Promotion of student engagement by online community college faculty

by

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

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DEDICATION

This dissertation is dedicated to the memory of my maternal grandmother, Julia Joyce Brashear (1902-1992), former Dean of Women at Hiram Scott Junior College, botanist, farmer, rancher, educator and lifelong learner in western Nebraska. Thank you for inspiring me to explore life with curiosity, challenge the establishment and let my voice be heard through education, teaching and singing.

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ABSTRACT

Online higher education courses continue to attract students across the U.S. However, online student persistence, particularly in community colleges, continues to lag traditional delivery. It is well known that student engagement may lead to improved academic performance and persistence. Previous research has identified how faculty communication and teaching strategies promote student engagement, yet it is not always clear to what extent these strategies are implemented. In virtual education, faculty are often the primary connection online students have with the institution. Additional study was needed to determine to what extent online faculty implement strategies that promote student engagement and how faculty perceive and define online student engagement. This exploratory quantitative study sought to validate the Community of Inquiry framework, emphasizing online faculty teaching strategies that promote interactive teaching, cognitive and social presence. Using this framework, a survey instrument modified from previous publications was distributed to online faculty teaching in four community colleges in the Midwest. Survey responses provided data about faculty personal and teaching demographics, communication methods, and teaching strategies. In addition, definitions and perceptions of student engagement in their online courses were analyzed. There was high participation in the survey, a nearly 50% response rate. A large proportion of participants had received prior training in student engagement practices and consistently reported implementing strategies that promote teaching, cognitive and social presence. Teaching practices that promote social presence were found to be the most significant predictor of student engagement, yet these were least likely to have been implemented. This study affirms prior research connecting the

Community of Inquiry framework with perceived student engagement, but is the first to do so based on faculty data. Faculty definitions of online student engagement varied, but centered around active participation and interactions with faculty and other students. Implications from the study can be used to further hone teaching standards for online faculty that especially focus on social presence strategies. These efforts can contribute to improving online student performance and persistence through a consistent student engagement definition and distance education mission

Key Words: online students, online faculty, student engagement, online teaching, faculty-student communication, Community of Inquiry framework

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CHAPTER 1.   INTRODUCTION

"No generation has ever had to wait so little time for so much information" (Renard, 2005, p. 44). Access to information has completely transformed the role of faculty in education today. Online education is no longer a passing trend, but a mainstream education mode that has attracted higher education students in colleges and universities globally (Kentnor, 2015). Over the past twenty-five years, online education evolved from explosive growth in the for-profit education market into comprehensive inclusion in public and private institutions. It is estimated that more than 6 million higher education students in U.S. were enrolled in an at least one online course in 2015 (Allen & Seaman, 2017, p. 4) and two-thirds of degree-granting institutions offered distance learning options (Allen & Seaman, 2014). In 2013, 72.7% of students enrolled in currently active, degree-granting 2-year institutions were enrolled in some form of distance education; approximately 1.9 million students (National Center for Education Statistics, 2014). The growth of online courses in community colleges nationwide has continued and in some cases, enrollment online has outpaced the traditional classroom (Fisher, 2010, Allen & Seaman, 2017). With this growth, the approach to teaching and strategies utilized to achieve desirable student outcomes for online students has also shifted (Garrison, Anderson, & Archer, 2009; Simpson, 2012).

According to John Sener (2012), author of *The Seven Futures of American Education: Improving Learning & Teaching in a Screen-Captured World*, the first era of online education was devoted to access, but the second era has the potential to improve education quality by shifting the way knowledge is "transmitted, preserved and generated" (Sener, 2012, p. 124). Unfortunately, student success and persistence in online courses continue to lag traditional course delivery (National Center for Education Statistics, 2014;

Allen & Seaman, 2015). The ultimate challenge for institutions is creating a virtual

environment that best meets students' needs and promotes success, while providing a high-

quality education in a cost-effective manner (Coates, James, & Baldwin, 2005).

Understanding online faculty perceptions of student engagement and analyzing the extent to

which student engagement strategies are implemented are critical to achieving this goal.

Background of the Problem

Globalization has provided opportunity for students worldwide to engage in flexible

education delivery and this expansion has impacted higher education (Dabbagh, 2007).

Public institutions have expanded the availability of courses delivered online both as a

response to student demand and to increase enrollment (Allen & Seaman, 2015). The non-

profit public sector has had the greatest recent growth in online higher education (Allen &

Seaman, 2017).   In 2015, 63% of higher education administrators predicted that online

education would continue to be a significant part of their long-term strategic plan (Allen &

Seaman, 2017; Allen, Seaman, Poulin, & Straut, 2016, p. 21). This expansion has increased

competition for online students, and institutions are increasingly pressured to provide courses

at an affordable rate and promote positive student outcomes, such as program completion and

employment (Lorenzo, 2011; BestColleges.com, 2016).

As competition within the online higher education market increased, the quality of the

online "student experience" has been promoted. Higher education experiences encompass

how students feel about the quality of their institution, coursework, social experiences, and

interaction with faculty and staff (Schindler, Puls-Elvidge, Welzant, & Crawford, 2015).

Student experiences are an essential part of student engagement, which impacts persistence,

satisfaction and overall learning (Kuh, Kinzie, Schuh, & Whitt, 2010; Stavredes & Herder,

2015). Decades of research studies have concluded that students' interactions during college

contribute more to learning than personal demographics or where they attend (Astin, 1975; Astin, 1984; Tinto, 1993; Kuh, 2003; Tinto, 2012). In the digital age, creating positive online experiences are equally important yet even more challenging and competitive (Rovai, 2003; Ludwig-Hardman & Dunlap, 2003). Online faculty play a key role in creating and managing the virtual student experience (Shelton & Saltsman, 2005; Simpson, 2012).

Community colleges serve a variety of students' education needs, including the provision of an affordable and flexible path toward a degree or technical career (Santos Laanan, Compton, & Friedel, 2006). Community colleges have embraced online education to meet the needs of large numbers of nontraditional students on career paths (Jaggars, Edgecombe, & Stacey, 2013).   These students may choose this flexible option to accommodate multiple life roles while pursuing an education (Ludwig-Hardman & Dunlap, 2003; (Jaggars et al., 2013). Community colleges have an extensive history of providing distance education, yet institutional approaches to online education and faculty expectations may differ (Meyer, 2014). Community college faculty make up a significant portion of instructors teaching in distance education (Allen, Seaman, Lederman, & Jaschik, 2012).

Online courses attract an increasingly diverse set of learners (Dumais, Rizzuto, Cleary, & Dowden, 2013) with varied expectations about engagement and interaction with technology, academic coursework and faculty (Simpson, 2012). Increasingly, these students are "digital natives," where technology has been integrated into nearly every aspect of their lives. This means that these students think and process information and knowledge in fundamentally different ways than faculty teaching the courses (Prensky, 2001, p. 1). As a result, the ways faculty present information and manage an online course must be adjusted

(Meyer, 2014). At the same time, institutions must globally address the fast-paced changes to the virtual learning environment (Johnson & Berge, 2012; BestColleges.com, 2016).

Faculty in the United States are increasingly being required to teach online or in a hybrid setting to accommodate demand, but may be ill-equipped to do so (Otter et al., 2013; Allen & Seaman, 2015). There are compounding factors that may impact the ability of online faculty to provide the same quality of education as the traditional setting and effectively communicate and engage with students. These factors include inadequate faculty preparation (Batts, Pagliari, Mallett, & McFadden, 2010; Lichoro, 2015), disparate attitudes toward teaching online (Bolliger & Wasilik, 2009; Lloyd, Byrne, & McCoy, 2012; Allen & Seaman, 2015), and reliance on part-time faculty to teach online courses, especially in community colleges nationwide (Bedford, 2009; *The Condition of Education Indicator* Report, 2015; Center for Community College Student Engagement, 2014). Faculty may be trained in the technical aspects of the learning management system with less focus on successful teaching strategies (Lane, 2013). Faculty teaching online in community colleges may receive less training than those teaching in 4-year institutions (Meyer & Murrell, 2014).

Online faculty may lack the institutional support needed to create the optimal online experiences that promote learning and engagement (Batts, Pagliari, Mallett, & McFadden, 2010; Lloyd, Byrne, & McCoy, 2012.) Faculty and administrators report that online education practices have not been implemented consistently within institutions, nor has the approach been strategic (Lammers, Bryant, Michel, & Seaman, 2017). In fact, a recent Babson Research Survey report of higher education administrators indicated a decline in the inclusion of online education in the institution's strategic plan (Allen et al., 2016). In addition, in a survey of postsecondary online faculty and administrators, they reported that

while online faculty are key to successful online learning, they are "woefully undersupported" and resources are lacking (Lammers et al., 2017, p. 6)

Faculty perceptions about their preparedness to teach online and the ability to achieve successful student outcomes vary (Allen & Seaman, 2003; Haber & Mills, 2008; Lichoro, 2015). Allen at al. (2012) outlined two related misperceptions faculty have about online learning: quality cannot be controlled and learning cannot be assured. Online faulty have expressed concerns about student success and their ability to effectively communicate and achieve meaningful student learning outcomes (Lloyd, Byrne, & McCoy, 2012). Numerous studies indicate that faculty desire additional training (Bolliger & Wasilik, 2009; Batts et al., 2010; Lichoro, 2015; Lammers et al., 2017). Additionally, faculty have been found to be appreciative of training and support provided to enhance their skills and achieve success (Wingo, Ivankova, & Moss, 2017).

As more faculty are being asked to teach online, the virtual learning environment has introduced a new set of technical challenges (Brewer, DeJonge, & Stout, 2001). In early online education, the technological learning curve and use of the online learning management system was a considerable challenge for students (Brewer, DeJonge, & Stout, 2001), faculty (Wingo, Ivankova, & Moss, 2017) and institutions (Coates et al., 2005). Initially, online faculty spent considerable time supporting students' technical needs rather than providing academic support (Harasim, 2000). Technology has evolved and become integrated into day-to-day living (Prensky, 2001). However, students who utilize their smart phone for social media may not be adept with online learning systems (Stott, 2016). The role for online faculty has moved from one of information transmission (lecture-style pedagogy) to a supporting role in navigating through information presented in a variety of mediums

(Simpson, 2012). At the same time, some research findings indicate that online faculty have access to learning system tools but are not using the technological tools effectively (Revere & Kovach, 2011; Jaggars, Edgecombe, & Stacey, 2013).

Student retention is a complex problem that has been extensively studied (Hagedorn, 2012). Retention models are complex because they contain multiple variables. Online students face unique challenges that impact success and as a result, have a higher rate of stopping out than those attending face-to-face (Rovai, 2003; Simpson, 2012; Allen & Seaman, 2015; Bettinger & Loeb, 2017). Students are faced with multiple barriers to persistence in online courses – situational, institutional, dispositional and epistemological (Stanford-Bowers, 2008; Park & Choi, 2009). Data about student retention in online courses has been found to be determined by their enrollment – part-time, exclusively online, and enrollment in developmental courses (Jaggars et al., 2013; James, Swan, & Daston, 2016). Online students often feel isolated and have a more difficult time staying connected with the institution (LaPadula, 2003; Jaggars et al., 2013; Dixson, 2015). Online student success in community colleges poses unique challenges for these institutions and serves students already at high risk of stopping out. In many cases, these students simply fail to withdraw from the online course (Jaggars et al., 2013, p. 2). The fact that students drop out from online courses at any point in the semester or their learning program also contributes to the problem (Bawa, 2016).

