assessments, such as ungraded quizzes and learning games and activities. Recent studies have explored interrelationships between the CoI framework constructs (Shea & Bidjerano, 2010; Wei et al., 2012). For instance, the Wei et al. study found that teaching presence had a positive effect on social presence and indirectly supported higher cognitive presence in online courses.

There is a strong link between CoI theory and connectivism theory. Both of these theories will inform the researcher's Cowboy Quality Rubric (CQR) categories (i.e., independent variable) as well as the three CoI constructs (i.e., dependent variables). These theories are especially tailored to the digitally-mediated environment, which is the

foundation of this research. Further, these theories will shed light on the relevance of the categories contained in the CQR. Connectivism theory focuses on the importance of creation of knowledge and learning through connections between instructors, learners, and the content of the course - the three constructs of CoI. Essentially, connectivism theory is simply the researcher's justification for believing that Web 2.0 enhancements (graded using the CQR) might promote the overall level of CoI.

Both Garrison's (2000) CoI theoretical framework and Siemen's connectivism theory (2005) were utilized as a guide to provide a social constructivist perspective to understand the dynamics of the online learning experience. This study explored relationships between enhanced online classrooms and perceived levels of all of the CoI constructs (Shea & Bidjerano, 2010). Teaching presence in an online classroom is foundational. It was established that a strong teaching presence influences cognitive presence positively and social presence indirectly (Shea & Bidjerano, 2010). This construct is defined as the design, facilitation, and guidance provided by the instructor in both social and cognitive progress (Skramstad et al., 2012).

The second construct of CoI is social presence defined as having participants communicate in a trusting environment and develop interpersonal relationships (Garrison et al., 2010). A key principle in connectivism theory is that connections to other learners are vital for learning in the digital age since other learners' knowledge is a surrogate for all knowledge (Siemens, 2005). In addition, the connectivism theory requires that there exist a diversity of opinions amongst the community of learners.

For these principles to exist, it is important that student participate in online group discussions where they can create and view comments on topics relevant to the class

(Dunaway, 2011). A well-designed and monitored forum will not only increase knowledge sharing but increase trust between the participants. A CQ online classroom is consistent with Constructivism Theory since it contains authentic tasks based on real-world topics where student collaborate and communicate to share and discuss ideas (Reese, 2015). The essence of an information literate student who is ready for the knowledge economy is one who participates in online group discussions that contain a diversity of opinions.

Cognitive presence, the third construct of COI, is defined as a student's ability to solve the problem or task, explore information and knowledge, integrate ideas, and test solutions (Garrison et al., 2010). Connectivism theory supports this concept in several ways. Siemens (2005) defined learning as actionable knowledge that can reside outside individuals usually within a database or organization. More importantly, it is vital for learners to increase their consumption of knowledge since it enhances their ability to decipher valuable information from useless information (Reese, 2015). Central to learning based on connectivism theory is combining the ideas to construct new ideas and to recognize patterns (Dunaway, 2011). Finally, posting videos and PowerPoint slides that are relevant to the course is integral to cognitive presence since it can be accessed repeatedly and on the learners' schedule (Reese, 2015).

## **Definition of Key Terms**

### *Conceptual Definitions*

#### **Communities of Practice:**

- **Community of Inquiry:** Community of Inquiry (CoI) is a theoretical framework that provides collaborative-constructivist perspective to understand online learning and consists of three constructs (Arbaugh et al., 2008):

- *Teaching presence* - The design, facilitation, and guidance provided by the instructor in both social and cognitive progress (Skramstad, Schlosser, & Orellana, 2012).
  - *Social presence* - Communication in a trusting environment that develops interpersonal relationships (Garrison et al., 2010).
  - *Cognitive presence* – The student’s ability to solve the problem or task, explore information and knowledge, integrate ideas, and test solutions (Garrison et al., 2010).
- **Community of Practice:** The participation by people in an activity system where they share understandings about what they are doing and what that means for their lives and community (Bolisani & Scarso, 2014).
  - **Knowledge Economy:** An economy based on creating, evaluating, and exchanging knowledge (BusinessDictionary.com, 2016).
  - **Nodes:** A point at which two or more devices are interconnected or two or more lines or links terminate (BusinessDictionary.com, 2016) .
  - **Online Class:** A course that is delivered online; there are no required face-to-face sessions within the course and no requirements for on-campus activity (OnlineLearningConstortium.org, 2016 ).

*Operational Definitions*

- **College Students:** Students enrolled in at least one online class offered on Oklahoma State University at Oklahoma City campus (OSU-OKC) during the timeframe of the data collection. OSU-OKC is a two-year institution with both part and fulltime students attending.

- Enhanced Online Course:** An *enhanced online course* is an online course that has received a *Cowboy Quality* (CQ) distinction. The purpose of these online enhancements are to assist the student to connect with the course, their peers, and the instructor in a way that supports learning. To receive this distinction, the online course must pass Section 1 and receive a score of 90% or higher on Sections 2 – 5 (0 – needs improvement, 1 – meets requirements, 2 – OSU-OKC quality) on the *Cowboy Quality Online Course Evaluation* (CQR, see Appendix A).
- Types of Course Designations:** Below is a table of the types of courses offered at OSU-OKC and their section designations indicating the type of course that is being offered (i.e., on-campus, hybrid, online, 16-week or 8-week course):

| <b>Type of Course offered at OSU-OKC</b>   | <b>Section identifier</b> |
|--|---------------------------|
| <b>Online Courses 16 weeks in duration</b> | <b>N##</b>                |
| Hybrid Courses 16 weeks in duration        | H##                       |
| On-Campus Courses 16 weeks: Daytime        | 1##                       |
| On-Campus Courses 16 weeks: Night          | 5##                       |
| Online Courses 8 weeks in duration         | N72                       |
| On-Campus Courses 8 weeks in duration      | 172                       |
| Special Offering (Outreach)                | Z##                       |

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The focus of the study will be only the N## sections, eliminating online courses taught by the researcher.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

The purpose of the literature review is to explore topics related to the primary tenets of this study. The first section will discuss the history of education from the perspective of the various educational philosophies. Next, literature explaining the effect of the knowledge economy on the learner will be investigated. The researcher will then explore the evolution of course design for online learning platforms from early conferencing systems to the interactive Web 2.0 tools used today (Mason, 2000). In this section, the challenges as well as the positive attributes of the online learning platform will be explored. Literature will then be discussed on Quality Matters and its connection to the CQ initiative at OSU-OKC. The two next sections will explore CoI framework and its three constructs of teaching, social, and cognitive presence as well as connectivism theory. In these sections, the connection of the CoI constructs to learning as well as student performance will also be discussed. To this end, the researcher will explore the literature to understand the vital role of the teacher in an online course. Both pre-class course design as well as teacher interaction and facilitation after the start of the course will be researched. Social presence in the online classroom will then be discussed from the perspective of the connectivism learning theory and its effect on learning and student performance. Cognitive presence, the third construct of CoI theory, will be



examined from the perspective of the online learner. Finally, student engagement strategies in online classrooms will be studied from the viewpoint of the teacher and the learner.

*Table 1: Relationship between CoI theory, CQR, and Connectivism theory*

*Relationship of CoI theory, CQ designation and Connectivism theory*

| Community of Inquiry theory   | Cowboy Quality Rubric  | Connectivism theory   |
|---|--|---|
| <ul style="list-style-type: none"> <li>• <i>Teaching Presence</i>-visibility and facilitation by instructor</li> </ul>    | <ul style="list-style-type: none"> <li>• Instructor bio (Section 1)</li> <li>• Faculty announcements via news items and emails (Section 4)</li> </ul>                                    | <ul style="list-style-type: none"> <li>• Deciding what to learn is key</li> <li>• Nurturing connections is a necessary part of the learning process</li> </ul>                |
| <ul style="list-style-type: none"> <li>• <i>Social Presence</i>-learners interaction in a trusting environment</li> </ul> | <ul style="list-style-type: none"> <li>• Etiquette expectations for discussions clearly stated (Section 1)</li> <li>• Facilitated discussion posts and chat rooms (Section 4)</li> </ul> | <ul style="list-style-type: none"> <li>• Learning requires a diversity of opinions</li> <li>• Learning is a process of connecting nodes or communities of learners</li> </ul> |
| <ul style="list-style-type: none"> <li>• <i>Cognitive Presence</i>-connection and understanding of content</li> </ul>     | <ul style="list-style-type: none"> <li>• Outline of class content and activities well-designed (Section 2)</li> <li>• Course content accessible for all learners (Section 5)</li> </ul>  | <ul style="list-style-type: none"> <li>• The capacity to know more is key</li> <li>• Up-to-date knowledge</li> </ul>  |

### **History of Adult Education**

A brief history of adult education will provide a foundation to a better understanding of how education has evolved from a classical view that is centered on the teacher to a contemporary view of the learner as self-directed and independent. It is this contemporary view that online learning seeks to embrace.

From the time of Greek thought to the rise of modern science in the 18th century, liberal philosophy dominated the field of education. This thought reflected the view that

truth was viewed as an absolute and education was administered using specific disciplines in an authoritative way (Elias & Merriam, 1995). Beginning in the 19th century, the worldview began to evolve to one of change and relativity. Towards the end of the 19th and the beginning of the 20th century, John Dewey introduced the idea of *progressive* adult education. Much of his views were shaped by the etymology of the education. He points out in his seminal book *Democracy and Education* (Dewey, 1916, p. 10) that education means “a process of leading or bringing up.” The focus of progressivism is to never educate directly, but to teach by experiencing the real world. His philosophy can best be summed his famous saying that “...education means the enterprise of supplying the conditions which insure growth, or adequacy of life...” (Dewey, 1916, p. 51). The response to this movement was the development in 1881 of the first technical school, New York Trade School, to offer specific training of trades founded by Colonel Richard Tylden Auchtmuty (Paulter, 1999). In his pivotal work, on adult learning theory, Malcolm Knowles refined the needs and attributes of the adult learner. He suggests that the role of the teacher should be of a helper, guide, encourager, consultant, and resource.

A component of progressivism, the emphasis on the learner, spawned the next evolution of education in the 1930's. At this time, Carl Rogers studied progressive thought at Columbia University. He began to focus on the idea of human growth of the learner for both cognitive and affective domains. He developed the new philosophy of humanism that upholds the freedom and dignity of the individual person for the purpose of reaching full potential or self-actualization (Elias & Merriam, 1995). In terms of the

classroom, activities such as problem-posing, discovery, and self-directed learning are the norm.

Psychologist John B. Watson and B.F. Skinner founded the philosophy of behaviorism. They believed that learning can be understood through observation of behavior of learners. The thought was by Skinner that behavior and learning is strengthened consequences. His belief is that positive reinforcement would add the desired behavior while punishment would extinguish undesired behavior (Elias & Merriam, 1995). This philosophy is still popular in schools at all age levels where instructional objectives are embedded in lesson plans and measured extensively through state and federal mandated assessments.

Other recent movements in adult education based on radical and analytical philosophies. In the early 1970's, Paulo Freire felt a primary goal of education is to bring about social, political, and economic change. He felt that teachers should help their students by means of praxis to reflect and act upon the world in order to transform it. He makes a strong case that oppressors can maintain status quo as long as they divide, manipulate, and invade their culture. Freire points out that oppressors manipulate the oppressed into mindless thinking because "people join to their presence in the historical process critical thinking about that process, the threat of their emergence materializes in revolution" (Freire, 1993, p. 130). His approach to education offers an alternative to a banking concept or the information pouring approach that is the norm in many classrooms. Turning away from this banking approach in classroom offers disadvantaged students the ability to raise their level of conscientiousness, which is vital to break the

cycle of oppression for students (Freire, 1993). Analytical philosophy espouses that education can best take place through careful analysis and argumentation of the facts. This approach to learning requires students to take a reductive approach by breaking down all propositions to their smallest components. Analytical practitioners ask three types of questions: questions of facts, questions of value, and questions of concept. They feel that class discussion solely based educationally significant topics are the most appropriate in the classroom (Elias & Merriam, 1995).

### **The Knowledge Economy and its Effect on the Learner**

The United States and many other industrialized nations have been transformed over the last three centuries from agrarian or resource providers to an economy that is primarily based on providing value-added services and intellectual property creation. Therefore, the types of skills required by today's employers have morphed from physical to mental abilities. Beginning in the early 20<sup>th</sup> century, well-known economists Frederich von Hayek and Joseph A. Schumpeter commented that knowledge is fluid and cannot be treated as fixed (Senge, 1990). Hayek posited that the role of market mechanisms is to communicate information so that individual knowledge can be mobilized socially. Schumpeter went on to say that "the emergence of new products, production methods, markets, and organizations resulted from new 'combinations' of knowledge" (Elias & Merriam, 1995, p. 34). In 1960 Peter Drucker coined the term "knowledge worker" to emphasize the transformation of our society whose basic resource is no longer capital or natural resources, but knowledge. He goes on to say that firms must continually abandon knowledge that is obsolete and learn to create new products and services through innovation by raising the productivity of knowledge (Elias & Merriam, 1995).

## **History of Online Course Design**

The use of the internet is a relatively new approach to the delivering education to learners. One of the earliest online platforms was a small two-course pilot test in 1986 at the University of Guelph, Ontario using a combination of electronic mail and the CoSys conferencing system (Mason, 2000). Although this early attempt at an online learning environment was a quantum leap in response time for communication, as well as assignment submission, the lack of facial expressions and body language by both the instructor and students that are prevalent in on-campus classrooms were woefully lacking (Petrides, 2002). Fortunately, during the early 1990's advances in computer hardware and software and higher internet speeds were being employed by many instructors. They began to design online courses that integrated course material, contained links to other websites, and incorporated online discussion into virtual classrooms (Mason, 2000). Sound basis for these improvements was provided by Moore's transactional distance theory, which contends that educators need to provide three forms of interaction: learner-learner, learner-instructor, and learner-content to reduce the level of transactional distance (Kanuka, 2011).

These innovations brought about a new era in course design by incorporating multimedia, which along with graphics and words has led to learning outcomes greater than when they were used separately. According to Mayer (2006) people learn more deeply when the instructor includes both text and graphics as opposed to words alone. Further, Kanuka (2011) found that the highest levels of learning outcomes were achieved when the online course was well-structured, contained clearly defined student roles and responsibilities, and provoked students to confront other students' opinions. Other sound

pedagogy embedded in course design, according to Kanuka, were utilization of interesting content, use of valid assessment methods, and the highest possible quality of feedback.

As with any learning environment, the online platform has challenges. Early on there were a plethora of technical problems of students logging in from home, however, the use of university support centers mitigated these issues (Mason, 2000). Much more problematic than the technical challenges were the high social barriers inherent in the early online classrooms. A delayed response time from the instructor presents a barrier in directly accessing the instructor for an immediate need. Also, lack of facial expressions and body language may lead to misunderstandings and misinterpretations (Petrides, 2002). Another downside to this environment is that it is easy for students to procrastinate unless the instructor has a detailed schedule of due dates.

In spite of such challenges, the online setting allows for students to engage in more meaningful cognitive thinking due to the written nature of the communications (Oud, 2009). Educators who have an ultimate goal of improving student learning can effectively utilize the online environment to better serve adult learners who have the attributes of self-directedness and the motivation to control their own learning environment (Senge, 1990). With wise use of interactive classroom technology coupled with a well-designed social media platform, communities of practice will thrive (Cross, 2007). Also, the quality of education is based on the clarity of the goals and effective use of sound pedagogy designed to meet those goals. Petrides (2002) states that there is a need for committed learners and instructors as well as well-designed support structures, stating that the quality of the course content and design and the nature of the interactions

with the instructor is a more important determinant of learning than whether the course is taught face-to-face, online, or some blend of both.

Fortunately, there are many instructional support tools that, when used properly, can both motivate students to succeed and create a community within an online setting. A study by Linstrom-Hazel and West-Frasier (2004) found that after each learning activity, a faculty-guided learning tutorial would help students think about their performance and help them retain information. Although the simulations are in a live setting, this type of support can easily be adapted in an online setting. Technology exists today to stream instructor-produced video and connect it to a discussion group for the use of student-created postings. Further alleviating student stress levels, the instructor should make it clear that they will give support during the entire problem-solving process. They generally felt comfortable using and thus create a collaborative environment. Even with this support, students in this study still need synchronous communication with co-students and the instructor with tools such as Skype, text, or phone. Further, instant feedback from instructors and other students was especially helpful during times of simulation decision making (Yun-Jo, 2010).

Other ways to enhance reflective critical thinking and team accountability are online student discussion and maintaining online journals. Discussion in an online environment has been shown to be better for this type of reflection than oral discussion due to its greater permanence (Kanuka, 2011). Also, students generally take more time to formulate a posting than they do in a live setting. In addition, responses to a co-student are given much more thought in an online discussion board (Keengwe, Boateng, & Diteeyont, 2013). Some instructors require teams to submit a “decision record”, which

details how members worked interdependently on the simulation. This has proven to have promising results to ensure that members are accountable for their efforts towards team success (Jenner, Zhao, & Foote, 2010).

### **Community of Inquiry**

Shea and Bidjerano (2010) used the CoI framework to examine relationships between a learner's self-efficacy and the quality of learning in virtual environments. These researchers found that strong teaching presence and positive social presence support student self-efficacy. This is especially true when students do not have the traditional classroom structure found in on-campus classes. Other important work was completed by Arbaugh et al. (2008) in constructing a quantitative instrument to measure the perceived level of CoI. The outcome of their research was the creation of a 34-item questionnaire instrument that measures the three constructs of CoI that can be used to conduct large-scale quantitative studies.

Community of inquiry theory urges instructors to change their approach from providing knowledge to creating an experience in the online classroom that promotes autonomy and a community of students (Reese, 2015). Instructors oftentimes spend 50 hours or more every year at their respective institutions to hone their technological skills in discovering ways to use their existing learning management software to create a learning environment that is both interactive and inviting. Further enhancements to teaching presence are teaching online students how to construct knowledge by creating discussion forums, as well as providing students with corrective feedback, encouragement, and motivation. Under this new paradigm, the instructor's role is



focused on influencing and shaping the network by creating content that continually encourages students to improve their critical thinking skills.

Studies measuring the use of various tools have been done in the past. The role of the teacher is especially critical when the primary teaching tool is a wiki that is used for solving ill-structured problems (Yun-Jo, 2010). Participants in the Yun-Jo study required not only asynchronous discussion boards, but also reported a need for synchronous tools such as Skype, text, or phone conversations. This need for real-time communication may lead one to believe that it is insufficient for the instructor to simply provide information; rather, the instructor must provide it in a timely fashion that allows for instantaneous comments and feedback. Timeliness of instructor feedback is also a critical component of an instructor's role in the online classroom (Skramstad et al., 2012). In the Skramstad, et al. (2012) study, instructors were expected to provide a 24-hour or less response time to students' questions. This expectation requires the instructor to log in every day during the workweek in order to increase the level of teaching presence, which ultimately would increase the level of the other two CoI constructs, social presence and cognitive presence (Garrison et al., 2010).

According to Garrison and Akyol (2015), the CoI framework provides the key elements that are essential to study and understand shared metacognition in a learning community. The authors define metacognition as the ability to monitor and control learning to achieve success in learning as well as learning how to learn. Each of the three constructs (i.e., teaching, social, and cognitive presences) were explored by Garrison and Akyol, using the CoI framework since it encourages learners to be self-reflective and communicative. The cognitive presence element was a focus of this study in order to

better understand the shared metacognition process of both self and co-regulation.

Further, the study discovered that teaching presence encourages students to take responsibility for learning, which in turn increases metacognitive functioning because it assists in managing the inquiry process through facilitation. Finally, social presence creates a collaborative and safe environment where students participate and contribute in critical inquiry, which develops self and co-regulatory metacognition processes.

In recent years, there have been efforts to evolve the CoI theoretical framework to include the exercise of agency and control by students rather than by compliance and passivity (Shea et al., 2012). Shea et al. suggest that these outside behaviors and student traits may be a part of larger element, termed “learning presence” (Shea et al., 2012, p. 90). These authors looked at student activity in small-group debate preparation discussion groups. They found that learning presence appears to have components of forethought, monitoring, and strategy formulation, which are not the same as an instructor’s role of instructional design, facilitation of discourse, and direct instruction. In order for learning presence to flourish independent of the teacher, self- and co-regulation are necessary. A study conducted by Garrison et al. (2010) found, among 14 different courses utilizing a structural equation model, a significant direct effect of teaching presence on both social and cognitive presences. Shea et al. (2012) concluded the addition of learning presence to the CoI model represents progress that more fully explains the differences in the roles and activities of teachers and students engaging in an online classroom.

### *Role of the Teacher in Online Courses*

As mentioned earlier, the teacher plays a vital role in both the development of curriculum content, learning activities, and timelines for feedback. The facilitation and monitoring of collaboration and reflection, once the online course has begun, are also critical teacher responsibilities (Garrison et al., 2010). In his pivotal work on adult learning, Malcolm Knowles refined the needs and attributes of the adult learner. He suggests that the role of the teacher should be of a helper, guide, encourager, consultant, and resource (Knowles, 1970 as cited in Elias & Merriam, 1995).

Keengwe et al. (2013) found in their work confirmation of Knowles view of the teacher to be more of a facilitator as opposed to the central figure in the learning environment. Three studies support this role of the teacher as a facilitator. Interactions in online learning environments in the context of a class project were explored by Keengwe et al. (2013). These researchers contend that the role of the online instructor is not to directly teach course materials, but to facilitate learning and enable peer interaction to flourish. To this end, instructors and course designers might incorporate a variety of interactive tools to enhance learning activities between divergent perspectives and provide a fertile environment for knowledge-building activities. In order to explore these subjects, they first reviewed relevant literature concerning social network tools, such as wikis, Facebook, and blogs which are designed to cement online social connections. In another study, Tu and Corry (2008) suggest three significant constructs in the support of online student learning: interactivity, social context, and technology. Interactivity plays a role in motivating and stimulating the online learning with student-to-content, student-to-interface, and student-to-instructor interactions (Thompson, 2006). This researcher's

findings revealed that discussion posts were centered on the group project with negligible evidence of additional interactions between the students and the instructor.

Keengwe et al. (2013) conducted a study to explore the challenges that students and instructors face in online learning environments and the tools that influence interactions. To this end, a questionnaire was sent to online undergraduate students at a public Midwestern university. The survey data revealed that students overwhelmingly preferred the use of email to make contact with the instructors (Keengwe et al., 2013). Students revealed challenges with communication in an online environment, such as difficult and different schedules, non-responsiveness, and working with students whom they considered “strangers.” The researchers recommended implementation of online tools, such as wikis, to assist in the group projects as well as incorporating unambiguous questions in discussion forums. They concluded with several strategies to help instructors establish social presence in online learning environments, such as early personal email contact by the instructor, instructor biographical information post, understandable navigation tools, detailed syllabus, rubrics for evaluation of all assignments, resource links, groups formed based on common student interest, and a discussion forum for students to informally interact.

The importance of frequent and effective instructor involvement in the online class is vital. According to Garrison et al. (2010), evidence is growing that there is a casual relationship among each of the CoI constructs. Garrison stated that “the CoI framework suggests teaching presence directly influences the creation and sustainability of social and cognitive presence...” (2010, p.32). This relationship was confirmed utilizing a structural equation model showing that students’ perceptions of teaching

presence had a direct effect on perceptions of cognitive presence and were significantly associated with social presence. The importance of the teaching presence and its effect on social and cognitive presence was also found to exist in blended learning environments as well (Shea & Bidjerano, 2010).

One of the benefits of online learning is that it allows participants to have more control of the instruction due to its asynchronous communication. Vonderwell and Turner (2005) study of pre-service teachers found this freedom enhanced the teachers' responsibility and initiative towards learning and gave them more control as well as enabled them to use resources more effectively. The instructor's primary role in a discussion group should be to stop and address questions to the presenters or to point out fallacies in logic.

#### *Social Presence in Online Courses*

Social presence is defined as "as the ability of participants in a community of inquiry to project themselves socially and emotionally as 'real' people through the medium of communication being used" (Garrison et al., 2000, p. 94). Social presence in an online classroom is essentially the degree to which students in an online classroom react to one another as human beings, as opposed to unattached intellectual entities. The importance of having a high level of social presence in an online classroom is that it builds a trusting environment, vital for both asynchronous and synchronous interactions that are both meaningful and educative (Wei et al., 2012). In addition, according to Bandura's social cognitive theory, personal perceptions and environmental factors have profound influences on behaviors necessary for a positive student experience in an online classroom. Video technology is an effective tool to increase student trust, emotional

connectedness, and instructor social presence, all of which are critical components in increasing the level of social presence in the online classroom (Borup, West, & Graham, 2012).

Incorporating social media such as Facebook, Twitter, and LinkedIn into the online classroom involves a leap of faith by many college institutions. There is an innate mistrust of social media platforms due to recent breaches in security, which has compromised privacy. Further, social media, defined as “a set of technologies and channels targeted at forming and enabling a potentially massive community of participants to productively collaborate” (Thomas & Akdere, 2013, p. 331), is seen having a *personal* rather than *educative* value. These researchers sought to explore how to increase social presence in online classrooms using existing social media platforms. They point out how social presence is associated with an emotional sense of belonging, which will lead to building relationships in a trusting environment. A worthy cause, because making the online classroom more inviting and interactive can positively impact enrollment, retention, and completion rates (Wei et al., 2012).

Greenhow (2011) reviewed research literature, regarding the incorporation of existing social network platforms, such as Facebook and Twitter, into the online classroom. Based on her selective literature review, two themes emerged. First, social network sites can serve as supports for learning by providing an emotional outlet for school-related stress, validation of creative work, peer support, and help with school related tasks. Second, online social networking can stimulate social and civic benefits, both online and offline, which effects better educative outcomes by tapping into surplus brain function that currently exists. Greenhow argues that facilitation and nurturing of

human relationships and connections via social media has many advantages such as encouraging greater openness, accelerating information-sharing, stimulating collaborative knowledge-building, and coordination of resources and actions. In addition, this research explored how existing social networking technologies can be re-worked to produce improvements in educational attainment. It was found that students use their social networks to fulfill social learning functions, such as validation of creative work, peer support, and help with school-related tasks, within and across informal and formal learning environments. Greenhow also makes a case for social networking increasing social capital, defined as resources or benefits available to people through their social interactions that are valuable to feelings of trust, reciprocity and social cohesion (Lin, 1999). Finally, a study by Ellison et al. (2007) of primarily white, middle-class, college students points out that Facebook was associated with higher levels of *bridging* capital (weak ties that give one diverse perspectives from new information) and, to a lesser extent, *bonding* capital (strong ties from close friends). In other words, she suggests that networking through social media sites may help to reduce barriers some college students experience by forming diverse networks.