Retention of online students has a substantial financial impact on the economic condition of the institution (Cuseo, 2010). As public funding continues to decline, institutions such as community colleges rely heavily on the tuition and financial aid income of students (Mitchell, Leachman, & Masterson, 2016). Administrators in higher education are

pressured to employ cost-effective course delivery modes by instructors that promote engagement and retention (Lorenzo, 2011). "Faculty are the key to improving student learning productivity that can, in turn, help address the financial crunch of less state resources and more students with more needs" (Meyer, 2014, p. 577).

Scholars have described student engagement using a variety of definitions (Coates, 2007, Kuh et al., 2010; Trowler, 2010; Quaye & Harper, 2015). "Student engagement pertains to the time and physical energy that students expend on activities in their academic experience" is one commonly cited definition (Kuh, 2003; Robinson & Hullinger, 2008, p. 101). Researchers make the case for promoting student engagement to improve learning (directly or indirectly), retain students, and promote equity and social justice. A plethora of empirical evidence has confirmed that it is worthwhile to measure and determine ways to promote student engagement, especially for those students who may be most vulnerable to stopping out (Quaye & Harper, 2015).

The Community of Inquiry learning framework has been used extensively in research to better understand the creation of higher order learning and student engagement in online education (Meyer, 2014; Garrison, 2016). The framework has been applied in hundreds of studies and validated by various instruments and research designs (Arbaugh et al., 2008; Garrison et al., 2009; Garrison, Cleveland-Innes, & Fung, 2010; Shea & Bidjerano, 2012; Meyer, 2014; Garrison, 2016; Garrison, 2017). This framework describes the virtual learning process by dividing it into three overlapping and interdependent senses of "presence": teaching presence, social presence and cognitive presence (Garrison, Anderson, & Archer, 2000, p. 88). "The model proposes that engagement in learning as well as the learner itself is the result of a well-designed and facilitated online course (teaching presence), interaction

with the course content and other students focused on learning (social presence), and focused problem exploration and resolution (cognitive presence)" (Meyer, 2014, p. 17-18).

Most student engagement research has focused on students as the primary stakeholder, and rightfully so, as students are the primary "customer" in higher education. Previous researchers contend that in online education, faculty have a significant impact on the student experience and engagement (Jackson et al., 2010; Orso & Doolittle, 2011; Simpson, 2012). Therefore, it is important to understand how online faculty employ strategies to achieve and improve engagement. The Community of Inquiry framework provides a way to evaluate the quality of online education (Meyer, 2014). However, previous studies have primarily analyzed student data. In depth study is needed to determine how online faculty perceive student engagement and employ Community of Inquiry teaching practices to promote these outcomes (Tabata & Johnsrud, 2008; Meyer, 2014).

Purpose of the Study

An abundance of research has indicated that instructors in an online setting have a significant opportunity to promote student engagement and ultimately impact student success and retention (Simpson, 2004; Robinson & Hullinger, 2008; Allen, Seaman, Lederman, & Jaschik, 2012; Meyer, 2014). The purpose of this exploratory quantitative study was to measure online community college faculty perceptions of student engagement in their online courses, and determine to what extent online faculty report using teaching strategies that have been previously shown to promote online student engagement. These teaching strategies were derived from the Community of Inquiry model, categorizing aspects of teaching, cognitive and social presence introduced by Garrison, Anderson and Archer (2000) and expanded upon by many other researchers (Arbaugh et al., 2008; Nagel & Kotze, 2010; Richardson et al., 2012; Shea & Bidjerano, 2012). This study sought to identify faculty

perceptions of online student engagement in their own online courses, teaching strategies employed that are known to improve online engagement, and definitions of online student engagement.

Research Questions

This study answered the following research questions:

RQ1: What are the demographic characteristics of community college faculty teaching online who participated in the survey?

RQ2: Among survey participants, to what degree of engagement do community college faculty perceive for students in the online courses they teach?

RQ3: Among survey participants, to what extent are community college faculty encouraging online student engagement through teaching practices supported by the Community of Inquiry framework?

RQ4:   4a. Among survey participants, what inter-relationships exist among variables measuring online faculty perceptions of student engagement?

4b. Among survey participants, what inter-relationships exist among variables measuring strategies that promote teaching presence?

4c. Among survey participants, what inter-relationships exist among variables measuring strategies that promote cognitive presence?

4d. Among survey participants, what inter-relationships exist among variables measuring strategies that promote social presence?

RQ5: Are there any significant differences among survey participants in reported student engagement based on full-time or part-time employment, highest degree attained, orientation to online teaching, or training in student engagement practices?

RQ6: Among survey participants, to what extent do the demographic characteristics and online teaching practices predict perceived online student engagement?

RQ7: How do online community college faculty define online student engagement in their courses?

Significance of the Study

This study is both significant and timely for multiple reasons. First, student retention in online courses continues to be a complex problem for students and institutions as community college students continue to enroll online in higher numbers (Allen & Seaman, 2017). Previous research indicates that online students, particularly in the community college setting, are struggling to be engaged with learning or the institution (Robinson & Hullinger, 2008; Lorenzo, 2011; Bawa, 2016). Institutional approaches for addressing online student engagement have not always been systematic (Lammers, Bryant, Michel, & Seaman, 2017). Best practices and expertise of successful online programs have not been consistently mainstreamed into institutional planning (Kunstler, 2007). This study answers important questions about the extent to which online faculty in multiple community colleges have implemented online student engagement strategies within their own courses and the factors that influenced perceptions of online student engagement.

Second, because much of previous research about online student engagement has focused on students, research is needed to understand how faculty perceive student engagement. Huber (1998) believed that community college faculty members are one of the most important groups to evaluate as "community college faculty stand out from many of their professional colleagues not only because of their size and diversity of their sector of higher education, but also because teaching …is the heart of their profession (Huber, 1998, p. 12). It is unclear how faculty perceive the engagement problem and work toward

implementing strategies to improve even if they have been trained in best practices (Tirrell & Quick, 2012). A significant body of research has been published that support teaching and communication strategies found to promote engagement, particularly for online students (Meyer, 2014). Previous similar research determined that faculty surveyed about teaching were not consistently aware of research-supported practices (Tirrell & Quick, 2012). There is need to determine which teaching practices are in place in online courses, particularly in the community college setting since online courses continue be offered at an increasing rate (Fisher, 2010; Meyer, 2014; Allen, Seaman, Poulin, & Straut, 2016). These findings may assist online course designers and administrators in guiding course development and evaluation, as well as faculty professional development so practices can be implemented in a consistent manner.

In addition, as the offering of online courses continues to expand, faculty are increasingly being called upon to teach online (Lammers, Bryant, Michel, & Seaman, 2017). Faculty who teach online approach their positions with varied experiences and knowledge about teaching and engaging students (Tirrell & Quick, 2012). Some may be full-time faculty who teach exclusively online, while others may only teach one online course as adjunct faculty. In the community college setting, adjunct faculty are relied upon to provide online education yet may have less time and energy to focus on the endeavor (Bedford, 2009; Center for Community College Student Engagement, 2014). Understanding how online faculty demographics and experiences impact student engagement strategies will help community college administrators adapt professional development and orientation for all online faculty.

Finally, with dire funding situations for community colleges, efficient and effective administration of online courses becomes even more critical (Allen & Seaman, 2015). Community colleges are faced with ongoing declines in state-supported funding, being asked to do more with less (Kahlenberg, 2015). Online enrollment provides a way to attract a variety of students beyond the physical campus, and retention of students becomes even more critical. Because more than a quarter of all community college students are enrolled in at least one online course, it is critical to promote success for students in these courses (Allen & Seaman, 2017). Due to increasing online course demand, an increasing number of community college faculty may be asked to teach online with little preparation for the job (Lammers et al., 2017). In addition, as faculty compensation has increased, this has offset the economic benefit of online courses from an institutional perspective (Lloyd, Byrne, & McCoy, 2012). Therefore, it becomes even more critical to understand online teaching practices to promote efficiency and effectiveness.

Theoretical Framework

When virtual education was in its infancy, Garrison, Anderson and Archer (2000) recognized the unique learning process for online learners and developed a conceptual framework to analyze and promote a successful higher education experience for online students. Their initial goal was to create a template for analyzing text-based communications within virtual courses to develop an educational community of inquiry and mediate critical reflection and discourse (Garrison, Anderson, & Archer, 2000, p. 103). The Community of Inquiry model focused on teachers and students as joint participants in the educational experience. Interactions between teachers and students were grouped within three overlapping core elements – teaching presence, cognitive presence and social presence (Garrison, Anderson, & Archer, 2000, p. 88). Within each of these elements, categories and

indicators were included that could be applied by faculty and institutions within their distance education courses to evaluate higher learning.

The Community of Inquiry framework was used to guide the variables (engagement activities) measured in this study. In this framework, the goal is to create a community of inquiry where students are fully engaged in collaboratively constructing meaningful and worthwhile knowledge (Garrison et al., 2000). Redmond and Lock (2006) applied the framework to describe faculty actions that promoted collaborative learning. These included being proactive, flexible in planning, anticipating challenges, and developing clear communications. (Redmond & Lock, 2006, p. 274). Because much of the prior research was qualitative, Arbaugh et al. (2008) developed and validated a survey instrument to measure students' perceptions of presence, which included online instructor behaviors, application of course content and perceptions of social interactions (Arbaugh et al., 2008). Some causal relationships have been determined indicating the interconnectedness of the three forms of presence and the impact on online student learning (Garrison, Cleveland-Innes, & Fung, 2010).

Garrison, Anderson and Archer (2009) published a retrospective summary of the first ten years' application of the Community of Inquiry framework in online higher education. This summary cited support for the model through validated instruments and the authors promoted continued use of the framework moving forward (Garrison, Anderson, & Archer, 2009). While most studies about this framework have focused on student stakeholders, a small number have gathered data from online faculty (Shea & Bidjerano, 2012). Other research has focused on only one aspect of the model – cognitive, teaching or social presence. These studies have provided key insight into faculty behaviors and further support

the need for expanding research focused in this area on faculty and encompassing all aspects of presence.

This quantitative study evaluates the connection between the Community of Inquiry framework and faculty teaching strategies that have been found to achieve a higher level of learning for students and as a result, improve online student engagement.

Definition of Terms

Cognitive Presence: The process of both reflection and discourse in the initiation, construction and confirmation of meaningful learning outcomes (Garrison, 2003, p. 50).

Community of Inquiry framework: Generic and coherent structure of a transaction educational experience whose core function is to manage and monitor the dynamic for thinking and learning collaboratively (Garrison, 2017, p. 24)

Distance education: The effort of providing access to learning to those who are physically distant (Moore, Dickson-Deane, & Galyen, 2011, p. 129).

Distance Learning: A mode of learning which is learner controlled; where the learner is in charge of their own learning and they monitor, and manage the cognitive and contextual aspects of their learning (Moore et al., 2011, p. 130)

E-learning: The utilization of electronically mediated asynchronous and synchronous communication for the purpose of thinking and learning collaboratively (Garrison, 2017, p. 2).

Face-to-face students: Students enrolled in a course that meets in person and less than 30% of the course content is delivered online (Allen & Seaman, 2015).

Online learning: Students enrolled at a school taking one, some, or all courses online (Allen & Seaman, 2003, p. 6).

Online students: Students enrolled in courses in which 80% or more of the content is delivered online (Allen & Seaman, 2015).

Persistence: The behavior of continuing action despite the presence of obstacles and the length of time an adult attends classes (Rovai, 2003, p. 1-2).

Social Presence: The ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves as 'real people' (Garrison et al., 2000, p. 89).

Student Engagement: The amount of time and effort students put into their studies and other activities that lead to the experiences and outcomes that constitute student success (Kuh, Kinzie, Schuh, & Whitt, 2010, p. 9).

Stopping out: Students who began with a plan of student, however, for some reason, withdraw and leave for a period of time, and then reenroll to complete their degrees (Simpson, 2012)

Teaching Presence: The instructional design and organization, facilitation of discourse, and direct instruction that online instructors "do" (Shea, Li, & Pickett, 2006, p. 176).

Summary

Chapter 1 outlined the purpose of this research, complexity of the student engagement problem, educational framework, and research questions addressed in this quantitative study. Chapter 2 will expand upon and summarize the literature that supports the background of the problem, the evolution of online teaching, the online student retention and engagement problem, the role of online faculty, and review how engagement has been measured.   In addition, application of the Community of Inquiry model and literature citing online teaching and communication strategies that promote online engagement will be summarized.   Chapter 3 will describe the setting, sample, survey instrument and quantitative methodology used, as

well as limitations of the study. Chapter 4 will describe the statistical findings from the survey results.   Finally, Chapter 5 will include discussion of the descriptive, reliability, comparative, regression, and qualitative analysis, and conclude with suggestions for practical application and recommendations for further study.

CHAPTER 2.   LITERATURE REVIEW

Reintroduction of the Problem/Selection of Literature

Student engagement has long been studied and proven to impact positive student outcomes in academic performance, satisfaction and persistence (Astin, 1984; Tinto, 1987; Kuh, 2003). Online education poses a unique set of challenges for students and faculty. Students often rely entirely on online faculty as the key connection to the course and the institution (Harasim, 2000). Faculty teaching online may be poorly equipped to utilize teaching and communication strategies that promote student engagement (Peters, 2011; Tirrell & Quick, 2012).   The research summarized below focuses on the history of these online education challenges, evolution of the role of online faculty, faculty perceptions about online teaching and engagement, and online faculty training. An overview of the student engagement problem, definitions and measures of student engagement will be presented. Finally, applications of the Community of Inquiry framework, as well as those teaching practices that promote student engagement will be compared. When possible, literature about fully online courses rather than blended courses was selected. In addition, studies focusing on community college faculty were included when available. In depth research about learning management systems was not included, as this was not central to this study's research questions.

Literature for this review was initiated by conducting searches in university databases, EBSCOhost, ERIC, and Google Scholar. Studies reviewed include both empirical and qualitative research areas. Search words and phrases for this literature review included *online student engagement, distance education, online faculty, faculty-student communication, faculty perceptions, Community of Inquiry framework, teaching presence,*

cognitive presence, social presence, and online teaching. Resources were selected primarily from the years 2005 and more recent except for those that provided a historic and theoretical background of the problem.

Evolution of Online Education

A better understanding of the current state of online education, the role of the instructor, and online student engagement can be gained by briefly delving into the history and evolution of online education, enrollment and teaching. This section provides a historical background of several key issues pertinent to this research: 1) history and challenges posed by online education, 2) perceptions of online education from an institutional perspective, 3) evolution of online faculty roles.

Several authors have published descriptions of the evolution of online education and its challenges. The ability of students and instructors to communicate and interact via distance education has evolved significantly (Wallace, 2003). The first completely online undergraduate course originated in 1984, and the first online degree program in 1986 (Harasim, 2000). Since that time, considerable transformations in online learning have taken place (Harasim, 2000; Wallace, 2003; Kentnor, 2015). Prior to online education, two of the most common forms of distance education were correspondence courses and television broadcasts. These courses included written exchanges between instructor and student but provided limited feedback and interaction opportunities (Kentnor, 2015). The virtual learning evolution led to new opportunities for interaction between the students and the student and instructor (Harasim, 2000; Garrison et al., 2000). Expansion into online education posed new questions about the interactive role of the teaching and responsive communication aspects of the online classroom (Wallace, 2003)

Harasim (2000) outlined the paradigm shift of attitudes toward online learning, focusing on the very nature of learning in distance education. She explained that both distance and online learning were conducted anytime, any place and were largely text-based. However, the key distinction for online courses was the group communication phenomenon, more like the dynamic created in the traditional classroom. The evolution of online education introduced entirely new modes of educational delivery, learning domains and principles, learning processes and outcomes, and new educational roles and entities (Harasim, p. 45). Initially, the traditional learning model was based on transmission of information and less on collaborative learning and interaction. According to Harasim (2000), the weakness of this model soon became evident and further exploration expanded beyond information transmission into online pedagogy.

Wallace's (2003) literature review of online education delved into the complex nature of online teaching and aspects of student engagement, identified as a factor in student success and retention. Student engagement in distance education was initially measured by student interactions with the instructor, other students, and the learning management system (Wallace, 2003). However, focusing on interactions provided a limited view of student engagement and failed to address student learning. Wallace (2003) summarized several impacts on student learning and satisfaction. First, instructors in online courses fulfilled multiple roles and these included moderating discussions, managing the course flow, and responding to students. Two critical aspects that impacted learning and student satisfaction were an instructor's sense of presence and immediacy (Wallace, 2003, p. 271). Second, substantial evidence supported the combination of social presence, student interaction, teacher presence, and online community to create an optimal environment for student

learning and satisfaction (Wallace, 2003). This summary further supported the Community

of Inquiry framework (Garrison et al., 2000) used extensively to evaluate online learning.

Perceptions of Online Education

Allen and Seaman (2003 - 2017) have published annual reports about the condition of

online learning in U.S. higher education through quantitative data collected and analyzed by

the Babson Research Group. Their data on online enrollment, activities and attitudes are

based on survey responses from academic leaders representing more than 2,500 U.S. colleges

and universities. In 2012, this research group incorporated the Department of Education's

Integrated Postsecondary Education Survey (IPEDS) data when this was added to the

Department's statistics.   Their publications provide a long-term annual snapshot of how

online enrollment has grown and how faculty and administrators have embraced online

education (Babson Research Group Website, 2017).

Initially the analysis of online education data focused on embracing the new

technology and path toward learning. In their initial 2003 report, Allen and Seaman measured

how students, faculty and institutions embraced online learning. The quality of online

learning and whether outcomes would match that of traditional instruction were questioned

by stakeholders (Allen & Seaman, 2003).   Continued growth in online education in both the

non-profit and profit institutions was predicted.   One fifth of administrators perceived that

the quality of online courses would surpass traditional instruction over the next three years.

However, administrators' perceptions of faculty attitudes about the quality of online

education were low and findings about faculty varied, depending on the extent of online

offerings in that institutions (Allen & Seaman, 2003).

Perceptions of online education only improved slightly as online education exploded.

Five years after the initial online summary report, Allen and Seaman (2008) found that online

enrollment had more than doubled, with a 12% increase in the previous year alone. They attributed this increase to higher fuel costs and rising unemployment because of the U.S. economic recession. With this explosive growth, Allen and Seaman (2008) analyzed data about administrators' attitudes and faculty motivations for teaching online. Both administrators and faculty agreed that meeting the needs of the students who were demanding this teaching mode was the highest motivator for online education (Allen & Seaman, 2008). They found that faculty who were required to teach online were the least motivated and were also most concerned about student-centered issues with success. Even by 2011, faculty acceptance about the legitimacy and value of online education had only improved by only six percentage points between 2002 and 2009.

Even today, as online enrollment continues to increase, challenges with perceptions and attitudes about online education still exist. In their most recent summary, Allen and Seaman (2017) provided an update about enrollment and faculty acceptance of online education. Enrollment in online courses at colleges and universities has continued to increase, with 29.7% of all higher education students enrolled in at least one online course in 2015 (p. 11). There continues to be considerable online growth for public institutions, while for-profit enrollment has declined (Allen, et al., 2017, p.4). For public 2-year institutions, enrollment was consistent from 2012 – 2015 (p. 16). In evaluating institutional perceptions, only 29.4% of chief academic officers in higher education institutions believed their faculty accepted the value of online education, and this was a decline since 2004 (p. 6). One third of these administrators cited faculty as a significant obstacle to success (p. 27). This report further affirms the timeliness and importance of this research study: uncovering faculty perceptions and practices in teaching online.

Evolution of Online Faculty Roles

Through the evolution of online education, distinct challenges for faculty have been identified as they face their teaching roles. Initially, there was a failure on the part of educators and administrators to recognize the distinct difference between the online and traditional teaching and the learning environment. Shelton and Saltsman (2005) reported that the most common complaints from online faculty were a lack of understanding of online teaching methods, lack of institutional support, and skepticism about the quality of education (Shelton & Saltsman, 2005). In addition, perceived burdens were placed on online faculty to manage course tasks beyond the context of direct instruction, with considerable administrative, organizational, technical, and pedagogical challenges (Harasim, 2000). Often, faculty were faced with helping students manage information overload and evaluating the quality of information provided as they navigated through the vast new virtual learning world (Harasim, 2000).

Over time, the identity of the "virtual professor" was formed. Harasim (2000) described the virtual professor as "an educator who chose to teach online or in addition to teaching traditional classes" (Harasim, 2000, p. 57). Her studies indicated that virtual professors had to learn how to facilitate and engage rather than simply lecture and present information. She found that the instructor took on the role of participant and more ownership was placed on the student (Harasim, 2000, p. 58). Key roles of faculty included course moderation, mediation and facilitation, with the goal of creating "courses that are constructional or conversational, and discourse and teamwork created a sense of commitment" (Harasim, 2000, p. 53).

The role of the online instructors evolved from content facilitator to a focused effort toward higher learning and engagement (Wallace, 2003). Early views of online teaching

focused on instructors as facilitating or moderating coursework. The term "facilitating"

implied that instructor knowledge of subject matter was limited and Harasim (2000) argued

that subject matter knowledge was just as important in effective teaching.   Wallace (2003)

emphasized the critical nature of faculty interactions with students, beyond the flow of

content within the course. He also named a key problem with online student learning, which

was failure to move students toward true knowledge building. Solutions proposed in this

summary of early research included the promotion of social presence, student interaction,

teaching presence and sense of community (Wallace, 2003).

Expansion of access to information through technology impacted faculty roles in

online teaching. Students' 24-hour course access changed demands students had about

receiving answers to questions and feedback from instructors (Young, 2006; Dennen, Durabi,

& Smith, 2007; Orso & Doolittle, 2011; Stott, 2016). In addition, access to nearly unlimited

resources required the online instructor to help students' process and make sense of

information beyond the virtual classroom and the textbook (Harasim, 2000). Text-based

communication led to large volumes of text to read, increasing the time involved with online

teaching (Conceicao, 2006; Stott, 2016). Positively, the computer-mediated environment

allowed instructors to create customizable learning environments best suited to their topic

(Harasim, 2000).