Wang and Wang (2012) looked at factors that contribute to social presence from an international learners' perspective. The researcher's findings can be used to shed light on the changing role of an instructor in the online classroom. They conducted a thorough literature review of how social presence in an online classroom determines the degree to which a person is perceived as real, thus increasing connectedness amongst their peers. To this end, the authors strongly suggests the use of discussion forums and chat rooms to achieve a high level of collaboration that is part of social constructive learning activities,

which are linked to self-efficacy (Lee, Hong, & Ling, 2002). They gathered data using a questionnaire of multiple choice and open-ended questions of 70 business students at two Chinese universities (in July 2010). The authors found that 73% of the respondents chose an asynchronous off-topic forum entitled “Virtual Café” as their favorite tool to promote a sense of online community. The majority of respondents felt this forum would be a good tool for an ice-breaking introduction early in the semester and have the added benefit of inviting students to adopt an informal tone for online posts. From the instructor’s perspective, the majority of the respondents felt that, while feedback is important to keep the discussion on the right track, a minimum intervention level is preferred. An example of this low level of intervention is teachers who do not comment on each individual post, but summarize at the end of the discussion activity. Further, the feedback should address students by name, and be detailed, specific, useful, and convenient for students to review (Wang & Wang, 2012).

### *Cognitive Presence in Online Courses*

Content is basic to all learning, but it is the interactions that the learners have with co-students and instructors that deepen their understanding of course material (Kanuka, 2011). In Kanuka’s study, it was determined that the highest levels of cognitive presence were achieved by utilizing WebQuest (i.e., search for new information to justify plausible solutions to a case study) and debate activities. The author concluded that these activities had the advantage of being well-structured, clearly defined roles and responsibilities, and provoked students to explicitly confront each other’s opinions. These findings suggest that online education should have multiple modalities present so



that learners have opportunities to share ideas about course content and thus think more critically about course content.

As technology evolves, there has been a rapid adoption of the use of Web 2.0 tools to present material in online classrooms. According to Mayer (2006), using words with graphics or video tends to produce more effective learning since these modalities work on different parts of memory. In addition, Mayer recommends splitting longer, more complex content into small segments to help reduce content-related memory load. Each chunk or segment should be arranged from easiest to most complex so that it focuses on a major learning objective to help students process information well. Another suggestion by Mayer is to design the activities so that they are within the capabilities of the students.

In agreement with Mayer, according to Kolb's theory of the learning process, authentic learning does not happen without some form of participation in actual experience. Therefore, it is vital that the instructor provide real-life interactive activities to support meaningful learning. Earlier, Eduard Lindeman, who was influenced by Dewey and other progressives, saw education's primary aim as developing social intelligence and a practical understanding of the world in which we live (Elias & Merriam, 1995). The experimental view of methodology was also espoused by Paul Sheats and Kenneth Benne who advocated the experimental attitude toward the work of education. Benne felt that learning should be a series of experiments to be applied to problems encountered and constructed. He advocated for adjustments in programs to account for changes in the types of problems encountered (Elias & Merriam, 1995). John

Dewey summed it up by stating that “an ounce of experience is better than a ton of theory simply because it is in experience that any theory has vital and verifiable significance” (Dewey, 1916, p. 144). He contrasted this educational philosophy with traditional education that tries to fill our heads like a scrapbook, turning students into a piece of registering apparatus. The problem Dewey had with traditional education’s approach is that we do not live in a finished world, but one that is ever-changing and requires prospective rather than retrospective thinking.

### **Quality Matters and its connection to Cowboy Quality**

The Quality Matters (QM) program was developed by the MarylandOnline not-for-profit consortium, using Maryland’s Department of Education funding over the three year period ending in 2006 (Shattuck & Colleagues, 2013). The goal of this program was to provide a tool that can be employed for peer review and improvement of online course design. From these efforts, both a rubric and a process for evaluating a wide-variety of online course were designed. As of 2013, 825 educational institutions have formally reviewed 3,998 courses and 28,756 online instructors have complete the QM professional development courses.

In 2010, a Title III grant was awarded to OSU-OKC for the purpose of improving their online course design. These efforts were driven by stagnant enrollment numbers at OSU-OKC in 2009. At this time, administrators and faculty believed that one way to improve enrollment numbers was to expand access to courses through online and hybrid courses. There was a belief that enhancing the quality of these courses would increase student engagement and ultimately enrollment. As part of these efforts, a task force of 11 administrators and faculty was created in FY2011 to help develop the Cowboy Quality

Rubric (CQR) and guide the review process. This taskforce was under the direction of the OSU-OKC VP of Academics (C. McKee, personal communication, September 16, 2016). This rubric is the primary tool used to evaluate online courses wishing to receive the CQ certification.

### **Connectivism Theory**

Siemens (2005) describes his connectivism theory as a combination of relevant elements of learning theories, social structures, and technology to create a theoretical construct for learning in the digital age. He developed this theory in response to the notion that most learning theories focus on the learning that takes place inside of individuals. Even social constructivist views promote the idea of the individual within a learning environment. Neither of these views though, addresses the learning that occurs outside of people in a digitally-mediated environment which is prevalent in the field of education.

According to Siemens (2005), the ability for the learner to recognize connections and synthesize patterns is what is needed in today's academic and workforce settings. Therefore, it is the competency to form connections rather than acquire knowledge that is most vital for success. The foundation of connectivism is that the world is constantly changing and new information is continually forming. Therefore, the learner's best asset is to distinguish between important and unimportant information. Pedagogy, according to this theory, supports learning via nodes or connections. Thus, instructional design should promote personal learning networks by utilizing collaborative Web 2.0 in the online classroom. In addition, the teacher's role shifts from one of control to influence on the shape of the network (Dunaway, 2011). This theory is also founded on the value

of individual ideas and opinions with diverse perspectives (Reese, 2015). Further, the online environment should be a bastion of student driven creation of ideas that are relevant to everyday life that engages learners in activities with the support of the instructor. Effective communication in the online classroom is essential to promote connectivism theory tenets. According to this theory, it is not important what students know as long as they have easy access to the knowledge through their individually created networks (Guder, 2016).

There is a wealth of information regarding subjects that are relevant to this study (Dunaway, 2011; Guder, 2016; Reese, 2015; Siemens, 2005). Much has been written about the history of education from a perspective that was centered around the instructor, but educational perspectives have evolved to view a learning environment centered around learners' needs is the most vital part of the process. This new perspective was due to the rapid rise of the knowledge economy that requires workers to have high-level thinking skills versus acumen-related to skills. This evolution spawned the age of online learning platforms, needed to disperse this knowledge conveniently over a diverse learner base. To better understand the delivery methods needed in the online environment, Garrison et al. (1999) developed the CoI theory. This theory is built upon the idea of three constructs; teaching presence, social presence, and cognitive presence. The theory helps to support the need for online classrooms to address teacher-to-student, student-to-student, and student-to-content interactions, critical to enhancing the learning experience that can often times be one-dimensional and isolating. Exploration of the history of Quality Matters and how it spawned the Cowboy Quality initiative at OSU-OKC was needed to understand the methods used to select the enhanced courses for this study.

Finally, connectivism theory was discussed since it provides justification for the use of Web 2.0 tools to increase levels of CoI constructs.

## **CHAPTER III**

### **METHODOLOGY**

This study was to explore the effect of enhancements of an online class, the initial investigation of this study was to understand the types of tools and methods used to enhance an online course. To this end the researcher developed two research questions. The first question was to ask what the effects of course enhancements using the Cowboy Quality Rubric on the perceived level of Community of Inquiry (CoI). The second question was to explore the effects that class enrollment size in online courses had on the perceived level of CoI. The researcher requested instructors from both enhanced (CQ certified) and non-enhanced to post a link to a questionnaire based on a preexisting instrument that measures the level of perceived CoI. Both MANOVA and Pearson r Correlation statistical analysis was used to explore statistically significant differences in the two groups.

#### **Context of Study**

This study was conducted at the OSU-OKC campus. OSU-OKC is primarily a two-year higher education institution that offers a variety of undergraduate degree programs to a diverse population of approximately 6,000 students (Oklahoma State University OKC, 2014). Further, OSU-OKC is an inner city two-year public college and

has a substantially high minority student population. This population is consistent with the researcher's degree at Oklahoma State University specializing in Workforce and Adult Education (formally Occupational Education), which is focused on the adult population. The data for this study was gathered during spring 2016 semester. The sample population was online students over the age of 18 who are enrolled in at least one 16-week class. The CQR was developed by a team at OSU-OKC using the Quality Matters (Shattuck & Colleagues, 2013) rubric as a guide. Heretofore, this process has been funded by a nearly \$2 million five-year Title III grant beginning on October 2011. Faculty and staff evaluate the quality of only those online courses that an OSU-OKC instructor requests CQ certification. The evaluators only employ the CQR to determine if the online course will receive the CQ certification and thus classified as "enhanced" per this study.

### **Research Design**

Designs for group experimental research include true experimental designs, factorial designs, pre-experimental designs, and quasi-experimental designs. Quasi-experimental research design was chosen because subjects were enrolled in different course sections, and it was not possible to randomly assign subjects to groups (Gay, Mills, & Airasian, 2014). Every effort was made to include groups that were equivalent as possible.

The nature of the research questions drives the design of any study. Justification for this quasi-experimental approach was driven by the research questions that seek to discover effects between variables rather than gaining an understanding of how

individual participants construct and interpret phenomena. The researcher desired to test several hypotheses with little interaction with the study groups (Gay et al., 2014).

Institutional Review Board (IRB) approval was obtained through Oklahoma State University Stillwater (supported by a letter from the VP of Academics at OSU-OKC) to conduct the necessary research, and all guidelines for the IRB were followed by the researcher. This researcher met with the OSU-OKC Vice President of Academics in December 2015 and was assured that no local site IRB approval was necessary for conducting this study at the OSU-OKC campus. The OSU-OKC Vice President of Academics provided a letter to this effect to be kept with the researcher's records. This study employed a *cluster random* sampling method to select both the non-enhanced and enhanced class sections. Cluster sampling techniques are advantageous for educational researchers, and for this study, since it employs selection of intact classrooms rather than individuals (Gay et al., 2014). For purposes of this study, the researcher randomly selected 40 online classrooms and then contacted the instructors of record to gain permission to provide a questionnaire link that was available to their students (see Appendix C). Any classes taught by this researcher were excluded prior to sampling selection. Data were analyzed using a *One-Way MANOVA* as well as Pearson *r* correlation statistical techniques.

## **Population and Sample**

### *Population*

The population consisted of undergraduate college students over the age of 18 years old of any gender enrolled in at least one completely online class (no face-to-face class meeting) at the OSU-OKC campus. OSU-OKC is primarily a two-year higher



education institution that offers a variety of undergraduate degree programs to a diverse population of approximately 6,000 students (Oklahoma State University OKC, 2014). Further, OSU-OKC is an inner city two-year public college and has a substantially high minority student population. This population is consistent with the researcher's degree at Oklahoma State University specializing in Workforce and Adult Education (formally Occupational Education), which is focused on the adult population.

### *Sample*

This study employed a cluster random sampling method to select both the non-enhanced (NCQC) and enhanced (CQC) class sections. The sample consisted of freshman and sophomore students over the age of 18 years old, all ethnicities, and levels of online experience who were enrolled in 16-week semester enhanced or non-enhanced completely online classrooms at OSU-OKC during the time the questionnaire was administered. At the institution where the study was conducted, OSU-OKC, the normal semester length is 16-weeks in duration. The desired sample size was  $n = 130$  for each type of online class (i.e., enhanced and non-enhanced) for a total sample size of  $n = 260$ . This desired sample size was chosen by the researcher based on achieving a representative sample which may be generalizable to the target population (Fraenkel, Wallen, & Hyun, 2012). Students not included in the study were those who dropped the class prior to administration of the questionnaire and those enrolled in either hybrid (online with required face-to-face class meetings; H## section designation) or on-campus classes (1##, 5##, or Z## section designations). Online classes that are designated as 8-week classes (N72 or 172) were excluded from this sample.

For the purposes of this study, online sections that were 16-weeks in duration and taught during the time of the data gathering were eligible for inclusion in this study. At no time did the researcher survey instructors at OSU-OKC. For purposes of this study and in the interest of brevity, any enhanced or CQ certified courses were designated as *CQC* and any course not CQ certified were designated *NCQC*.

### **Instrumentation**

Below is a list of the study's variables and the corresponding measurement instrument:

- **Type of Online Course.** The CQR (see Appendix A) was the instrument used to measure this variable. The original CQR was developed during 2011-2012 (Version 1.0). A revision occurred during 2012-2013 (Version 2.0). For the purposes of this study the current CQR was employed (Version 3.0), dated September 27, 2013. The revisions were made to meet OSU-OKC's needs for evaluation of student performance and faculty input via questionnaires as well as to stay up-to-date with current research as the grant progressed over its five-year life (C. McKee, personal communication, September 16, 2016). Courses were classified as either CQC or NCQC. CQC online courses are online courses that have received a CQ distinction. The purpose of these online enhancements was to assist the student in connecting with the course, their peers, and the instructor in a way that supported learning. To receive the CQ distinction, the online course passed Section 1 and received a score of 90% or higher on Sections 2 through 5 on the CQR. NCQC online courses were all courses that did not meet the CQ distinction using the CQR or have

not been graded against the CQR. Each class was reviewed by a group of five fulltime and adjunct faculty who have taught classes at OSU-OKC. All instructor information was hidden from the reviewers. The review process took a maximum of two weeks.