Learning management systems are essential to the delivery of online courses, and

faculty interaction and acceptance of technology has been studied (Coates et al., 2005).

Wingo, Ivankova and Moss (2017) conducted a literature review about faculty acceptance of

technology in online education over a twenty-year span (1995-2015). Using the Technology

Acceptance Model, they focused on perceptions of ease of use, usefulness, image as an

online instructor, job relevance and output quality. Primary concerns identified over this time-span were effective communication, technical proficiency, legitimate achievement of learning outcomes and uncertainly about expectations and evaluation of online teaching. Positive outcomes were that technology allowed faculty to have flexible teaching schedules and location, professional growth in learning new technology and access to training. Finally, they summarized that as faculty gained more experience, they could better adapt to technology changes, and perceptions of mastery of technology and the learning management system improved teaching satisfaction (Wingo, Ivankova, & Moss, 2017).

Online Faculty

The evolution of online education has transformed online faculty employment, characteristics, perceptions, and satisfaction (Conciecao, 2006; Bolliger & Wasilik, 2009; BestColleges, 2016). This summary of literature provides insight about the online faculty population and origins of online teaching expectations.

Employment of faculty teaching online has changed over the past two decades. Initially, faculty were asked to teach online courses in addition to traditional courses and adapt accordingly (Harasim, 2000). Then, exclusively online institutions led to creation of full-time online faculty positions (Allen & Seaman, 2014; Stewart, Goodson, & Miertschin, 2010; Mitchell, Leachman, & Masterson, 2016). Over the past decade, the hiring of part-time faculty to teach online has continued to increase to meet course delivery demands in a cost-effective manner. Continued reliance on more part-time faculty to teach online is predicted (BestColleges, 2016; Allen & Seaman, 2017).

Two phenomenological case studies have provided further insight about the characteristics of the online teaching experiences (Conceicao, 2006; Stewart et al., 2010). Conciecao (2006) described the changing teaching role and work intensity. Faculty in her

study described the time involved in organizing the course, meeting different learning styles,

providing material in advance and especially, the time required to communicate effectively

and provided feedback. Faculty thought about their online roles differently – as a

partnership. "Knowledge becomes an activity shared by the online learning community.

Expertise is part of a collective effort between learners and the instructor" (p. 44.) Stewart et

al. (2010) also emphasized the importance of online faculty characteristics as being good

time managers and avoiding procrastination.   Other successful qualities included being

adaptive, technologically literate, able to work without social reinforcement, and having an

independent working style (Stewart et al., p. 189).

Barriers about online education and teaching have been measured and analyzed.

Lloyd, Byrne and McCoy (2012) identified perceived online education barriers in one public

4-year institution in the southwest U.S.   In their sample of 75 faculty (90% full-time), 78%

had completed a mandated statewide online training course called "Facilitated Online

Learning" (Lloyd, Byrne, & McCoy, 2012, p. 3). Barriers were classified into institutional,

training and technology, interpersonal and cost/benefit analysis.   Consistent with their

literature review, those faculty with the least experience in online education perceived greater

barriers, as did faculty who were older. Overall, the time commitment of teaching online was

the most frequently cited and highly rated barrier to teaching online (Lloyd et al., 2012).

Mitchell, Parlamis and Claiborne (2015) summarized literature about faculty

avoidance of online education applying the Transtheoretical Model of Change. "Faculty,

who are both the recipients and agents of change, must be open to online education to

increase the likelihood of its successful implementation" (p. 354). They emphasized

recognizing sources of faculty resistance including cultural assumptions, fear of the

unknown, fear of disruption in personal relationships and concerns about the external impact of change (p. 357). Based on their analysis, Mitchell et al., (2015) made six recommendations moving through the precontemplation and preparation stages of change. These included being clear about online faculty roles, validating fears, encouraging faculty to express their opinions, providing meaningful data about online outcomes, and finally, revising training and support (Mitchell et al., 2015).

Windes and Lesht (2014) studied the motivating and inhibitive factors that may draw or drive away faculty from online teaching. Previous literature identified motivators such as teaching with innovative technology, the ability to respond to student demands, flexible schedules, support in instructional design and additional income. Inhibiting factors included concerns with the quality of online education, the time involved and potential loss of contact with students (Windes & Lesht, 2014). They surveyed faculty (n=342) teaching in two-year, four-year, public and private institutions about their experience and factors that influenced their choice of online teaching. They discovered that experience teaching online led to improved perceptions about online education overall. Primary motivators of online faculty in all institutions were first, meeting the needs of students and second, market demand for online courses to remain competitive in higher education. Inhibitors included losing contact with students and lack of release time to teach online. Of interest was the finding that community college faculty expressed a negative shift in institutional attitude toward online teaching (Windes & Lesht, 2014).

Stott (2016) painted a portrait of the online faculty in his reflections of a "lonely, brave, and rather exposed" online instructor (p.51). He described ongoing challenges of online teaching in a review of previous literature. Comparing student engagement and

conclusions about his own online course, his findings concurred with Windes & Lesht (2014), Conceicao (2006) and Otter (2013).   The time involved in online teaching was extensive and underestimated (Stott, 2016). In addition, Stott (2016) expressed concerns that poor student engagement posed risks not only to the student, but also the instructor. Poorly engaged students rated instructor effectiveness as low. Students taking traditional courses and online courses simultaneously consistently rated online courses lower. Lagging student success and negative feedback may impact faculty perceptions of recognition and reward associated with teaching and lead to higher burnout (Stott, 2016). At the same time, students wanted faculty to teach and provide information rather than take ownership over their own learning (Stott, 2016).

Technology has also shaped perceptions of online education, as previously reviewed by Wingo, Ivankova and Moss (2017). Tabata and Jonsrud (2008) measured faculty use and attitudes about technology in a 10-campus public university system.   Faculty with higher technological proficiency, viewed technology as relevant and meaningful. These faculty were more likely to participate in and encourage distance education and perceived their instructional skills as being higher than those in traditional education delivery alone (Tabata & Johnsrud, 2008). These findings are consistent with published research of Liaw, Huang, and Chen (2007) and Otter et al. (2013).   Liaw et al. (2007) reported high perceived enjoyment, usefulness and self-efficacy toward e-learning among online faculty overall. Otter et al. (2013) compared faculty and student perceptions of online and traditional course delivery.   Faculty with more favorable perceptions of advanced technology also had more favorable perceptions of online course effectiveness and technology ease of use (Otter et al., 2013).

Online faculty satisfaction is one of the five pillars of the Online Learning Consortium's Quality Framework, promoting quality online education nationwide (www.onlinelearningconsortium.org). Bolliger & Wasilik (2009) discovered in their survey research of 102 online faculty that student-related factors were more important to satisfaction than instructor or institutional-related factors. Student success was important to faculty, and "The majority of faculty believed that their online students are actively involved in their learning, participate at a good level, and communicate actively with course instructors." (p.113). The impact of student success on faculty satisfaction concurs with Stott (2016) as previously noted.

Adjunct Faculty

Utilization of adjunct faculty online is extensive and impacted by increasing course demand and financial constraints within institutions. Full-time faculty are not always able to fill the gap in course demand (Mandernach, Register & O'Donnell, 2015). Use of adjunct faculty increased as institutions faced challenges in meeting the employment guidelines of the Affordable Care Act and the number of hours assigned to adjunct faculty were limited (Mandernach et al., 2015). Over the past decade, fewer adjunct faculty are working in the private sector and are instead employed at more than one academic institution (BestColleges.com, 2016). In community colleges, the dramatic growth of online education has created a challenge for institutions to have adequate faculty to meet course demand (Allen & Seaman, 2013; BestColleges, 2016).

There is debate about whether adjunct faculty can provide the quality of online education as full-time faculty (Shelton & Saltzman, 2005; Mueller, Mandernach, & Sanderson, 2013). For example, one such study compared the outcomes of online students enrolled in 396 sections of an introductory course taught by both full-time and adjunct

faculty. Those students taught by full-time faculty had improved success rate, lower withdrawal rate and slightly higher mean course grades (Mueller et al., 2013, p. 344). In a special report from the Center for Community College Student Engagement (CCCSE) (2014), their survey of community college faculty indicated that part-time faculty spent less time providing feedback to students and preparing for class, and referred fewer students to support services (Center for Community College Student Engagement, 2014).

Bedford (2009) has provided a thorough description of the "professional adjunct" in her qualitative study investigating the motivations and demographics of online faculty who are employed part-time in multiple institutions. She defined full-time adjunct faculty as a "third group of instructor" (p. 2) who do not fall within the traditional full-time and adjunct categories and complicates the faculty-institution relationship. Her findings indicated that those faculty teaching full-time in multiple institutions did so because online teaching fit into their teaching style. In addition, they reported adequate preparation for online teaching to fill this niche and were committed to online quality instruction (Bedford, 2009).

Increased use of part-time faculty also supports the need for consistent online institutional policies and teaching practices (Harasim, 2000; Mueller et al., 2013). Peters et al. (2011) identified that adjunct faculty, particularly those teaching in technical programs, lacked training on pedagogical/andragogic teaching strategies. Mueller et al. (2013) recommended that institutional policies be developed to encourage adjunct faculty to be invested in in the resources beyond the contracted online teaching expectations. In addition, they recommended that additional training focused on adjunct faculty include clear expectations for teaching practices (Mueller et al., 2013).

Online Faculty Training

This study does not focus specifically on the extent or quality of training online faculty have received but does inquire about whether participants have received trained about teaching practices that promote student engagement. Therefore, it is of value to expand briefly on how training for online faculty has evolved and examples of the degree to which it has been implemented within institutions, particularly community colleges.

Since the inception of online education, prevalence of faculty training and perceptions of preparedness for teaching have varied (Haber & Mills, 2008; Meyer & Murrell, 2014). In their annual institutional survey of online education (public, private, 4-year and 2-year institutions), Allen and Seaman (2011) found that although the approach to training online faculty for teaching was inconsistent, there was considerable improvement in the number of institutions offering online faculty training (Allen & Seaman, 2011). Most institutions reported providing internal training courses (72%) and online mentoring (58%). Larger institutions and those with exclusively online programs were much more likely to have training programs in place than those without them (Allen & Seaman, 2011, p. 21).

The focus of training for online faculty has shifted since online education has expanded. Technical training on the learning management system has long been the primary focus in preparing faculty for online teaching (Wolf, 2006). Since the inception of online education, efforts have moved toward utilizing the tools within the learning management system in ways that engage students, such as allowing students to see, hear and get to know their teacher despite the distance between them (Jaggars et al., 2013, p. 3). Meyer and Murrell (2014) found the degree of emphasis on teaching pedagogies versus online teaching tools was dependent on the type of institution and emphasis on online pedagogies surpassed teaching tools.

Meyer and Murrell (2014) reported variability in the approach to training, but consistency in the content of online faculty training in their study of 39 higher education institutions during the 2011-2012 academic year. Nearly all institutions reported that online faculty training included assessment of student learning, creation of online community, accommodation of different student learning styles, optimal instructional design and effective use of the learning management system (Meyer & Murrell, 2014, p. 8). This list is consistent with the training areas that Batts et al. (2010) reported for community college faculty in a statewide system.

Findings about training for faculty teaching online in community colleges have been reported. Meyer and Murrell (2014) found that 2-year institutions offered training less frequently than 4-year institutions. Batts et al. (2010) reported that 58% of community college faculty had not received off-campus training for online teaching in the past year. Consistent with Allen and Seaman (2012), Batts et al., (2010) reported that faculty expressed the need for enhanced or additional training for online teaching. Lichoro (2015) conducted a qualitative study of online community college faculty to describe their experiences in transitioning to online teaching. In his unpublished findings, faculty concurred that as they transitioned to teaching online, they felt ill prepared to teach in this setting (p. ix). Meyer (2014) found in her qualitative study that the online community college faculty wanted additional training about using online tools more effectively with diverse students.

Studies have been conducted to evaluate the effectiveness of online faculty training programs by measuring faculty perceptions and student engagement outcomes (Covington et al., 2005; Bigatel & Williams, 2015). Covington et al. (2005) studied a professional development pilot program for training online faculty for professional writing courses

transitioned to online delivery.   Comparing faculty surveys before and after the training, participants reported a positive attitude shift about teaching online and an improvement in perceived confidence after participating in the training (Covington et al, 2005). Bigatel and Williams (2015) found that online students reported higher engagement in courses taught by faculty who had received professional development on student engagement practices. However, they concluded that it was too difficult to determine from their survey instrument whether student engagement was impacted by the professional development faculty had received, the innate qualities of the faculty's teaching abilities, or the course design (Bigatel & Williams, 2015). They recommended continued in depth study of student outcomes because of training.

Some online faculty receive training from an external source rather than within the institution. Online quality assurance programs such as Quality Matters have evolved to provide standards and training for online faculty worldwide (Quality Matters, 2017). Quality Matters is a nonprofit organization whose organizers have developed online course rubrics using a peer-review setting to evaluation online course quality and organization. This group provides training to faculty on course evaluation and overall improvement in online course quality.   More than 1300 colleges and universities have subscribed to the program, and 52,000 educational professionals have been trained in this program (Quality Matters, 2017).

Characteristics of Online Students

Online education has shifted the focus of instruction from faculty-driven to student-driven, so an understanding of online students is needed. Characteristics of online students have evolved now that online education is considered mainstream. This literature review section will include characteristics online students, explanations of why students choose online course delivery, and findings about successful online student characteristics.

For the first time, students are entering higher education institutions with an entire lifetime of experience interacting in a virtual world. According to Marc Prensky (2001) in his article regarding the thinking process of the current generation of students, he defines digital natives as those "native speakers" of the digital language of computers, video games and the Internet (Prensky, 2001, p. 1). He expounded on the differences in brain processing for students who have grown up interacting with computers and video throughout their lives. This poses unique challenges for instructors, who typically fall into the digital immigrant category. Higher education instructors must modify courses to meet the language and learning style needs of these students.   As in Prensky's (2001) publication, community college students include both digital natives and digital immigrants, and the faculty serving these students must adjust accordingly.

Characteristics of students who choose online courses and programs have been identified. Online students are more life-centered, experience-based, skill seeking, solution-driven and both internally and externally motivated (Trowler, 2010). Dabbagh (2007) identified changing demographics of online students as online education evolved. Early online learners were described as self-motivated, autonomous adult learners with competing work, family and social commitments (Dabbagh, 2007). A more recent profile of online learners has been described as diverse, dynamic, tentative, younger, and responsive to technological changes (Dabbagh, 2007). Dabbagh (2007) concluded that successful online students possess strong academic self-concept, fluency with technology, exhibit interpersonal and communication skills, understand and value collaborative learning, possess an internal locus of control, and exhibit self-directed learning and need for affiliation (Dabbagh, 2007, p. 220).

There are numerous reasons why community college students may be attracted to online course delivery. Swan and Daston (2016) suggested that online learning was implemented in community colleges primarily to provide access for underserved students, not able to attend courses in person due to time or location constraints. These courses offer flexible schedule options and independence for self-directed learners (Johnson & Berge, 2012). Student limitations may include geographic location, location of the educational program, competing work schedules, and family commitments (Ludwig-Hardman & Dunlap, 2003). A study of North Carolina community college systems indicated that students chose online courses based on whether they believed the subject was suited to online context, perceived difficulty of the subject matter presented, and how interested they were in the subject matter (Jaggars et al., 2013, p. 2).

Johnson and Berge (2012) described characteristics of a successful online community college student and mirrored those characteristics described by Dabbagh (2007). They also concluded that adult students were more autonomous, self-directed and goal-oriented (Johnson & Berge, 2012). Johnson and Berge (2012) questioned whether some community college students have made the transition to being adult learners and recommended students be encouraged to complete a self-assessment of their readiness to enroll in online coursework. Their review cited varying findings about poor online student academic performance and higher drop-out rates, a perpetual problem in online education, and the challenge in trying to reach such a diverse student population (Johnson & Berge, 2012). As noted by Stott (2016), students wanted the instructor to provide the information, rather than take ownership over their own learning.

Online Student Retention Problem

The perpetual question about why higher education students are not retained is still elusive. Hagedorn et al. (2012) provided an overview of the challenge in defining student retention within higher education. Low student retention impacts students and higher education institutions in multiple ways. These include students failing to achieve their educational goals, negative financial impacts and failures of programs and institutions in carrying out their missions (Tinto, 2012). For online students, retention typically refers to that student's decision to remain and achieve success in the online course (Bawa, 2016) rather than students who remain enrolled in the institution from fall to fall terms (Noel Levitz Retention Codifications, 2008).

Online students introduce a unique set of persistence challenges for colleges and institutions. The latest data about student retention, particularly in online courses in 2-year institutions, indicates little progress has been made (Allen et al., 2016). Online retention trends are not limited to a specific period or level of graduation. Students stop out of online courses at any point in the semester and at any point in the learning process (Bawa, 2016). For example, Jaggars, (2011) reports that online students are more likely to drop mid-semester than those students in traditional delivery courses. The fact that students can drop out an any point creates additional challenges for faculty and institutions not only for retention but tracking students in the system (Bawa, 2016).

External, internal and contextual factors can influence students' decision to drop out and contributes to the complexity of the situation (Croxton, 2014). Cochran et al., (2014) found that a higher cumulative GPA and having senior status positively correlated with improved online course retention, and other impacting factors such as previous withdrawal

from an online course, receipt of loans, age and ethnicity varied by major (Cochran, Campbell, Baker, & Leeds, 2014).   James, Swan and Daston (2016) determined that online student retention in community colleges was positively impacted by dual enrollment in online and traditional courses, and being an adult student. Park and Choi (2009) found that family and institutional support as well as students' satisfaction and attitudes toward course relevance were most predictive of positive online student retention (Park & Choi, 2009). Coates (2004) and Jaggars (2011) concluded that students with poor academic preparation were more likely to drop out of online courses and less like to return in subsequent semesters.

Faculty in higher education are known to have in impact on students at high risk of dropping out (Croxton, 2014). High-risk students are more likely to benefit from increased interaction with faculty (Lundberg, 2003). Schreiner et al. (2011) identified attitudes and behaviors of faculty in traditional course settings that contributed to higher student persistence.   To improve retention, creating a connection and building relationships between students and faculty was the most common positive factor described by students, faculty and staff. The most influential faculty approached teaching "with a sense of mission and calling" and expressed that it was their responsibility to connect with and impact students (Schreiner et al. 2011). Unique to 2-year institutions, community college faculty reported that they took more time to explain concepts, provide positive feedback, convey confidence, and serve as role models (Schreiner, Noel, Anderson, & Cantwell, 2011, p. 331).   In addition, community college faculty and students reported the importance of respect, both for students' abilities and strengths as well as respect for their life situations and responsibilities (Schreiner et al., 2011).

The Case for Student Engagement

Achieving student engagement, like student retention, is an equally complex problem within higher education (Kuh, 2003; Stanford-Bowers, 2008; Dixson, 2015; Quaye & Harper, 2015). Student engagement has been studied for decades and continues to be a focus in higher education across the U.S. In review of the published work of Astin (1975), Tinto (1987, 1993, 2012), Kuh et al. (2003, 2008, 2010) and others, their theories and research findings support student engagement as a key factor in improving student persistence. For decades, George Kuh has been making the case for student engagement to measure and improve the quality of education for the increasing diverse set of higher education students (Kuh, 2003). Kuh's engagement premise claims 1) the more students study, the more they learn 2) the more practice and feedback they receive, the more skilled they become in that area and 3) being engaged is and of itself contributes to key life skills for the future (Kuh, 2003).

There are a myriad of definitions and measures of student engagement described in the literature. Differences exist in determining with whom students should be engaged, and whether the focus of engagement is on student learning, student identity, or the structure and processes in place (Trowler, 2010). For example, Cole and Chan (1994) defined student engagement as "the extent of students' involvement and active participation in learning activities" (p. 259). Kuh defined student engagement as "the time and energy students devote to educationally sound activities" (Kuh, 2003, p. 25). In a summary of student engagement literature, Trowler (2010) compiled definitions to broadly describe student engagement as "concerned with the interaction between the time, effort, and other relevant resources invested by both students and their institutions, intended to optimize the student

experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution" (Trowler, 2010, p. 3).

Decades of studies have uncovered numerous factors impacting student engagement and have affirmed the complexity of the student engagement problem (Carini, Kuh, & Klein, 2006; Kuh et al., 2007; Trowler, 2010; Meyer, 2014). In 2007, Kuh et al. and others identified key student characteristics that can negatively impact engagement (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2007; Johnson & Berge, 2012). These included poor academic preparation, first generation college attendees, taking time off before attending college, working more than 30 hours per week, part-time enrollment, financially independent and managing life roles such as being a single parent and having children at home. He concluded that as these characteristics compounded, the less likely the student was to succeed and persist (Kuh et al., 2007). Other variables impacting engagement included the type of institution (Kuh, 2003; Carini et al., 2006), engagement with technology (Laird & Kuh, 2005), quality and rigor of course content (Gonyea, 2006), and demographic factors of race, gender, first-year enrollment, and first-generation students (Quaye & Harper, 2015). Perhaps most importantly for community colleges, Carini, Kuh and Klein (2006) found that those students with the lowest academic ability benefited the most from engagement activities. These finding are of importance in this study because many students enrolled in online community college courses have these characteristics and may be academically at-risk (Johnson & Berge, 2012).

Measuring Student Engagement in Higher Education

Nearly two decades ago, a need for better data to evaluate quality in higher education and an effort to address the student engagement problem led to the development of the

National Survey of Student Engagement (NSSE) (National Survey of Student Engagement, 2017). Through these efforts, a widely-used definition and description of activities that promote student engagement were developed for the survey instrument. The NSSE components of engagement include active learning, participating in challenging academic activities, quality communication with faculty and staff, enriching educational experiences, and perceived support by the higher education institution (National Survey of Student Engagement, 2017). In 2013, the benchmarks were revised into themes, which included engagement indicators and high impact practices (*NSSE: From benchmarks to engagement indicators and high-impact practices*, 2014). NSSE data are based on the collective experience of users and used to promote student engagement and improve education policy and practice. In 2015, 587 colleges and universities participated in the NSSE survey and incorporated engagement into their institutional assessment plan. (National Survey of Student Engagement, 2017).