- **Community of Inquiry.** The *level of CoI* was scored using a survey instrument consisting of 34 questions (see Appendix B) on a 5-point summated scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree (Shea & Bidjerano, 2010). The 34 questions included three constructs or primary traits; teaching presence, cognitive presence, and social presence (Akyol & Garrison, 2008). A study by Arbaugh, et al. (2008) employed factor-loadings to support these three primary traits. From this work, Arbaugh, et al. (2008) developed a quantitative questionnaire instrument that was employed for gathering numerical data.
- **Teaching presence.** The level of *teaching presence* was scored using a portion of the CoI Survey instrument consisting of 13 questions (see Appendix B) on a 5-point summated scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree (Shea & Bidjerano, 2010).
- **Social Presence.** The level of *social presence* was scored using a portion of the CoI Survey instrument consisting of 9 questions (see Appendix B) on a 5-point summated scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree (Shea & Bidjerano, 2010).
- **Cognitive Presence.** The level of *cognitive presence* was scored using a portion of the CoI Survey instrument consisting of 12 questions (see

Appendix B) on a 5-point summated scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree (Shea & Bidjerano, 2010).

- **Class Size.** Class size was measured by the average number of students enrolled in each online class during the final week that the data were gathered (planned weeks 8 through 12, actual weeks 9 through 13).

### **Validity**

The CQR was developed by a team at OSU-OKC using the Quality Matters (Shattuck & Colleagues, 2013) rubric as a guide. Faculty and staff evaluated the quality of only those online courses that an OSU-OKC instructor requests CQ certification. The evaluators only employed the CQR to determine if the online course received the CQ certification (C. McKee, personal communication, September 16, 2016).

The CoI Survey instrument was tested for construct validity using Principal Components Analysis as the instrument was administered to four institutions over the Summer of 2007 (Arbaugh et al., 2008). Further, the authors suggested that the CoI Questionnaire could be used in studies where the CoI was the predictor variable of course outcomes as well as a criterion variable to the extent that course design encouraged or inhibited the development of the three CoI constructs.

### **Reliability**

The reviewers received about two hours of training regarding how to score courses using the CQR. This training was conducted by the OSU-OKC Senior Instructional Designer. No reliability coefficients for the CQR instrument have been reported. There was no evidence of inter- or intra-rater reliability regarding the issuance of the CQ certification.

The CoI instrument was tested by Arbaugh et al. (2008) for reliability using a three-factor loading solution using SPSS. This survey instrument was administered at four institutions located in the United States and Canada in the summer of 2007. There were 287 graduate-level Education and Business majors who responded to this questionnaire. Using the study's dataset, Chronbach's Alpha yielded internal consistencies of 0.94 for Teaching Presence, 0.91 for Social Presence, and 0.95 for Cognitive Presence.

## **Procedures**

### *Type of Sampling Method*

The study employed a *cluster random* sampling method in selection of both the NCQC and CQC online class sections after exclusion of researcher-taught classes. Since both the CQC and NCQC were previously intact groups this technique had a greater chance of potentially selecting a sample that was not fully representative of the target population.

### *Procedures used in Sampling*

Randomization was employed in the selection of each of the types of online courses (i.e., CQC or NCQC) to mitigate researcher selection bias. The researcher employed the following procedures for this study:

- Obtained a list from the Director of Institutional Research and Reporting of all the online classes taught at OSU-OKC (all online classes will have a section "N##" designation as previously defined in the operational definitions of this study) for the semester that data collection was performed.

- Eliminated from the above list any online classes taught by the researcher as well as 8-week in duration online classes (N72).
- Added all NCQC online class sections at OSU-OKC with class and section numbers indicated to an Excel spreadsheet.
- Added all CQC online class sections taught at OSU-OKC with class and section numbers indicated to a different Excel spreadsheet.
- Each of these lists were randomized by assigning a randomized number, using the Excel generator, to each class section and then resorting the rows by the random number (lowest to highest).
- The researcher chose the first twenty class sections from each list that appeared on the top rows of the Excel spreadsheet for the treatment (i.e., CQC classes) and comparison (i.e., NCQC classes) groups (Salkind, 2008). The number of class sections chosen was a result of the total desired questionnaire response of 260 for both CQC and NCQC class groups. Assuming an average online class size at OSU-OKC of 20 this represented a 32.5% response rate.
- The researcher contacted the instructors from each of the lists and requested that a link to the questionnaire be added to their online class (see Appendix C). Instructors had the option of offering extra credit for participation or an alternative assignment if the student did not wish to complete the questionnaire.
- Data were collected from student responses to the CoI questionnaire over a four-week period starting in the 9th week of each 16-week class (see

Appendix D, Cover Letter to Participants). Note: originally the 8th week starting period was chosen after some discussion with the researcher's mentor (who was also an instructor of a CQ online class). It was the opinion of the mentor that students would not be able to gauge adequately an online class until they have had sufficient time to engage with their co-students as well as the instructor and the class material. In addition, beginning the survey later than the 8th week would not allow adequate time for data collection before the end of the semester. There was a one-week delay when the questionnaire was actually sent due to a delay in the IRB submission and approval.

- Reminders to complete the questionnaire were sent out to each instructor (to remind their students to complete the questionnaire) the beginning of week 10 and weekly thereafter until week 13.
- Collection of data from the CoI questionnaire was concluded the end of week 13.

#### *Desired Sample Size*

The desired sample size was at least  $n = 130$  students enrolled in NCQC (not CQ certified) and at least  $n = 130$  students enrolled in CQC (CQ certified) online classes for a total of at least  $n = 260$ .

#### *Avoidance techniques for Sample Bias*

Confounding or mediator variables may result in rejecting the null hypotheses or a Type I error. The researcher attempted to control for these extraneous variables that may threaten internal validity by incorporating sound research design limiting the data

collection time to four weeks which lessens the effects of history, mortality, and maturation (Fraenkel et al., 2012). In addition, sound cluster randomized sampling techniques were employed to lower the effects of selection bias (Gay et al., 2014). Finally, the instrument used to collect the level of perceived CoI was tested for reliability and validity using a variety of datasets in previous studies.

### **Data Analysis**

- **H1:** *One-Way MANOVA* was used. (College students who attended a CQC online course would have significantly higher level of perceived *Community of Inquiry* than those who attended a NCQC course).
- **H2:** *Pearson r Correlation test* was used. (The level of perceived CoI would be significantly different for online students based on class size).

### **Timeline for Conducting the Study**

- February 2016: Obtained IRB Approval.
- March 2016: Identified online classes and obtained instructor permissions.
- March – April 2016: Sent out questionnaires and received data utilizing Qualtrics.
- May-June 2016: Analyzed quantitative data using SPSS.
- July - October 2016: Finalized and wrote study.

### **Limitations and Assumptions of the Study**

A limitation for this study was that many instructors of the selected courses chose not to participate. The researcher had no access to the instructor's online classroom and therefore no knowledge of which instructors participated and which did not. Additionally, it was assumed that all students answered the questionnaire honestly.



Another limitation is that instructors teaching NCQC courses may have attended one or more of professional development training events that pertain to CQR enhancements, but did not go through the formal process of having their course CQ certified. Therefore, NCQC classes may have met some of the CQ certified standards, but not be officially certified and thus skewed the results of the CoI data for the comparison group.

### **Significance of the Study**

The information gained from this study can be used by course designers and instructors of online classes in a variety of subject areas. This study may assist the education profession in the design of online courses with student engagement at its core. Online courses, which have a high level of student engagement and social presences, may influence learning interaction positively, leading to increases in learning performance. Finally, it is a primary goal of all higher education stakeholders to increase retention and program completion for the students who they serve since higher levels of CoI have led to higher retention rates (Wei et al., 2012).

## CHAPTER IV

### FINDINGS

#### Overview of the Study

The purpose of this study was to determine the effects of course design as well as class size for online classes on the perceived level of CoI. The exploration of any relationships between enhancements to online courses and improvements in the perceived level of CoI were the core of this study. Instructors from randomly selected classrooms, at OSU-OKC during spring 2016 were sent a request to participate in a questionnaire containing 34 questions covering three CoI constructs (i.e., teacher, social, and cognitive presences). These instructors were asked to post the study's questionnaire link prominently on their online class homepage which directed all of their enrolled students to take the questionnaire (see Appendix C). The CQR (see Appendix A) was the instrument employed to measure the independent variable of whether the course was CQC or NCQC (i.e., enhanced or non-enhanced). The data were analyzed using a *One-Way MANOVA* as well as Pearson *r* Correlation analysis. The significance of these statistical tests were reported by the researcher in the discussions to follow.

#### *Data Collection Process*

The researcher initially randomly selected 40 intact classrooms (i.e., 20 = CQ, 20= NCQ) and then contacted the instructor of record to gain permission to provide a

questionnaire link to be located prominently on their online course homepage (see Appendix C). Any classes taught by this researcher as well as 8-week section designated (N72) were excluded prior to sampling selection. During this time one of the instructors from the CQ group notified the researcher that their course was an 8-week and not a 16-week course. According to study protocol set forth by the researcher, this course was eliminated from the study. No replacement was made due to time constraints that required data collection to begin week eight. In addition, the researcher chose not to replace this course due to the fact that the randomization process had already occurred.

Data collection was originally slated for week eight which was the week of March 14, 2016. Due to the delay in obtaining institutional IRB final forms and the fact that the week of March 14 was spring break, data collection did not occur until week nine which was the week of March 21, 2016. The 39 courses eligible to receive the questionnaire link comprised of 902 students in week 13. During this time, the researcher sent the link to the instructors of the selected courses to post to the homepage of their online class. The first completed questionnaire was 10 days later on March 31, 2016. Data collection ended on week 13 on April 24, 2016.

During the window of data collection, responses from students were received from and could be identified to each group (i.e., CQC and NCQC) for 17 of the 39 courses. Therefore, there were a total of 22 selected courses that either did not participate in this study or the questionnaire was such that it could not be identified to a specific CQC or NCQC group. These 17 courses had, as of April 28, 2016, 387 enrolled students. A total of 177 participants fully completed the questionnaire, which represented an

overall response rate of 45.7% for the 17 courses. Thirty completed questionnaires were not used for this study since the section number were not included on the questionnaire making it impossible to determine which group the participant was enrolled in (i.e., CQC or NCQC). The remaining 147 useable questionnaires consisted of 95 respondents from the CQC group and 52 respondents from the NCQC group. Pseudonyms in lieu of actual names are used to protect privacy as well as provide transparency of multiple classes taught by the same instructor.

*Table 2: Participating Classes for Study*

| <i>Course Name</i>                      | <i>Instructor<br/>(Pseudonyms)</i> | <i># of Students Enrolled as<br/>of 4/28/16</i> |
|---|------------------------------------|---|
| <b><i>NCQC Courses:</i></b>             |                                    |   |
| <b><i>BUSINESS LAW</i></b>              | Eowyn                              | 27  |
| <b><i>DESKTOP PUBLISHING II</i></b>     | Elanor                             | 6   |
| <b><i>US HIST SINCE 1865</i></b>        | Elrond                             | 29  |
| <b><i>MICROSOFT WINDOWS EXPERT</i></b>  | Gimli                              | 21  |
| <b><i>INFORMATION TECHNOLOGY CA</i></b> | Gimli                              | 8   |
| <b><i>INTRO SPEECH COMM</i></b>         | Gandalf                            | 25  |
| <b><i>CQC Courses:</i></b>              |                                    |   |
| <b><i>PRIN OF BIOLOGY</i></b>           | Sam                                | 26  |
| <b><i>PRIN OF BIOLOGY</i></b>           | Sam                                | 23  |
| <b><i>COMP CONCEPTS/APPS-INCLUD</i></b> | Saruman                            | 22  |
| <b><i>COMP CONCEPTS/APPS-INCLUD</i></b> | Saruman                            | 23  |
| <b><i>ENGLISH COMP II</i></b>           | Bilbo                              | 25  |
| <b><i>ENGLISH COMP II</i></b>           | Bilbo                              | 21  |
| <b><i>US HIST SINCE 1865</i></b>        | Galadriel                          | 27  |
| <b><i>BASIC HUMN NUTRITION</i></b>      | Rosie                              | 24  |
| <b><i>BASIC HUMN NUTRITION</i></b>      | Rosie                              | 25  |
| <b><i>INTRODUCTION TO PHARMACOL</i></b> | Celeborn                           | 25  |
| <b><i>INTRO LAW ENFORCEMENT</i></b>     | Legolas                            | 30  |

*Data Storage Security*

The records obtained for this study were kept private and secure. Any written results only discussed group findings and did not include information that would identify

the individual participants. Research records were stored securely and only researchers and individuals responsible for research oversight had access to the records. Data were stored on the researcher's personal laptop and was password protected and the laptop was used only by the researcher. The data were backed up on the researcher's thumb drive, which was encrypted and in the possession of the researcher at all times. It is possible that the consent process and data collection could be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in this research study. The questionnaire results were collected online via Qualtrics (Version 2015) site which was password protected. The password was known only to the researcher and Qualtrics support personnel.

#### *Data Analysis*

Data were analyzed using *One-Way MANOVA* and Pearson *r* Correlation statistical techniques. *One-Way MANOVA* analysis was used for analysis of H1 (RQ1) to determine any statistically significant differences ( $F_{(3, 143)} = \text{obtained value}, p < .05$ ) between perceived levels of each of the three CoI constructs and the course design (i.e., CQC or NCQC). Obtained values were then compared to critical values using tables found in Salkind (2008) statistics textbook.