Community college engagement differs from other higher education institutions. Community College Survey of Student Engagement (CCSSE) data have indicated that engagement has consistently been lower in community colleges than four-year institutions. In a 2009 CCSSE summary report, an estimated 62% (as high as 90% in some colleges) of community college students were considered underprepared for college-level courses and required remedial education. Positively, according to the CCSSE benchmarks, eleven years of data show that overall student engagement improved from 2004-2014 (Center for Community College Student Engagement [CCCSE], 2015, p. 1). However, student engagement for exclusively online students has been found to lower than students enrolled in blended instruction and those online students enrolled part-time are even less likely to be

engaged (Jaggars et al., 2013). With the growth of online education, remedial courses were increasingly being offered online in community colleges. Faculty reported that even in the "Net Generation", it could not be assumed that students were able to successfully use technology in their online courses. Additional research was recommended to determine the efficacy of online developmental education (CCSSE, 2009, p. 9).

Online Student Engagement

Online students pose unique challenges in achieving engagement with learning, the course and the institution. First, online students are increasingly diverse, as previously noted, with competing life roles and barriers to learning (Dabbagh, 2007). Online courses attract traditional, non-traditional students and students in dual-enrollment high school programs. Engagement strategies for online students must expand beyond understanding demographics to focusing on social psychology of students (Palloff, 2005, p. 4). Second, despite the expanse of technology into daily living and use of smart phones, students have technical issues with learning management systems and lack appropriate access to the Internet, a computer, or software needed to access the assignments (Haber & Mills, 2008; CCSSE, 2009; Simpson, 2012; Baker, Bernard, & Dumez-Feroc, 2012). Third, online faculty have reported that students are resistant to interacting with the instructor and one another, despite efforts to encourage social interaction (Haber & Mills, 2008). "I think they (students) take online courses sometimes so they don't have to interact. They want to do the work, turn it in, and that's the end of it" (Haber & Mills, 2008, p. 275). Finally, online students in community colleges may be less prepared for the rigor of college-level courses and often require remediation (CCSSE, 2009).

Measuring Online Student Engagement

Student engagement research has concluded that engagement principles and strategies implemented for the traditional classroom can be applied to online learners (Kuh, 2003; Coates, 2007; Robinson & Hullinger, 2008; Meyer, 2014). Hundreds of studies have sought to answer research questions about student, faculty and institutional actions that impact online student engagement. This section summarizes measures of online student engagement and faculty definitions.

Online student engagement scales have been developed to measure student perceptions and online engagement activities (Coates, 2007; Dixson, 2010; Pittaway, 2012; Dixson, 2015). Coates (2007) focused on the impacts of the learning management system on learning and student engagement. Through a Student Engagement Questionnaire (SEQ), he developed a statistical model evaluating student engagement of on-campus students also using online learning systems. The SEQ provided direct measures of the extent to which students were engaging with activities and conditions that were likely to promote learning within the learning management system. Students' responses were classified based on different (transient) states of engagement as intense, collaborative, independent, or passive. These states of engagement impacted students' likelihood to engage in social, cognitive or collaborative online activities. Coates' (2007) model did not assess engagement of entirely online students.

Pittaway (2012) developed a student engagement program for Faculty of Education in an Australian university. In her Engagement Framework, student engagement is based on four key principles: staff engagement, development of respectful and supportive relationships, student responsibility for their own learning, and student development of knowledge, understandings, skills and capacities. Pittaway (2012) theorized that engagement

occurs when learning is scaffolded, high standards are set, and expectations are clearly communicated (p.40). Based on these principles, she developed an engagement framework with interacting elements which included academic, personal, intellectual, professional and social.   Pittaway's (2012) model was not tested, only described in her published work.

At least one student engagement scale has been developed based on the Community of Inquiry framework. Dixson (2010) developed her own online student engagement scale by combining three previously-tested engagement instruments focusing on engagement and interaction within online courses. The original instruments were based on Social Constructivism, the Community of Inquiry framework and additional research about engaging online teaching strategies.   A focus group of online instructors assisted with adapting the survey items for online application.   Engagement behaviors in the survey instrument were divided into skills (e.g. studying, note-taking), emotion (e.g. putting forth effort, applying the information), participation (e.g. interacting and engaging with others) and performance (e.g. grades and test performance).   Reliability for the pilot instrument was tested with 31 online students, which produced two global items within the course and two global items of social presence (getting to know other students and your instructor).   For her research, 186 undergraduate students in 38 online courses from six campuses at a large, Midwest university completed the survey. From the analysis of this data, Dixson (2010) concluded that no one single online activity produced higher online engagement but that the overall measure of engagement warranted further validation.   She concluded that multiple communication channels may be correlated with student-student and student-instructor interaction and recommended continued testing of the instrument (Dixson, 2010).

Dixson (2015) conducted further research using the online student engagement scale. She compared online student engagement survey data of 34 online students with their interactivity in their online courses, analyzing observational and application learning behaviors. Observational learning behaviors included interaction with course content, such as reading and watching lectures. Application learning behaviors included taking a quiz or responding to a discussion post. Dixson (2015) predicted that both types of behaviors would be correlated with higher engagement but found that only application learning behaviors significantly correlated with higher engagement using her scale. Dixson (2015) concluded that perhaps activities such as reading course material, e-mail and posts weren't simply enough to be "engaged" (p. 9).

Faculty Definitions of Engagement

Minimal research has been conducted about how online faculty define student engagement and how engaged they perceive their students to be based on these definitions. In the unpublished study of Berger (2014), this researcher obtained input from online faculty and students in a private, not-for-profit institution about which definition of student engagement they could most closely relate and whether their online courses were engaging. Online faculty chose between the Kearsley and Schneiderman (1999), Kuh (2009a), and Coates (2007)/NSSE (2003) definitions. Faculty and students overwhelmingly (70%) chose the Coates (2007)/NSSE (2003) definition, which is defined as "a broad construct intended to encompass…academic as well as…non-academic aspects of the student experience, including active and collaborative learning; participation in challenging academic activities; formative communication with academic staff; involvement in enriching educational experiences; and feeling legitimated and supported by university learning communities" (Berger, 2014, p. 113). Berger (2014) concluded that this preference was possibly due to the

definitions' inclusivity of multiple concepts on student engagement. She also reported that more than three-fourths of students and faculty found online courses to be engaging based on this definition (Berger, 2014).

Community of Inquiry Framework

"Theories explain what happens and why it happens, and learning theories generate educational practices and the improvement of practice. Learning theories underpin how traditional face-to-face and online courses are designed and therefore indicate how online learning can improve in the future" (Meyer, 2014, p. 14). The Community of Inquiry framework is one of the most prominent frameworks used in understanding student learning (Meyer, 2014). The Community of Inquiry authors contend that strategies developed to impact student engagement are effective because they focus on active learning, such as collaborative and experiential learning (Garrison, Anderson, & Archer, 2000). This portion of the literature review will provide an explanation of the development of the Community of Inquiry framework and a chronological summary of key research findings supporting teaching strategies within the framework.

Framework Overview

The Community of Inquiry framework is a "process model, incorporating three forms of presence, intended to capture the dynamics of the educational experience" (Garrison et al., 2009, p. 6). It is based on several fundamental assumptions and perspectives for understanding the applications of e-learning (now referred to online learning). This perspective is based on the historical work of John Dewey, who pioneered the concept of action-based education and transactional communication (Garrison, Anderson, & Archer, 2009; Garrison, 2017). It is based on the belief that "there is an inseparable relationship between the social environment and personal meaning making. Collaboration and

constructivism correspond respectively to the teaching and learning responsibilities of an educational experience" (Garrison, 2017, p. 9). Recognizing these concepts is key to understanding the Community of Inquiry framework and ultimately applying via online teaching approaches that enhance learning and engagement.

One key assumption of the framework is that a student never learns in isolation (Garrison et al. 2000). Therefore, the Community of Inquiry describes a collaborative approach to thinking and learning, brought together by electronic technologies used to deliver education. Even though learners must be self-directed, they are continually impacted by their environment. Electronic communication has led to new transaction opportunities that allow for connection and collaboration to occur (Redmond & Lock, 2006). Garrison (2017) declared that it is human nature to be social, collaborate and recognize the strength of a group. Unfortunately, conventional educational approaches have focused on learning as an individual activity (Garrison, 2017).

To develop the Community of Inquiry framework, computer-mediated transcripts were reviewed to identify categories and specific transactional indicators within each element of presence (Garrison et al., 2000). The authors believed cognitive presence was the most basic to success because the meaning of information is constructed through sustained communication. Social presence was defined as "the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves as 'real people'" (Garrison et al., 2000, p. 89). Teaching presence focused first on the course design, then facilitation by both instructor and students, and was meant to enhance cognitive and social presence. According to the developers, teaching

presence was developed when faculty designed the cognitive and social elements for

educational purposes (Garrison et al., 2000). See Figure 1.

Figure 1. *Community of Inquiry Framework (*Garrison, Anderson and Archer. 2000 p. 88).

Each form of presence within the framework plays a critical role in promoting higher

learning and engagement (Garrison et al., 2000). First, cognitive presence is directly related

to how communication is restricted or encouraged, and is likely the most difficult for

students to develop in online courses (Garrison & Arbaugh, 2007). Garrison et al. (2000)

found there was need for valid indicators in comparing the extent of meaningful facilitation

when comparing face to face learning with computer conferencing. They believed that

cognitive presence could stand alone and must be reinforced by a broader social

environment, which included high-order thinking skills and collaborative work. "Cognitive

presence is operationalized by the Practical Inquiry (PI) model that consists of four phases of

inquiry – triggering event, exploration, integration and resolution" (Garrison, 2017, p. 26).

The work of Garrison and others determined that students struggle to achieve the integration and resolutions phases, in part because of low expectations of students in online education (Garrison et al., 2009).

Second, social presence is needed to promote sustained cognitive presence through collaboration (Garrison et al., 2000). Their theory is that collaboration draws learners into shared experiences for the purposes of constructing and confirming meaning. Collaboration helps students create a qualitative dimension to the meaning of content. They reported that familiarity, skills, motivation, organizational commitment, learning activities, and length of time using the learning media directly impacted social presence (Garrison et al., 2000). For online faculty, the challenge is creating social presence using text communication. With text communication, the lack of immediacy may hinder personal relationships and be limiting for critical discourse (Garrison, 2017).

Finally, teaching presence binds cognitive and social presence together and coordinates learning activities. The presence of a teacher provides the appropriate facilitation, leadership and direction within the online course. Accomplishing this in a virtual setting can be challenging (Garrison et al., 2000). A teacher's presence can be felt when student's contributions are acknowledged and guidance is provided (Garrison et al., 2009). Teachers are needed to regulate the amount of content included, moderate discussions, determine group sizes, assess understanding, and ensure the best medium of communication. For example, Garrison et al. (2009) recommended that a small group discussions focus on a topic for only a week or two. Students would have time to reflect and contribute after formulating their thoughts and avoid losing focus and connectivity.