Data for H2 and RQ2 were analyzed using Pearson *r* Correlation coefficients. Data regarding class size for the 17 participating courses were analyzed against the average scores for teaching presence, social presence, and cognitive presence. Relationships between class size and perceived CoI questionnaire scores were determined using a Pearson *r* Correlation coefficient for the significance ( $r_{(15)} = \text{obtained value}, p <$

.05). Obtained values were then compared to the critical values using the tables found in Salkind's (2008) statistics textbook.

*Descriptive Statistics for Sample Population*

Demographic data for the 147 group-identifiable respondents was described; which excluded the 30 completed questionnaires that could not be identified to one group or the other (i.e., CQC and NCQC). The age group with the most responses was 18 to 25 years, followed by 26 to 34 years, 35 to 54 years, 55 to 64, and 65 and over (see Table 2). Due to requirements of the IRB, no student was allowed to participate in the study if they were under the age of 18. There were a greater number of female versus male respondents. The same held true for the number of fulltime students versus part time students.

*Table 3: Demographics of Study Participants*

|                               | <i>Number (n=147)</i> | <i>Percent of Total</i> |
|-------------------------------|-----------------------|-------------------------|
| <i>Age of Respondents:</i>    |                       |                         |
| <i>18-25 (3)</i>              | 68                    | 46.3%                   |
| <i>26-34 (4)</i>              | 44                    | 29.9%                   |
| <i>35-54 (5)</i>              | 30                    | 20.4%                   |
| <i>55-64 (6)</i>              | 4                     | 2.7%                    |
| <i>65 or over (7)</i>         | 1                     | 0.7%                    |
| <i>Gender of Respondents:</i> |                       |                         |
| <i>Male (1)</i>               | 65                    | 44.2%                   |
| <i>Female (2)</i>             | 82                    | 55.8%                   |
| <i>Status of Respondents:</i> |                       |                         |
| <i>Fulltime (1)</i>           | 84                    | 57.1%                   |
| <i>Part time (2)</i>          | 63                    | 42.9%                   |

**Research Questions**

*Research Question #1: What effect does enhanced online course design have on the perceived level of Community of Inquiry among college students?*

The concept and thus the measurement of perceived Community of Inquiry has three constructs; teaching presence, social presence, and cognitive presence. Further, each of these constructs are measured by the CoI questionnaire tool with between 9 and 13 individual questions (see Appendix B). Results of the 147 questionnaire responses were arranged by each of the three CoI constructs with average scores (denoted as *M*) and standard deviations (denoted as *SD*) noted. In addition, *One-Way MANOVA* obtained values will be discussed as well, and whether or not they exceed the critical value for the CoI constructs. In addition, the homogeneity of variance for each of the groups using Lavene’s test of equality will be reported and discussed. Finally, average scores by courses will be discussed if they deviate significantly from their groups (i.e., CQC and NCQC) overall scores.

*Table 4: Descriptive Statistics for RQ1*

| <i>Group</i>       | <i>n =</i> | <i>M of Teaching Pres.</i> | <i>SD Teaching Pres.</i> | <i>M of Social Pres.</i> | <i>SD Social Pres.</i> | <i>M of Cognitive Pres.</i> | <i>SD Cognitive Pres.</i> |
|--------------------|------------|----------------------------|--------------------------|--------------------------|------------------------|-----------------------------|---------------------------|
| <i>NCQC Course</i> | 52         | 4.36                       | 0.78                     | 3.81                     | 0.87                   | 4.08                        | 0.66                      |
| <i>CQC Course</i>  | 95         | 4.25                       | 0.80                     | 3.60                     | 0.73                   | 4.01                        | 0.66                      |
| <i>Overall</i>     | 147        | 4.29                       | 0.79                     | 3.67                     | 0.79                   | 4.03                        | 0.66                      |

Descriptive Statistics for RQ1

The teaching presence construct is defined as the design, facilitation, and guidance provided by the instructor in both social and cognitive progress (Skramstad et al., 2012). Both the CQC and the NCQC groups scored very close to each other on average for the teaching presence construct. The NCQC group averaged a score of 4.36

out 5.0 for teaching presence with a *SD* of .78. The CQC group actually had a score that was less than the CQC group ( $M = 4.29$ ,  $SD = .80$ ). Overall, teaching presence score was 4.29 out of 5.0 and a *SD* of .79. Individual course and section differences from the mean score for this construct were Information Technology ( $M = 4.65$ ,  $n = 6$ ), English Composition II ( $M = 4.69$ ,  $n = 5$ ), and U.S. History Since 1865 ( $M = 3.80$ ,  $n = 8$ ). The first course was NCQC while the last two courses were from the CQC group. These differences based on course subject warrant further exploration and will be discussed in the last section of this study.

Social presence is defined as having participants communicate in a trusting environment and develop interpersonal relationships (Garrison et al., 2010). The NCQC group had an average score of 3.81 out of 5.0 with a *SD* of .87. The CQC group had a score that was lower at 3.60 out of 5.0 with a *SD* of .73. There were only two courses that had an average social presence score significantly different from their groups' averages. Introduction to Speech Communications (NCQC group) had a social presence score of 4.35 out of 5.0 ( $n = 8$ ) and English Composition II (CQC group) had a score of 4.51 out of 5.0 ( $n = 5$ ).

The cognitive presence construct of CoI, is defined as student's ability to solve the problem or task, explore information and knowledge, integrate ideas, and test solutions (Garrison et al., 2010). There were also very little differences in the means of the NCQC and CQC group scores for this construct. The NCQC group averaged 4.08 out of 5 and a *SD* of .66 while the CQC group had an average score of 4.01 and a *SD* of .66. There was only one outlier for this construct and it was from the CQC group. English



Composition II scored a 4.47 out of 5 average ( $n = 5$ ). This particular class was the only one from either group that had scores significantly different for all three CoI constructs.

To test for homogeneity of variance CoI construct scores of the two groups (i.e., CQC and NCGC), a Lavene's test was performed. For average teaching presence and  $F_{(1, 145)} = .435$ ,  $p = .511$ , average social presence and  $F_{(1, 145)} = .106$ ,  $p = .745$  and for average social presence  $F_{(1, 145)} = .088$ ,  $p = .767$  values were obtained. The null hypothesis was therefore accepted ( $p > .05$ ) that the error variance of the dependent variable are equal across all three CoI constructs. Therefore, a parametric statistical test was used to analyze the data for RQ and H1.

#### One-Way MANOVA Results

The results of the One-Way MANOVA statistical test indicated that there was not a statistically significant to reject the null hypothesis. The results produced a score of  $F_{(3, 143)} = .924$ ,  $p = .431$ . This obtained value was far below the critical F value of 2.61 (DF 3, 143) per the tables found in Salkind (2008) textbook. Therefore the study failed to reject the null hypothesis that college students attending an enhanced online course will *not have* a significantly higher level of perceived Community of Inquiry (CoI) than those who attend a non-enhanced course.

*Research Question #2: What effect does class size have on the perceived level of Community of Inquiry among online college students?*

The second research question results yielded some interesting correlations between each of the three CoI constructs and class size both overall and for each of the groups (i.e., NCQC and CQC). The data will be presented as to the Pearson  $r$  Correlation scores between class size and each of the CoI constructs to see an effect in the perceived level of these constructs (i.e., teaching, social, and cognitive presences). The absolute

size of the Pearson  $r$  Correlation Coefficient will be compared to the Critical Values needed for the rejection of a null hypothesis found in (Salkind, 2008) tables ( $r_{(15)}, .4821, p < .05$ ). The Pearson  $r$  Correlation values and the decision to reject or accept the null hypothesis was found in the figure below:

Table 5: Pearson  $r$  Correlations between CoI scores and Class Size

|                    | <b>N =</b> | <b>AVG. TEACHING PRES. R =</b> | <b>REJECT NULL HYPOTH. (Y/N)</b> | <b>AVG. SOCIAL PRES. R =</b> | <b>REJECT NULL HYPOTH. (Y/N)</b> | <b>AVG. COGNIT. PRES. R =</b> | <b>REJECT NULL HYPOTH. (Y/N)</b> |
|--------------------|------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|-------------------------------|----------------------------------|
| <b>NCQC COURSE</b> | 6          | -0.80                          | Y                                | 0.66                         | Y                                | -0.42                         | N                                |
| <b>CQC COURSE</b>  | 11         | -0.35                          | N                                | -0.13                        | N                                | -0.19                         | N                                |
| <b>OVERALL</b>     | 17         | -0.54                          | Y                                | 0.30                         | N                                | -0.27                         | N                                |

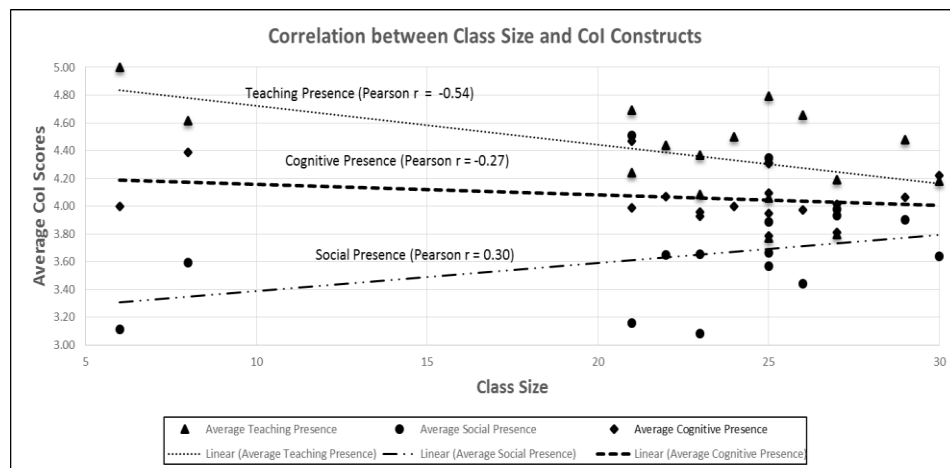
#### Pearson $r$ Correlation Results

Overall, there was a moderately strong *negative* correlation of -0.54 ( $n = 17$ ) between class size and the average score for the teaching presence CoI construct. However, the critical value of .4821 ( $r_{(15)}, p < .05$ ) was exceeded only by the NCQC group of courses which had a Pearson  $r$  Correlation of -0.80 (number of classes  $n = 6$ ). The critical value was not reached by the CQC course which had a Pearson  $r$  Correlation of only -0.35 ( $n = 11$ ). Therefore, the null hypothesis that the level of perceived Community of Inquiry will *not* be significantly different for online students based on the class size was rejected for only the NCQC group of courses. The results suggest that as the number of enrollments increase in NCQC online classes, the level of perceived teaching presence declines.

The NCQC group of courses had a *positive* Pearson  $r$  correlation between class size and social presence average questionnaire scores. This group of course had a 0.66 Pearson  $r$  correlation score which easily exceeded the critical value of .4821 ( $r(15), p < .05$ ) needed to reject the null hypothesis that the level of perceived Community of Inquiry will *not* be significantly different for online students based on the class size. This was not true overall ( $r = 0.30$ ) or for the CQC group of courses ( $r = -0.13$ ). These results suggest as the number of enrolled students increases, the level of perceived social presence *increases* as well for the NCQC group of online courses ( $n = 6$ ).

Neither the NCQC nor the CQC group of online courses exceeded the critical value of .4821 ( $r(15), p < .05$ ) needed to reject the null hypothesis that the level of perceived Community of Inquiry will *not* be significantly different for online students based on the class size. The Pearson  $r$  correlation value for the NCQC group was -0.42 and the CQC group was -0.19. The overall score for this construct was a Pearson  $r$  correlation value of -0.27. These results suggest that there is a slight *negative* correlation in class for both groups but not enough to reject the null hypothesis.

Figure 2: Correlation between Class Size and CoI Constructs



## Summary of Findings

For RQ1 and H1 regarding the effect CQC online course design has on the perceived level of CoI among online college students, the findings indicate that there was no evidence of statistically significant effect. The *One-Way MANOVA* score was below the critical value needed to reject the null hypothesis. Since the *One-Way MANOVA* was below the critical value differences are likely due to chance and not the fact that a course is or is not CQ certified (Gay et al., 2014). In summary, this study found that there are no statistically significant differences in the perceived level of CoI between the CQC and the NCQC classes. Worth mentioning, all of the CoI construct means were lower for the CQC classes than the comparison group of NCQC classes. However, there were some interesting data as to the second question (RQ2 and H2) regarding the effect of class size on perceived level of CoI among online college students. The critical values for rejection of the null hypothesis ( $r_{(15)}, p < .05$ ) were exceeded in three of the nine relationships. These relationships will be further discussed in this study's final chapter.

## **CHAPTER V**

### **CONCLUSION**

#### **Summary of Study**

This study was conducted to explore the effects online course design and class size has and the level of perceived CoI experienced by college students. Essentially, the researcher wanted to know if the CQ enhancements (see Appendix A) would affect the level of perceived CoI constructs (i.e., teaching presence, social presence, and cognitive presence). Additionally, the researcher questioned if there was any correlation between the number of students enrolled in a course and the CoI constructs scores. This academic interest is based on the researcher's past and current experience as a full and part time accounting and economics instructor at OSU-OKC and other higher education institutions.

The researcher has witnessed during the past several years a rapid adoption of teaching online classes that were previously taught in the classroom. The importance of this phenomenon is not solely experienced by the researcher. Colleges worldwide have seen this rapid implementation of online classrooms across all academic disciplines. Therefore, there are broader institutional and social implications to increasing CoI constructs in the online classroom. Some examples are improvements in social presence in an online environment can lead to positive teacher and student efficacy

(Wei et al., 2012). The Wei et al. study also found a strong link in these efficacies to improvements in student retention and concluded that increases in social presence through the use of existing social media platforms created an emotional sense of belonging which leads to building relationships in a trusting environment. This trust ultimately makes the online classroom more inviting. In addition, these online enhancements lead to increases in enrollment, retention, and completion rates, all worthy goals of any higher education institution.

The research design of this study was based on the quasi-experimental method. This method does not include the use of random assignment to the treatment and the control groups, rather it employs groups that were intact (Fraenkel et al., 2012). This design was employed due to the fact the CQC or CQ certified classes were formed before this study took place. One important method to control the internal validity of this study was to employ a cluster random selection of equal numbers of CQC and NCQC online courses. It was decided by the researcher to select 20 from each group for a total of 40 individual online courses taught at OSU-OKC during the spring 2016 semester. The amount of courses chosen was based on obtaining a large enough pool (approximately 1,000) students in which to survey in order to obtain 260 completed questionnaires. This sample size would be sufficient to generalize the study's findings to the larger target population of undergraduate college students over the age of 18 years old who are enrolled in at least one online class at the OSU-OKC campus.

There were two instruments used for this study. The first instrument was the CQ Rubric (see Appendix A). This rubric is used by OSU-OKC reviewers to score online

courses objectively. The scores will determine if a course qualifies for the CQ designation (i.e., CQC group) or not (i.e., NCQC group). The second instrument employed for this study was the CoI Questionnaire (see Appendix B), which was developed by Arbaugh, et al. (2008) as a way to quantify the level of three CoI constructs (i.e., teacher, social, and cognitive presences). This instrument has been used in various studies as a way to gauge student engagement in the classroom. The reliability and validity of both documents were documented in the Methodology section of this study.

Permission to use the CoI was obtained via email from the owner of this questionnaire. No permission was obtained to use the CQ Rubric since the researcher did not administer this instrument as part of the study. This instrument has been used since 2011 by trained members of the CQ OSU-OKC as a tool in the selection of CQ online course. The selection process has been guided by the campus Director of Institutional Research and Reporting under the direction of the Vice President of Academics at OSU-OKC.

To obtain a survey that could gather data electronically, the researcher transcribed the 34-question survey questions contained on the published CoI questionnaire into Qualtrics. Using factor loading it was determined that these 34 questions can be grouped in three constructs; teaching presences, social presence, and cognitive presence (Arbaugh et al., 2008).

The researcher then included the 5-point summated scale from 1 = Strongly Disagree to 5 = Strongly Agree to each of the survey questions. Emails were then sent out to each of the selected online classroom instructors (see Appendix C) asking for

permission to survey their students. Of the 40 classes from both groups, 17 participated in the study, which represents a total of 387 enrolled students. From these classes, 177 questionnaires (45.7% response rate) were completed and 147 useable questionnaires were used for data analysis. The reason that 30 questionnaires could not be used in the study was that the researcher allowed the respondent to fill in the course and section number rather than choose their specific class from a drop-down menu. This resulted in erroneous or omitted course information, which made it impossible for the researcher to assign those questionnaires to either the CQC or the NCQC group. This will be a lesson that will not be repeated for future studies conducted by this researcher.

The 5-point summated scores for the 147 questionnaires were grouped in each of CoI constructs (i.e., teaching presence, social presence, and cognitive presence). A mean was then determined for each of the constructs utilizing simple average calculations. *One-Way MANOVA* was then employed to uncover significant differences ( $DF_{(3, 143)}, p < .05$ ) in the CoI means between CQC and the NCQC groups (RQ1 and H1). A Pearson *r* Correlation Coefficient test was employed for determining significant relationships ( $df_{(15)}, p < .05$ ) between CoI means and the number of students enrolled (RQ2 and H2).

## **Findings and Implications**

*Research Question #1: What effect does enhanced online course design have on the perceived level of Community of Inquiry among college students?*

### Brief Summary of Findings

Based on these results, there were no statistically significant differences in the mean CoI construct scores for the CQC and NCQC courses. The results of this study will add to the body of knowledge in a couple of ways. The lack of significant effect of the CQ



enhancements on the three CoI constructs (i.e., teacher, social, and cognitive presence) leads to the question of the relationship of the course enhancements on overall student engagement. It is possible that the research design did not provide sufficient explanation or detail to uncover this relationship.

### Implications for Theory

The framework that informs the researcher and this study is Garrison's Community of Inquiry (CoI) theory (2000). This theory is based on the assumption that learning occurs within the Community from the interaction of three constructs of teaching presence, social presence, and cognitive presence. Further, the CoI framework suggest that most learning takes place in a social context that requires students to negotiate meaning, diagnose misconceptions, and challenge previous beliefs (Garrison et al., 2000). Garrison et al. (2000) argues that three elements are essential to achieve a high level of inquiry that can lead to a higher educational experience and better learning outcomes.

An examination of the Cowboy Quality Rubric (CQR) with the attributes of CoI theory as a guide can provide insight in to the lack of statistically significant findings for RQ1; course design and its effect on the perceived level of CoI. Understanding the effect of course enhancements addressed in each section and their congruency to the principles of CoI theory can be revealing. This relationship will help uncover if the lack of significant effects to CoI constructs are due to CQ enhancements or to possibly other extraneous variables, such as teacher facilitation, student readiness, and the subject matter of the online course.

Section 1 of the CQR is concerned with the base requirements that must be present for all CQ online courses. This section addresses issues such as posting instructor

biographical information, links for technical and student services, university approved syllabus content, as well as explaining university policies concerning email communication and academic honesty. Other mandatory items listed in Section 1 are to make sure all files are in PDF format or web viewable, minimum technical skills explained, and “netiquette” discussed. Finally, Section 1 requires that all web links function properly. The first section of the CQR contains little or no CoI attributes. What is missing from this section are tools that allow learners to connect to each other and thus increase social presence in the online course (Shea, et al., 2012). All of the measurement categories in the section of the CQR are concerned with imparting instructor and course rules information to the students. This rules-based approach is no different than what many instructors have traditionally done, including the researcher, on the first day of class. They cover the syllabus, university and class rules, how to get technical help, and the ways students and instructors will communicate. This one-way communication approach is not consistent with increasing social presence that requires two-way peer-to-peer interaction in order to nurture connections to enhance the capacity for knowledge and gain new insights. The only category that even comes close to CoI theory principles is the discussion of “netiquette.” This may have an effect on nurturing student virtual communications if and when these opportunities arise.

Section 2 of the CQR is concerned with basic course design and navigation. Design elements such as an inviting course welcome, class orientation, and a clear schedule of assignments due dates are covered in this section. Clear and easy navigation, logical modules and lessons, and good visual design are also scored. Again, this section is primarily one-way communication from the teacher to the individual student. While a

warm welcome may be a starting point for student interaction, it does not ensure that collaboration between students will take place as the course progresses. In the same way, easy navigation and clear visual design only acts as a starting point for the student to begin to construct new ideas and recognize patterns that are central to increasing cognitive presence and thus their connection to course material (Garrison et al., 2010).

Evaluation and assessment is the primary concern of Section 3 of the CQR. This section addresses whether or not the online course has learning outcomes that are contained both in the course syllabus as well as the individual learning modules. Another concern in Section 3 is that the course includes a variety of assessments and assignments such as exams, drop box items, graded discussions, writing assignments, and service learning projects. In addition, it is suggested that rubrics be available for all graded work as well as the type of assessments should be compatible with the course's learning outcomes. Finally, this section of the CQR grades the course on self-assessment such as self-reflection, ungraded quizzes, and learning games. This section of the CQR is primarily about instructor feedback for the work that the student completes for the class. This type of feedback is heavily weighted on assessing the students' ability to gather information, retain the information, and then recite it on a test, written assignment, or discussion post. Since there is an active teacher presence required for a class to score high on the CQR, this section has a strong connection to this CoI construct.

The section that is most consistent with CoI theory tenets is Section 4 of the CQR. This section grades a course on engagement and interactivity faculty-to-student as well as with their peers. Interaction is evaluated by how much the online course employs office hours, journals, and chat availability. In order to score high in Section 4, a variety

of formats could be developed to grade assignments. The CQR evaluates the course for the existence of text, graphic, audio, video, simulations, and animated presentations of material. Activities are scored on how much they support active learning. In addition, the course is scored for whether there are outside links to resources and if rationale exists for their inclusion to the course. A course that scores high in this section, particularly on interactivity through online office hours and asynchronous and synchronous chat rooms would foster autonomy and promote a community for the students. Autonomy is a vital prerequisite to CoI since evolving learners are transformed from vessels of information into independent actors that engage with others in building knowledge through self-directed connections (Reese, 2015). To a lesser extent, instructor-posted links to outside resources may nurture self-directed learning, but does not give the students opportunities to explore on their own unless the resource contains multiple links in which to explore and make new connections not provided by the instructor.

The final section, Section 5, of the CQR is concerned with the students' ability to and availability of technology. The first part of this section addresses how clear the instructor is on posting the required technology that the student needs in order to take an online class. Subsequent sections look at how fast files are downloaded, the course technologies are current as well as how well the text, video and audio files are accessible for learners with disabilities. Although these elements are important, they do not address any of the CoI principles.

The validity and relevance of CoI theory principles as they pertain to the online learning environment remains very much intact. The instrument that determined the independent variable (i.e., CQC and NCQC courses), the CQR, does not have a strong

relationship to the principles that are vital to CoI theory. The vast majority of the categories in the CQR look at traditional course design that is focused on the readability, accessibility, navigation, and general ease of use for the students. What is missing is a focus on the fostering a community of learners through a robust social presence that is built in a trusting environment. CoI theory is based on how well all three constructs of teaching, social, and cognitive presence are nurtured to encourage the development of self-directed learners that make decisions on what they learn and methods for obtaining knowledge. Thus, the primary role of the teacher is to foster the environment to assist students in this endeavor.

### Implications for Practice

According to the researcher's advisor, "research does not occur in a vacuum (Self, 2016)." Before discussing implications and recommendations for the field of online education, it is worth discussing the context in which this study took place.

Understanding the context of the data-collection phase of this study is vital to how this study informs the body of research. During spring 2016, the semester that the data were gathered, the CQ Title III grant was finishing its fifth and final year at OSU-OKC. This grant was robust in its scope and even allowed for stipend payments to be paid to instructors willing to participate in the CQ program by enhancing a class taught by them of their choosing.

Given that there was no statistically significant effect of whether the course received the CQ enhancements or not, these findings suggest that there are other variables that effect the perceived levels of CoI in an online classroom. Literature suggest effects to student engagement can be determined by factors outside the realm of course design

(Cross, 2007). Factors such as quality of the teacher, course subject, access to technology, and preparation of the student all can affect the level of student engagement in the online class.

The Wei et al., (2012) study found increasing teaching presence has a positive effect on social and cognitive presences. Possibly instructors could use technology to increase both social and cognitive presences. One solution is to employ a Web 2.0 tool known as a wiki. A wiki is a website that gives students the ability to create and edit the webpage from any location (Yun-Jo, 2010). In this way wikis can be a very effective way to create and share knowledge rather than passively receive the information from the teacher. Some common uses of wikis are brainstorming, knowledge construction, project planning, problem solving and community building. Another technological enhancement that instructors should consider is to include audio rather than textual feedback to student written assignments. Borup (2012) cited several studies that concluded students preferred audio feedback over text because of the vocal cues which CQC recall. Many of the learning management system platforms include this functionality with their drop boxes.

Given the inherent nature of online course that does not require students to meet face-to-face, there likely exists alienation and isolation among the participants (Wei et al., 2012). This phenomena can lead to a low social presence unless there are enhancements to the course design as well as active involvement by the instructor. From the view point of social cognitive theory and connectivism theory, having a high degree of social presence is a crucial element to learning quality. Bandura (2001) stressed that people learn as a result of their own experiences, but also by observation, imitation, and

modeling others. Given that there is a lack of physical and verbal interaction in an online classroom, it is suggested that the instructor should make a concerted effort to incorporate and, most importantly, employ virtual collaboration tools such as discussion boards and chat rooms. One good practice may be to set up an introduction discussion thread that begins with an “ice breaker” activity and then let the students interact without instructor involvement. This type of interaction will increase the individual student’s emotional sense as long as they feel that they are operating in a trusting environment; two elements essential to increasing social presence (Wei et al., 2012). The payoff for expending these efforts is that studies have shown significant positive effects on learning performance driven by an increase in social presence that effects learning interaction (Wei et al. 2012).

Tools are available outside the learning management system that can also increase the cognitive presence with the course material. Instructors may employ VoiceThread for their slide presentations. This tool not only allows the instructor to record their voice to each slide, but allows the students to comment with text, audio or video. In a study by Borup et al. (2012), preservice teachers in online classes were able to utilize VoiceThread in three different ways; orient students to assignments, facilitate small group peer interaction, and provide students with personalized feedback. By using this tool in these three ways it will enhance the development of all three CoI constructs. The orientation of the students to assignments increases cognitive presence while allowing for small group peer interaction increases social presence. Utilizing VoiceThread for personalized feedback will enhance the teaching presence in the online class far more than written feedback (Wei et al., 2012). Borup et al. (2012) also mentioned the use of instructor-produced YouTube videos that were posted every week to share class

announcements, instruction, assignments, and answer student questions from the previous week. This is a very effective practice from the student's perspective.