Focusing on teaching presence, Shea et al., (2006) developed an evaluation scale specifically for measuring teaching presence. This instrument incorporated student perceptions of community based on Rovai's (2002) classroom community instrument. The three areas of teaching presence included design, direction and facilitation. Following data collection, they concluded that the order of the teaching process was not distinct yet still important (Shea et al., 2006). This study identified a positive correlation between online instructor behaviors that supported teaching presence with improved perceptions of community. They discovered that activities classified as "directed facilitation" contributed more to the equation than effective course design or instruction (Shea et al., 2006, p. 185). Examples of directed facilitation behaviors included drawing in participants, creating an open learning environment, keeping students on schedule, diagnosing misconceptions, facilitating areas of student disagreement, reinforcing student contributions, injecting their own knowledge, and confirming student understanding. Effective instruction behaviors included clear communication about assignment instructions, deadlines, goals, key topics and how to navigate the course (Shea et al., 2006, p. 185).

Garrison and Arbaugh (2007) recommended quantitative studies to identify moderating factors about the relationship between the three Community of Inquiry factors. They sought to determine if the three core elements really captured the core dynamics of the Community of Inquiry. Arbaugh et al. (2008) tested a 34-item survey instrument in a multi-institutional sample to better understand the relationship between Community of Inquiry variables and student outcomes (Arbaugh et al., 2008). Their findings indicated that the instrument was a valid measure of teaching, social and cognitive presence. See categories and indicators in Table 2.1. Their data analysis also produced a possible fourth factor, which

was inconclusive. They surmised that teaching presence might be divided into pre-course

(design and organization) and in-course activities (facilitation and direct instruction) (p. 135).

Table 2.1   *Community of Inquiry Categories and Indicators*

Elements	Categories	Indicators (examples only)
Social Presence	Personal/affective	Self-projection/ expressing emotion
	Open communication	Learning climate/ risk-free expression
	Group cohesion	Group identify/collaboration
Cognitive Presence	Triggering event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Applying new ideas
Teaching Presence	Design and organization	Setting curriculum and methods
	Facilitating discourse	Shaping constructive exchange
	Direct instruction	Focusing and resolving issues

From Garrison, D.R., *E-learning in the 21ˢᵗ Century,* New York, NY, Routledge, (2016) p. 28)

Garrison et al. (2009) summarized the first ten years' application of the Community

of Inquiry framework in online education. According to Garrison et al., (2009) the evolution

of teaching presence was most significant over the first ten years. These original authors

discussed the methodological challenges in developing the Community of Inquiry

framework, particularly with the subjectivity of transcript review and choosing units of

analysis. They reported that these early qualitative studies were plagued by reliability issues

with subjective coding methods.   For example, there was initial skepticism about the ability

to establish online social presence, and the importance of social presence being combined

with other portions of the model.   Garrison et al. (2009) emphasized the importance of

making a connection to the teaching and learning elements.   This area focused on a shared

social identity rather than personal identity, and included open communication and group

cohesion.   Later studies have confirmed that social presence is a mediating variable between teaching and cognitive presence (Garrison et al., 2009; Garrison et al., 2010; Shea et al., 2010).

Garrison, Cleveland-Innes and Fung (2010) sought to identify the causal relationships of the Community of Inquiry using the Arbaugh et al. (2008) survey instrument. Findings from their structural equation model supported the theoretical predictions of the framework in that teaching presence was the core of establishing cognitive and social presence. The interconnectedness was illustrated through students' perceptions that teaching presence influenced cognitive and social presence. Social presence predicted cognitive presence and social presence was the mediating variable (Garrison, Cleveland-Innes & Fung, 2010).

Shea, Hayes, Vickers, Gozza-Cohen, Uzuner, Mehta, Valchova, Rangan (2010) identified the need to study all parts of Community of Inquiry framework in more than one online course.   They wanted to delve into the role of the faculty social presence on student social presence. "Analysis of online course content interactions indicated that social presence may be contingent on the instructor and students working in concert" (Shea et al., 2010, p. 17). A complex relationship was identified and a strong correlation was found between a high instructor teaching presence and student social presence. Focusing on social presence, they recommended further study of open communication and group work (Shea et al., 2010).

Some researchers have proposed additional elements such as "learner presence," to the Community of Inquiry model (Shea & Bidjerano, 2012). In a large quantitative study of online students in multiple institutions, the previously developed Community of Inquiry instrument developed by Arbaugh et al., (2008) was used to analyzed students' perceptions

of each form of presence (Arbaugh et al., 2008). This was compared with an online self-regulated learning (OSRL) questionnaire about students' "learning presence" (Shea & Bidjerano, 2012, p. 324). They concluded that learning presence moderated the other aspects of Community of Inquiry and that teaching and social presence were predictors of students' ability to achieve cognitive presence (Shea & Bidjerano, 2012). Garrison (2017) argued that adding the learning presence construct was unnecessary for two reasons: first, this aspect is already incorporated into the original model and second, the concept of learning presence violates the collaborative fundamental principle of the model. Therefore, an evaluation of learning presence was not included in this study.

The Community of Inquiry has been applied in program-specific settings and illustrates how program-specific characteristics may influence students' perceptions. Carlon (2012) used Community of Inquiry instrument developed by Shea (2003) and Shea and Bidjerano (2009) to research student populations in three online healthcare professions. Data from nursing and allied health students validated the three-factor model of each form of presence but also produced two factors within the social presence (social comfort and social experience.) They also found differences between nursing students as compared to other health professions in social and cognitive presence (Carlon, 2012).

Researched Online Teaching Practices

"All teaching is undertaken within an environment, or context. Teaching staff are responsible for the environment they construct, whether that environment is online or on campus" (Pittaway, 2012, p. 39). Conclusions from previous literature strongly support faculty impact on online student engagement (Robinson & Hullinger, 2008; Trowler, 2010). In general, faculty characteristics and practices that promote online student engagement have been identified.   These can be divided into two broad categories – faculty-student

interactions and specific teaching practices employed within the course. Over the years, researched teaching practices have been established that promote effective online teaching (Chickering & Gamson, 1987).

Like the traditional classroom, effective faculty teaching practices have been identified that promote online student engagement (Robinson & Hullinger, 2008; Gaytan, 2013; Meyer, 2014). In general, it is the faculty member's role to create and facilitate online courses that encourage interaction, participation and communication in the online learning environment (Johnson, 2003). Researchers at Columbia University analyzed longitudinal data from 23 online courses in two state community college systems and identified faculty behaviors that impacted online retention and performance. Their findings indicated that students placed a high value on the quality of interactions with their instructors and positive performance data correlated with higher levels of personal interaction (Jaggars, Edgecombe, & Stacey, 2013). These findings are consistent with NSSE data, emphasizing faculty-student interaction as key to student engagement (*NSSE: From benchmarks to engagement indicators and high-impact practices*, 2014).

Thirty years ago, Chickering and Gamson (1987) published *Seven principles of good practice in undergraduate education,* widely used to measure the quality of teaching, both tradition and online courses. These principles were used to develop the NSSE standards, which expanded on these practices and continue to be used today to measure student engagement. In 1996, Chickering and Ehrmann updated the standards based on the technology that was rapidly evolving at that time (Chickering & Ehrmann, 1996). Since that time, additional studies have been completed to measure the use of these teaching practices online. Zhang and Walls (2006) found that implementation of these standards varied among

the 107 faculty they studied. Barriers to implementing included being too time-consuming to implement and difficult to implement in a distance education setting (Zhang & Walls, 2006).

Tirrell and Quick (2012) surveyed online faculty in three Virginia community colleges to determine to what extent faculty had implemented Chickering and Gamson's teaching principles in their online courses. They found that faculty were largely unfamiliar with the principles but that those principles that promoted student engagement could have a positive effect on student attrition (Tirrell & Quick, 2012). Communicating high expectations was the mostly highly utilized principle and encouraging student-faculty contact was the lowest.   They found no significant difference between full-time and part-time faculty use of the principles.

In the community college setting, Batts, Pagliari, Mallett and McFadden (2010) surveyed online faculty about Chickering and Gamson's best practices (1987) which were part of the "10 Principles of Effective Online Teaching: Best Practices for Distance Education" developed at Penn State's World campus (Batts et al., 2010, p. 23). They reported that 93% of faculty believed that best teaching practices could positively impact student learning. Some of the best practices reported by faculty were providing timely feedback (86%), providing a detailed syllabus (75%), using online assessment tools (74%), using discussion boards to facilitate interaction (71%), and providing introductory activities (68%). Nearly two-thirds of respondents indicated that they had not attended any off-campus training within the past year. The training they did receive focused on the teaching platform and technologies rather than best teaching practices (Batts et al., 2010).

Baily and Card (2009) evaluated the teaching practices of online faculty in South Dakota using three theories of pedagogy and identified eight effective pedagogical practices:

fostering relationships, engagement, timeliness, communication, organization, technology, flexibility, and high expectations. Engaging practices included ongoing communication, discussions, multiple opportunities for students to interact with one another, and opportunities for students and faculty to explore deeper learning (Baily & Card, 2009). They recommended providing additional training to all online faculty in these areas and connecting faculty with one another to promote peer support (Baily & Card, 2009.)

Pelz (2004) described similar practices in his own account of best practices as an award-winning instructor of online teaching excellence. His recommended practices were included as part of an overall philosophy of keeping the student at the center of every aspect of the course. Pelz (2004) provided specific examples of how to promote interactivity by "having students direct and facilitate the discussions" (p. 104). His second premise included the promotion of overall student interactivity – with faculty, other students one-on-one, groups of students, text, course material and the Internet. Finally, his approach included ensuring the development of a sense of presence – social, cognitive and teaching presence throughout the course, as consistent with the Community of Inquiry framework. Discussion tools were used to develop each sense of presence with clear expectations for students about meaningful content of the discussions, as well as clearly conveying the topic of discussion for all (Pelz, 2004).

Online teachers lack the ability to use verbal and nonverbal cues to evaluate and reinforce learning, as well as provide feedback (Simpson, 2012). Offir, Barth, Lev and Shteinbok (2003) measured specific types of online student and instructor interactions within one online course and provided a "map" of interactions as feedback to the instructor in each course lessons. They found that when the instructor's social interactions correlated with

learning assistance interactions, students' self-evaluations of content comprehension improved. While this study supported the importance of a combination of interactions, it is difficult to measure for multiple courses and instructors teaching a variety of subjects. (Offir et al., 2003).

Gaytan and colleagues have evaluated online instructional and assessment strategies in multiple studies (Gaytan & McEwen, 2007; Gaytan, 2015). They developed their own framework which happens to fit into the teaching presence category. In an early mixed methods study, Gaytan and McEwen (2007) collected data from students and faculty asking about the types of teaching techniques and assessments that were found to indicate quality online instruction and effectiveness. "The top five indicators of quality instruction according to faculty and students were 1) continual, immediate and detailed feedback 2) online course was as rigorous as conventional courses 3) e-mail was used to aid in the instruction process 4) a variety of instructional strategies were used and 5) a good rapport and collaboration with students was established" (p. 124). The primary assessments found to be most effective were "1) having a wide variety of clearly explained assignments 2) Student work is evaluated against learning outcomes 3) continual, immediate and detailed feedback" (p. 126). They summarized their work by recommending that online instructors become more familiar with a variety effective teaching strategies and assessments, give timely and meaningful feedback, and provide clear assignment explanations and rubric (Gaytan & McEwen, 2007).