*Research Question #2: What effect does class size have on the perceived level of Community of Inquiry among college students?*

#### Brief Summary of Findings

The data regarding correlation of CoI scores and class size was a statistically significant finding. There was a strong negative correlation of -0.8 between teaching presence and class size for the CQC group and a moderate negative correlation when both groups are included. Also, there was a moderately strong positive correlation between social presence and class size for the CQC course group. Finally, there was a moderate to weak negative correlation of -0.42 between cognitive presence and class size for the non-CQC group. All of the CQC group courses showed moderate to very weak correlation between class size and all of the CoI constructs. The study found that the larger the class size, the lower the scores on perceived teaching presence and the higher the scores for perceived social and cognitive presences. Results regarding class size are consistent with CoI theory since the teacher's role is to foster an educative environment that supports social and cognitive presences (Wei et al., 2012). Study results uncovered a significant effect from increased student enrollment and the level of student engagement, as measured by the perceived level of CoI.

#### Use of Theory in this Study

The results for correlation of class size to the level can be explained with the use of CoI theory constructs. Class size clearly *negatively* affected the perceived level of teaching presence; the higher the class enrollment numbers, the lower the level of



teaching presence. According to Akyol and Garrison (2008), the instructor has the role of creating an experience in the online classroom that promotes a community of learners. This in turn will promote an environment of trust as well as an understanding of course content, both a core principle of CoI (Garrison et al., 2000). The effect of class size may make the task of the instructor more daunting due to the increased work load. Instructors responsible for classes with many students are more concerned with grading the exams and written work rather than adding video or holding online office hours.

Social presence showed a significant *positive* correlation, for only the NCQC, with class size. The larger the class, the higher the social presence. This is consistent with CoI theory since it relies on nurturing social connections amongst community of students. It is vital for participants in a community of inquiry to see themselves as “real” people even though they are communicating in a digitally-mediated environment (Garrison et al., 2000). In order to achieve this, the instructor should spend the bulk of his or her time providing tools for students so that they can collaborate. This time is simply at a premium as class sizes increase since the instructor is spending time on providing instruction and assessments.

Cognitive presence showed moderate to weak *negative* correlation with class size. The higher negative correlation was with the NCQC group. This may be that non-CQC classes do not contain many of the user-friendly content that is required for CQC or CQ courses. This result for both groups is consistent with CoI theory which states that high degrees of commitment and participation are necessary on the part of the instructor and students to achieve high levels of cognitive presence. As class sizes increase, the role of the instructor is reduced to providing content in primarily textual formats.

### Implications and Recommendations for Practice

Given the shrinking Oklahoma State budgets, there has been a trend over the last two years to increase enrollment in classrooms. This is especially true in online courses that are unencumbered by physical room size and thus lend themselves to scalability without the concurrent increase in cost. However, this study uncovered negative effects to both teaching and cognitive presence as enrollments rise. This implies that the overall learning quality and retention will decrease as a result.

### **Implications and Recommendations for Further Research**

This study focused on how course design and class size effected perceived levels of CoI of college students in an online class. Since the scope of the research was limited to course attributes and not the instructor's role in facilitating the online class, a study to look at how differences in an instructor's teaching methods may uncover relationships to perceived levels of CoI constructs. Other factors that may effect CoI levels may be the amount of training that faculty have in teaching in an online class. Investigation in the effect that a course's subject matter and the effect on CoI levels would be valuable and may effect which courses are taught online versus blended or face-to-face. More research needs to be done on the effect of a student's access to technology and readiness for taking an online class. It has been the researcher's experience that more needs to be done to educate students on the challenges of online classes. Perhaps a pretest to measure students' readiness for an online course could be effectively employed. Other factors that may warrant further investigation are number of sections taught by an instructor and the level of experience the instructor has delivering courses online.

Additionally, a study that would give the researcher direct access to the students being surveyed would enhance questionnaire completion rates. This approach would give the researcher the ability to not rely on the instructor to be the conduit for completion of the questionnaire. This methodology of relying on instructors to administer the questionnaire was chosen so that the students' identity would be hidden from the researcher. This presented a significant disadvantage for the research study. Future research could allow for direct access to the students that participate in the study provided the researcher does not teach at the institution where the study is conducted. This was not true for this study where the researcher taught many online classes.

A mixed-methods or qualitative study would be of great value. This study only looked at the data quantitatively. Structured interviews of student experiences in CQC and NCQC online courses would uncover their perspective on which enhancements added value to their learning. A study of this nature would also increase our understanding to methodologies that students prefer to communicate to their peers and instructor. In addition, qualitative tools may uncover nuances of instructor profiles as well as their level of training. It has been the researcher's experience that there are many instructors that lack both the willingness and the skill to effectively teach an online class. This additional information would add richness to the data and may uncover issues that effect the perceived level of CoI constructs.

Other questions such as their readiness and access to technology could be explored to discover ways to better prepare students to the online classroom. There are many quantitative and qualitative survey tools that will measure a students' readiness for

embarking on an online class. Questions could also be designed to assess the level of students' access to the necessary technology (i.e., internet speeds, hardware requirements, and software access) to successfully complete an online course. A study of this nature would give administrators and teachers a tool for determining if a class should be taught online and whom should deliver and facilitate the course.

Finally, the type of course and its effect to the perceived level of CoI could be very useful. This study revealed significant differences in mean scores based on the type of course offered. One example of this was the English Composition II course received high marks for all CoI constructs (teaching presence = 4.69, social presence = 4.51, and cognitive presence = 4.47). Conversely, U.S. History Since 1865 received low marks for all CoI constructs (teaching presence = 3.80, social presence = 3.93, and cognitive presence = 3.81). Both of these classes were part of the CQ or CQC group. The subject matter of the course may play a role in the perceived level of CoI constructs. This begs the question; should all content for all subjects be taught completely online?

### **Significance of Study**

Online courses are here to stay and growing at a brisk rate due to their inherent scalability, flexibility, and low cost (Greenhow, 2011). Their popularity is directly tied to the level of engagement that the student experiences. Students that take online courses that are not well-designed will find them isolating and alienating causing them to drop out of the class or at best have lower learning outcomes (Wei et al., 2012).

This study explored how course design might effect the level of CoI from the perspective of the student. Class enrollment was also investigated as to its effect on the

level of CoI experienced by students in an online classroom. There is a tension that exists to over-enroll online courses. This is due to pressure to maximize the overall enrollment numbers for the institution. Further justification is that adding students to an online class is not limited to the size of a physical classroom and due to the inherent scalability of online classes adding students does not add to the costs of providing education. Even as the researcher finished the study, two of his adjuncts were overloaded (above 25 students) and the researcher was emailed frequently by his student advisor to take more and more students in his online classes.

This study is significant since it adds to the body of research regarding the constant push to enhance online courses with a variety of technological tools. This study found that enhancements to online course may not be enough. Other factors such as teacher training, facilitation by the instructor, student readiness, and the type of course taught might be considered in addition to course enhancements. Finally, this study makes an argument for keeping enrollment numbers reasonable so that the instructor has the opportunity to have a robust teaching presence that will in turn increase social connections and a deeper understanding of course topics leading to better learning outcomes and retention.

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## APPENDICES

### Appendix A: Cowboy Quality Rubric

| Cowboy Quality Online Course Evaluation (Title III) Version 3.0   |  |  |
|---|--|--|
| Course Title Goes Here  |  |  |
| <b>Total Score=0%</b>   | <b>Enter Date:</b>   | <b>September 27, 2013</b>  |
| PASS (See Section 1 for any missing info)   |  | Type of Course: <span style="background-color: #ffff00;">Online</span> |
| Quality - 90% percent      Needs Improvement - Below 90% percent  |  |  |
| <p><i><b>Evaluator instructions:</b> The course content order and location does not have to match the rubric order and suggested location. Items in section one are required. This section is pass/fail. Items in all other sections are rated on a scale of 0 to 2, based upon the criteria for the item.</i></p> <p><i>The yellow and orange sections of this form indicate where input is required. Orange sections are for text entry of comments or clarifying information. You are not limited to the visible space. Please clarify any 0 scores with comments. <b>Comments are EXTREMELY important to the designers. Be very specific when noting problem areas. For instance, note the location of non-working links, typos, missing alternate text, etc. Please enter helpful and encouraging feedback as appropriate.</b></i></p> <p><i>If you experience any difficulties with this form, email TitleIII@osuokc.edu or call Dr. Joey Fronheiser at 945-3250.</i></p> |  |  |
| Section 1 – Required Information - PASS/FAIL  |  |  |
|   |  | <b>All listed elements MUST be present.</b>                            |
| 1.1   | Instructor biographical information is present. The available information should include the educational background and experience showing the instructor is qualified to teach this course. Instructor contact information is present, including a telephone contact number, e-mail address, office location, office hours, and explanation of acceptable and preferred communication methods. Missing biographical and contact information is noted in Comments for Section 1.   | Yes  |
| 1.2   | Resources for student technical help are available including contact information for the Help Desk and the OSU-OKC Online Student Orientation. Links or explanations for accessing academic support services and student support services are available. Missing elements are noted in Comments for Section 1.   | Yes  |
| 1.3   | The course syllabus follows the OSU-OKC Syllabus Guide from the Faculty Handbook, and includes course description, prerequisites, next course in sequence, text and supplemental materials, instruction methods, attendance policy (including any in-class meeting dates and times), evaluation techniques, honors credit and service learning, grading explanation, the Campuswide Student Learning Outcomes, Syllabus Modification Statement, Institutional Statement, and Global Education Mission should be included. The syllabus is intended for the online and hybrid course and does not contain references specific to on-campus only courses. Missing items are noted in the Comments for Section 1.<br><br><a href="#">Syllabus Guide</a> | Yes  |
| 1.4   | As appropriate, all policies related to e-mail, assignments, and assessments are available. This section shall include grading time tables and communication expectations or time tables. The OSU-OKC Academic Dishonesty or Misconduct statement and the A.D.A. Policy Statement are available. For hybrid courses, the Electronic Device Policy and Unattended Children Policy should be included. Missing policies are noted in the Comments for Section 1.   | Yes  |

|                               |  |                              |
|-------------------------------|--|------------------------------|
| 1.5                           | All text-based resources, including the syllabus, are designed for web viewing. Non-web viewable resources are listed in the Comments for Section 1.   | Yes                          |
| 1.6                           | All text-based resources are designed for printability using PDF files. Printable files should not include dark backgrounds and should limit the number of printed pages as appropriate. Non-printable resources are listed in the Comments for Section 1. | Yes                          |
| 1.7                           | Etiquette expectations (sometimes called "netiquette") for discussions, email, and other forms of communication are clearly stated. Minimum technical skills expected of the student to succeed in the course are clearly stated.                          | Yes                          |
| 1.8                           | All web links function properly. <i>Broken links are noted in the Comments for Section 1.</i>  | Yes                          |
| 1.9                           | Presence of the Tutor.Com Widget (or alternate tutoring plan) on the homepage of the course.   | Yes                          |
|                               |  | <b>8 elements/8 elements</b> |
|                               |  | <b>PASS</b>                  |
| <b>Comments for Section 1</b> |  |                              |
| 1.1                           |  |                              |
| 1.2                           |  |                              |
| 1.3                           |  |                              |
| 1.4                           |  |                              |
| 1.5                           |  |                              |
| 1.6                           |  |                              |
| 1.7                           |  |                              |
| 1.8                           |  |                              |
| 1.9                           |  |                              |

| Section 2 – Course Site Design and Navigation (20 percent)   |   |  |
|--|---|--|
| 0- Needs Improvement   | 1- Meets Requirements                             | 2 - OSU-OKC Quality  |
| <b>2.1 The course provides a welcome.</b>  |   |  |
| There is no course welcome.  | A course welcome is available.                    | A course welcome is readily available, describes unique features of the course, and lists special technologies required. It overviews expectations, includes a basic course description using easy to understand terms, and introduces the instructor. |
| <b>2.2 The course provides an orientation.</b>   |   |  |
| There is no course orientation.  | The course orientation is available.              | The course orientation is easily located, intuitive and provides detailed descriptions of course components.   |
| <b>2.3 Course navigation is consistent.</b>  |   |  |
| Course navigation is not consistent.   | Course navigation is consistent.                  | Course navigation is consistent and helps students successfully complete the course.   |
| <b>2.4 An outline of class content, activity due dates, and class events is available and contains information about the assignments and events.</b> |   |  |
| An outline is not provided.  | An outline is provided.                           | The outline is provided in a format that is well-designed and user friendly with a schedule of assignments and events for the course.  |
| <b>2.5 The course is logically organized.</b>  |   |  |
| The course is disorganized.  | The course is organized.                          | The course is well-organized into logical modules or lessons.  |
| <b>2.6 The course uses good principles of visual design.</b>   |   |  |
| The course does not use good principles of visual design.  | The course uses good principles of visual design. | The course uses good visual design principles to enhance learning.   |
| <b>Total for Section 2</b>   |   | <b>0.00%</b>   |
| <b>Comments for Section 2</b>  |   |  |
| 2.1  |   |  |
| 2.2  |   |  |
| 2.3  |   |  |
| 2.4  |   |  |
| 2.5  |   |  |
| 2.6  |   |  |

| Section 3 -Evaluation and Assessment (30 percent) |   |  |  |
|---|---|--|--|
|   | 0- Needs Improvement  | 1- Meets Requirements  | 2 - OSU-OKC Quality  |
| 3.1   | Measurable learning outcomes are present for the course.  |  |  |
|   | No learning outcomes are available or the learning outcomes are not measurable.   | Measurable learning outcomes for the overall course are available in the syllabus.   | Measurable learning outcomes for the overall course are available in the syllabus. Learning outcomes are available in individual learning modules or lessons.  |
| 3.2   | A variety of assessments and assignments are included in the course. Assessments may include traditional exams, quizzes, drop box items, discussions, writing assignments, service learning, or projects. |  |  |
|   | Activities to assess student learning or skill attainment are not present in this course.   | This course includes one type of activity (e.g., exams only) to assess students' content knowledge, and/or skill attainment. | This course has more than one type of activity (e.g., project, discussion, self-test, journal) to assess students' content knowledge, and/or skill attainment. |
| 3.3   | Grading criteria are available for each assessment or assignment. Grading criteria may be in any format; it is not a requirement to use the Rubrics tool, although usage of this tool is encouraged.      |  |  |
|   | Grading criteria are not available for assignments and assessments.   | Grading criteria are available.  | Grading criteria are available for and associated with all graded assessment activities and assignments.   |
| 3.4   | The types of assessments selected measure the stated learning outcomes.   |  |  |
|   | Assessment do not measure stated learning outcomes.   | Most assessments measure stated learning outcomes.   | All assessments measure stated learning outcomes.  |
| 3.5   | Students are provided opportunities for self-assessment such as self-reflection, ungraded quizzes, and learning games.  |  |  |
|   | Students' self-assessment opportunities do not exist.   | Students' self-assessment opportunities are limited.   | Students' self-assessment opportunities exist throughout the course.   |
| Total for Section 3                               |   | 0.00%  |  |
| Comments for Section 3                            |   |  |  |
| 3.1   |   |  |  |
| 3.2   |   |  |  |
| 3.3   |   |  |  |
| 3.4   |   |  |  |
| 3.5   |   |  |  |

| Section 4 - Engagement and Interactivity (30 Percent) |   |  |   |
|---|---|--|---|
|   | 0- Needs Improvement  | 1- Meets Requirements  | 2 - OSU-OKC Quality   |
| 4.1   | <b>Announcements are utilized for faculty-to-student communication. (Examples of announcements include news items, e-mail, and discussion postings.)</b>  |  |   |
|   | No course related faculty-to-student communication method is used.  | At least one course related faculty-to-student communication method is used. | More than one course related faculty-to-student communication method is used.                                       |
| 4.2   | <b>There are opportunities for students to interact with the instructor. (Examples of interactions include online office hours, journals chat availability, facilitated discussions, and e-mail.)</b>                               |  |   |
|   | There are no opportunities for students to interact with the instructor.  | There are opportunities for students to interact with the instructor.        | There are <b>many</b> opportunities for students to interact with the instructor throughout the course.             |
| 4.3   | <b>There are opportunities for students to interact with their peers. (Examples of interaction methods include non-facilitated and facilitated discussions, chat rooms, peer review of assignments and activities, and e-mail.)</b> |  |   |
|   | There are no methods available for students to interact with their peers.   | There is one method available for students to interact with their peers.     | There are <b>multiple</b> methods available for students to interact with their peers throughout the course.        |
| 4.4   | <b>Learning modules contain a variety of formats to present information including text, graphics, audio, video, simulations, and animations.</b>  |  |   |
|   | Modules use text only.  | Modules use one format in addition to text.                                  | Modules use two or more formats in addition to text.  |
| 4.5   | <b>Learning activities provide opportunities for interaction that support active learning.</b>  |  |   |
|   | There are no learning activities that support active learning.  | There are some learning activities that support active learning.             | There are learning activities that support active learning in each module or lesson.                                |
| 4.6   | <b>Additional resources and links for the course are provided.</b>  |  |   |
|   | Additional resources or links for the course are not provided.  | The course content provides additional resources and links.                  | The course content provides additional links and resources which are content-related with rationales for inclusion. |
| <b>Total for Section 4</b>                            |   |  | <b>0.00%</b>  |
| <b>Comments for Section 4</b>                         |   |  |   |
| 4.1   |   |  |   |
| 4.2   |   |  |   |
| 4.3   |   |  |   |
| 4.4   |   |  |   |
| 4.5   |   |  |   |
| 4.6   |   |  |   |

| Section 5 –Technology (20 percent) |  |  |  |
|------------------------------------|--|--|--|
|                                    | 0- Needs Improvement   | 1- Meets Requirements  | 2 - OSU-OKC Quality  |
| 5.1                                | Students are informed of technology requirements for the course including connectivity and speed minimum standards, required software, and other required ancillary software. Requirements could include items such as downloading Adobe Reader, Windows Media Viewer, Real Media Player, Lockdown Browser, or other add-ins. This area should also address extra needed equipment such as a web camera, microphone, document scanner, etc. If no such items are required, a notation to that effect should be included. |  |  |
|                                    | Technology requirements are not addressed.   | Minimum technology requirements are addressed.   | Minimum technology requirements are addressed and preferred technology requirements are delineated.  |
| 5.2                                | File sizes are easy to download and view at various connection speeds.   |  |  |
|                                    | On campus, most files open in more than 30 seconds.  | On campus, most files open in 30 seconds or less; all files open in no more than 1 minute.   | On campus, all files open in 30 seconds or less.   |
| 5.3                                | The course technologies are current and support the course learning outcomes.  |  |  |
|                                    | Course technologies are not current or do not support the course learning objectives.  | Course technologies are current and support the course learning objectives.  | Course technologies are current, and they innovatively support learning objectives.  |
| 5.4                                | All course content and technological elements are accessible for all learners.   |  |  |
|                                    | Minimum accessibility compliance standards are not met.  | A link to OSU-OKC's Services to Students with Disabilities webpage is available. Web accessibility standards are met including alternate text, use of CSS, high contrast font/background colors, and equivalent alternatives for some audio and video files. | A link to OSU-OKC's Services to Students with Disabilities webpage is available. All accessibility standards are met including, alternate text, use of CSS, high contrast font/background colors, and equivalent alternatives for all audio and video files. |
| Total for Section 5                |  |  | 0.00%  |
| Comments for Section 5             |  |  |  |
| 5.1                                |  |  |  |
| 5.2                                |  |  |  |
| 5.3                                |  |  |  |
| 5.4                                |  |  |  |
|                                    | Not Cowboy Quality Recommended   |  | Total Score=0%   |
| Overall feedback                   |  |  |  |





The *OSU-Oklahoma City (OKC) Cowboy Quality Online Course Evaluation* uses criteria listed within the *OSU-OKC Online College Best Practices* and *Quality Matters™*.

*Quality Matters™ Rubric Standards 2011 – 2013 edition*; [http://www.qmprogram.org/files/QM\\_Standards\\_2011-2013.pdf](http://www.qmprogram.org/files/QM_Standards_2011-2013.pdf)

*HLC Guidelines for the Evaluation of Distance Education (On-line Learning)*

The HLC Guidelines for the Evaluation of Distance Education (On-line Learning) was developed in 2009 by the Council of Regional Accrediting Commissions (C-RAC). The Higher Learning Commission (HLC) is a member of C-RAC. HLC provides these guidelines as a resource for its affiliated institutions and its Peer Review Corps. The *Guidelines for the Evaluation of Distance Education (On-line Learning)* have been developed by the Council of Regional Accrediting Commissions (C-RAC) to assist institutions in planning distance education and to provide an assessment framework for institutions already involved in distance education and for evaluation teams. They are based on a 2006 report prepared by the General Accounting Office, *Evidence of Quality in Distance Education drawn from Interviews with the Accreditation Community* and the

*Best Practice Strategies to Promote Academic Integrity in Online Education* prepared by WCET. They replace the 2001 Statement of Best Practices for Electronically Offered Degree and Certificate Programs, and are intended to be used in conjunction with the relevant standards and policies of each accreditor.

[http://www.C.RAC.Distance\\_ed\\_guidelines\\_7\\_31\\_2009\[1\].pdf](http://www.C.RAC.Distance_ed_guidelines_7_31_2009[1].pdf)

*Best Practices for Electronically Offered Degree and Certificate Programs*, from Western Cooperative for Educational Telecommunications;

<http://www.wcet.wiche.edu/wcet/docs/cigs/studentauthentication/BestPractices.pdf>

WICHE Cooperative for Educational Technologies: *Guidelines for the Review and Evaluation of Distance Education Links to Guidelines and Policy Statements from the Regional Accrediting Commissions*

<http://wcet.wiche.edu/wcet/docs/publications/RACGuidelinesandPolicyhot.pdf>

## **Appendix B: CoI Questionnaire**

### ***Community of Inquiry Survey Instrument (draft v14)*** (Arbaugh, et al., 2008)

#### ***Demographics***

1. Age
2. Gender
3. Fulltime (12 + Credit Hours) or Part time student (11 or less Credit Hours)

#### ***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

### **Appendix C: Email to Instructor requesting CoI Questionnaire Qualtrics Link posting**

I am a doctoral student at Oklahoma State University College of Education and a fulltime Instructor at OSU-OKC. I have randomly selected your online course (Course####/Sec###) to participate in an online survey concerning course design. This questionnaire will take no more than 15 minutes to complete. I would like to ask your permission to include the following link to the questionnaire to be posted prominently on the homepage of your D2L classroom:

(Insert Qualtrics CoI Questionnaire link here)

Your students will be asked questions regarding your online course covering three aspects; teaching presence, social presence, and cognitive presence. This study is anonymous, which means no identifying information is collected. Results of this survey will only be discuss as group finding and will not include individual information that could identify any of the participants. In order to increase the response rate for this questionnaire, I would ask that you offer extra credit upon completion of the questionnaire.

You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study: Tony Smith at tony.smith@okstate.edu, (405) 519-1525 or contact my OSU advisor, Dr. Mary Jo Self at maryjo.self@okstate.edu, (405) 744-9191. If you have any questions about your rights as a research volunteer, you may contact the Oklahoma State University Institutional Review Board (IRB), 223 Scott Hall, Stillwater, OK 74078 or by calling (405) 744-3377. You may also email the IRB at irb@okstate.edu. Please reply via email response regarding your acceptance to be a part of this questionnaire.

Thank you, Tony Smith

Graduate Student Oklahoma State University

## **Appendix D: Cover Letter for Qualtrics Online CoI Survey**

I am a doctoral student at Oklahoma State University College of Education and am asking selected OSU-OKC students to participate in an online survey about online course design. You will be asked questions regarding the online course where the link for this questionnaire was posted. These questions will be focused on three aspects; teaching presence, social presence, and cognitive presence.

There are no known risks associated with participation in this research beyond those experienced in everyday living. No compensation is offered for participation in this research other than extra credit MAY be offered at the discretion of your teacher. This study is anonymous, which means no identifying information is collected. Results of this survey will only be discuss as group finding and will not include individual information that could identify you.

You may contact any of the researchers at the following addresses and phone numbers, should you desire to discuss your participation in the study and/or request information about the results of the study: Tony Smith at [tony.smith@okstate.edu](mailto:tony.smith@okstate.edu), (405) 519-1525 or contact my OSU advisor, Dr. Mary Jo Self at [maryjo.self@okstate.edu](mailto:maryjo.self@okstate.edu), (405) 744-9191. If you have any questions about your rights as a research volunteer, you may contact the Oklahoma State University Institutional Review Board (IRB), 223 Scott Hall, Stillwater, OK 74078 or by calling (405) 744-3377. You may also email the IRB at [irb@okstate.edu](mailto:irb@okstate.edu).

Thank you,

Tony Smith  
Graduate Student Oklahoma State University

## Appendix E: IRB Approval

### Oklahoma State University Institutional Review Board

Date: Monday, March 21, 2016  
IRB Application No: ED1657  
Proposal Title: Enhanced online course design and its impact on level of community of inquiry  
Reviewed and Processed as: Exempt  
Status Recommended by Reviewer(s): Approved Protocol Expires: 3/20/2019  
Principal Investigator(s):  
Anthony Smith Mary Jo Self  
251 Willard  
Stillwater, OK 74078 Stillwater, OK 74078

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The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval. Protocol modifications requiring approval may include changes to the title, PI advisor, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of the research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Dawnett Watkins 219 Scott Hall (phone: 405-744-5700, dawnett.watkins@okstate.edu).

Sincerely,

  
Hugh Crocher, Chair  
Institutional Review Board

**VITA**  
**Anthony A. Smith**  
**Candidate for the Degree of**  
**Doctor of Philosophy**

Thesis: ENHANCED ONLINE COURSE DESIGN AND ITS EFFECT ON LEVEL OF COMMUNITY OF INQUIRY

Major Field: Education

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Education at Oklahoma State University, Stillwater, Oklahoma in December 2016.

Completed the requirements for the Masters of Science in Business Administration at University of Phoenix, Albuquerque, New Mexico in 1993.

Completed the requirements for Bachelors of Science in Business Administration (Finance) at San Diego State University, San Diego, California in 1982.

Experience:

**Accounting Instructor, OSU-OKC** Dec 2013-present  
Oklahoma City, OK

**Adjunct Instructor, Southern Nazarene University** May 2011-present  
Bethany, OK

**Service Rep/Adjunct Faculty, OSU-OKC** Sept 2005–Nov 2013  
Oklahoma City, OK

**President, Professional Alternatives of NM** July 2000–Mar 2007  
Albuquerque, NM

Professional Memberships:

OTT Educational Research Symposium, April 2012

OSU-OKC Accounting Advisory Board, May 2014 and 2015

NAF Board Meeting for John Marshall High School, October 2014 - 2015

Served on OSU-OKC Academic Appeals Committee, October 2014

Served on MetroTech Accounting Advisory Board, November 2014 - present

Governor's/Love's Entrepreneur Cup Advisor, August 2014 – present

Faculty Senate, August 2016 – present

HLC Core Team for Persistence and Completion, October 2016 - Present