Online Faculty Communication and Tools

Online student-faculty communication is one piece of the student engagement puzzle and critical to success. There are advantages of written communication as the primary mode of connection, as in online education. Written communication provides time for reflection and connection to critical thinking (Harasim, 2000). When writing is reflective and explicit,

this encourages more disciplined and rigorous thinking. Researchers have sought to determine what features of the written language promote critical thinking (Garrison et al., 2000). Allen et al. (2012) reported that "75.4% of online faculty surveyed reported that digital communications had increased student-faculty communications and only 4.1% believed that the impact had been negative" (p. 25). The number of daily e-mails from students contributed to faculty workload, with one-third of online faculty reporting 11-25 e-mails per day (Allen et al., 2012). Online education has created a sense of urgency for both faculty and students to respond to electronic communications (Conceicao, 2006). In their analysis related to the urgency of responding to these student e-mails, 60% reported that they try to answer nearly all e-mails within 24 hours (Allen et al., 2012).

Swartzwelder (2014) studied the impact of the integration of mobile phone text communications in a distance nursing program on student outcomes, as well as faculty perceptions. These researchers divided 117 nursing students into a control group (no text) and an experimental group (text-incorporated). She found that learners perceived a higher level of learning when text messaging was incorporated into the course, however, grades were not impacted. Faculty improved a higher perception of student learning for the text group. Follow-up focus groups of students and instructors identified that texting increased interactivity, improved critical thinking and engagement, and faculty were surprised at the ease of use (Swartzwelder, 2014). Although this study was narrowly focused, it does provide some initial insight into the expansion of communication within online courses.

Multiple studies have evaluated the quality of online faculty-student communication. Research conducted at Columbia University about two state community college systems discovered that online students perceive a lack of "caring" from their teachers. This led to

feelings of isolation and having to teach themselves (Jaggars et al., 2013, p. 2). They found

that the quality of personal interactions was the most important factor in predicting online

students' grades (Jaggars et al., 2013). Sitzman (2016) focused on caring interactions

between online instructors and nursing students. She uncovered conditions and situations

that led to caring interventions and how instructors conveyed a sense of "caring" to students.

These included academic struggles, appeals for help, concerning behaviors, withdrawal,

personal issues, and positive events (Sitzman, 2016). This is one of the few studies that have

explored instructor perspectives and provides insight about the dynamics of faculty-student

interactions.

Meyer (2014) conducted a qualitative study of 11 faculty members in different fields

and disciplines to determine factors that can improve student learning, focusing on online

teaching tools. These included seven approaches to improving engagement: six course

structuring tactics to focus student attention on learning, assessment techniques and pursuing

a passion for online teaching. All instructors used discussions, but used them differently.

One specific online tool was used in several ways. Experienced faculty were more positive

about continuing to find new ways to reach students using these tools. "Faculty are often the

best advocates for innovations as they share what they are doing, stimulate further

experimentation among faculty members teaching online, and lure some faculty members

into exploring these tools" (p.585). These conclusions support the importance of faculty in

determining student outcomes, collaborative learning between faculty, using tools in different

ways, and that more experienced faculty were more positive (Meyer, 2014).

Summary

This literature review provided an overview of the evolution of online education and

its impacts on the role faculty. As financial constraints continue in higher education,

retaining students, especially those enrolled online, has been a critical outcome of quality institutional measures and financial viability. Student engagement has been shown to promote retention and improved student outcomes. A plethora of literature supports continuing to better understand the faculty role in promoting student engagement online. Many have measured students' perceptions of online engagement, faculty perceptions of online education and teaching, and applied the Community of Inquiry framework to evaluate higher learning.   Based on this review, there is need to compare previous findings through exploration of faculty perceptions of engagement and how those perceptions impact teaching practices as part of the Community of Inquiry framework.

CHAPTER 3. METHODOLOGY

This chapter provides a description of the survey research methodology and data analysis completed in this quantitative study. "Survey design provides a numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2014, p. 155). Several types of data analysis were employed in this study. First, descriptive analysis was completed to describe members of the sample. Comparative analysis measured and compared the significance of the relationship among variables. Regression analysis was used to analyze the predictability of the independent variables on the dependent variable. Finally, qualitative data analysis of two open-ended questions was completed to triangulate with the quantitative findings and provide detailed, descriptive text about online faculty perceptions of student engagement and practices.

Research Questions

This study answered the following research questions:

RQ1: What are the demographic characteristics of community college faculty teaching online who participated in the survey?

RQ2: Among survey participants, to what degree of engagement do community college faculty rate their students in the online courses they teach?

RQ3: To what extent are community college faculty encouraging online student engagement through teaching practices supported by the Community of Inquiry framework?

RQ4: 4a. Among survey participants, what inter-relationships exist among variables measuring online faculty perceptions of student engagement?

4b. Among survey participants, what inter-relationships exist among variables measuring strategies that promote teaching presence?

4c. Among survey participants, what inter-relationships exist among variables measuring strategies that promote cognitive presence?

4d. Among survey participants, what inter-relationships exist among variables measuring strategies that promote social presence?

RQ5: Are there any significant differences among survey participants in reported student engagement based on full-time or part-time employment, highest degree attained, orientation to online teaching, or training in student engagement practices?

RQ6: Among survey participants, to what extent do the demographic characteristics and online teaching practices predict perceived online student engagement?

RQ7: How do online community college faculty define online student engagement in their courses?

Hypotheses

Descriptive analysis was used for research questions one, two and three. Qualitative analysis was used for a portion of research question three and research question seven. Null hypothesis statements were written for research questions four (a, b, c, d), five and six for hypothesis testing.

RQ4: 4a. Among survey participants, what inter-relationships exist among variables measuring online faculty perceptions of student engagement?

4b. Among survey participants, what inter-relationships exist among variables measuring strategies that promote teaching presence?

4c. Among survey participants, what inter-relationships exist among variables measuring strategies that promote cognitive presence?

4d. Among survey participants, what inter-relationships exist among variables measuring strategies that promote social presence?

RQ4a. H₁ – Among survey participants, there is no significant inter-relationship among variables measuring online faculty perceptions of engagement.

RQ4b. H₂ – Among survey participants, there is no significant inter-relationship among variables measuring strategies that promote teaching presence.

RQ4c. H₃ - Among survey participants, there is no significant inter-relationship among variables measuring strategies that promote cognitive presence.

RQ4d. H₄ . Among survey participants, there is no significant inter-relationship among variables measuring strategies that promote social presence.

RQ5: Are there any significant differences among survey participants in reported student engagement based on full-time or part-time employment, highest degree attained, orientation to online teaching, or training in student engagement practices?

RQ5 – H₅ – There are no significant differences among survey participants in reported student engagement based on full-time or part-time employment, highest degree attained, orientation to online teaching, or training in student engagement practices?

RQ6: Among survey participants, to what extent do the demographic characteristics and online teaching practices predict perceived online student engagement?

RQ6 – H₆ - Among survey participants, there are no demographic characteristics nor online teaching practices that predict perceived online student engagement.

Research Design

Setting

This study was conducted in four Midwest community colleges, part of a statewide community college system.   Each community college is governed by locally elected boards ranging from five to nine members.   The community colleges were situated in cities whose populations range in size from 25,206 to 133,127 (U.S. 2010 Census Data, 2010). Online

course lengths varied from five to sixteen weeks and were synchronous or asynchronous. Three of the four community colleges used different learning management systems to deliver online courses to students.

Population and Sample

The population of interest in this study was community college faculty who were currently teaching at least one course online in one of the four participating community colleges.   Based on information from the community college administrators, these online faculty may not reside in the state in which the community college is situated and some lived worldwide.   Some online faculty were also employed in more than one institution but were asked to respond to the survey based on the primary courses taught within that community college. Community college administrators in each college reported current online faculty employment of 197, 177, 123 and 60 respectively, for a total of 537 full-time and part-time faculty teaching online courses in Fall 2017.

Survey Instrument

To collect data for this study, an online student engagement faculty survey instrument was created by adapting survey items from previously tested instruments developed for students. Teaching strategies were chosen based on the three components of the Community of Inquiry framework (Arbaugh et al., 2008; Garrison et al., 2010). The measure of online student engagement activities was adapted from an online student engagement scale developed for students (Dixson, 2015).   Survey items were modified and framed for faculty responses based on their observations and perceptions of student participation and engagement in their own courses. Permission to adapt the items was granted from primary researchers who developed and published the instruments. Twenty-six items about Community of Inquiry practices and five items about online student engagement were

incorporated into the survey. Survey format included quantitative multiple choice and

Likert-scale questions as well as two open-ended questions. The instrument was divided into

three sections: demographic and teaching information, statements about current teaching

practices and online student engagement, and open-ended questions including definitions of

online student engagement and the most effective engagement strategies. The survey

included 22 questions and 48 items. The survey can be found in Appendix A.

The first section of the survey included both demographic and teaching information.

Demographic data included gender, age, ethnicity, employment status (full-time/part-time),

highest degree attained, length of time teaching in higher education, and length of time

teaching online. Teaching information included number of online course sections taught in an

academic year, time spent each week responding to or giving feedback to students, previous

orientation to teaching online, and previous training about student engagement teaching

practices. This section also included questions about which communication methods (e-mail,

phone, text, in-person meetings, web meetings, social media and other) and online teaching

tools (assignment dropboxes, quizzes, discussions, interactive text, blogs, recorded

videos/lectures, grade books, rubrics, calendars, announcements and other) were used in their

primary online courses.

The second section included three sets of 5-point Likert scale questions asking

participants to rate their agreement about statements that reflected their use of specific

teaching strategies. These statements were based on the Community of Inquiry framework

and items fell within the three forms of presence – teaching, cognitive and social. Questions

were adapted directly from instruments developed and tested for reliability and validity by

Arbaugh et al. (2008) and Garrison et al. (2010). The same 5-point Likert scale was used to

rate statements about student activities that reflect the level of online student engagement in their courses. These statements were based on a previously developed online student engagement (OSE) scale developed by Dixson (2010) and included affective and behavioral components based on the Community of Inquiry framework (Dixson, 2010; Dixson, 2015). These questions were originally written for student responses. Statements that could be adapted for faculty were included about observed and application learning behaviors. Student engagement activities included regularly logging in to the course (observed), timely assignment completion (observed), active participation in discussions (application), getting to know one another (application), and use of critical thinking (application) (Dixson, 2015). To capture increased variability among participants, one final question asked faculty to rate overall online student engagement on a scale from one to ten, with ten being the most engaged.

Two open-ended questions were included in the third and final section. These asked participants to define online student engagement in their own words and describe the teaching strategies they perceived to be the most engaging for online students.

Pilot Study

In July 2017, a pilot survey was distributed to a sub-sample of online faculty, community college administrators and higher education researchers for review. Feedback was obtained about the time to complete the survey, question sequence, clarity of the question terminology, as well as suggestions about language in the survey invitation that could promote faculty participation in the study. Because questions from student survey instruments were used, pilot participants were asked to evaluate the appropriateness of the engagement and teaching practice measures for faculty. The sub-sample of experts shared

valuable recommendations for improving the survey language, survey organization, and edits were made accordingly.

Reliability and validity

In quantitative research, reliability refers to the consistency and stability of the scores obtained through measurements and validity refers to items that measure the information intended to evaluate (Creswell, 2014).   There was need to develop a unique faculty instrument, as previous surveys have surveyed students.   In this exploratory study, the instrument incorporated two previously tested student engagement measures that gathered self-reported data from online students. Validity and reliability of a Community of Inquiry instrument was tested by Arbaugh et al. (2008) using Exploratory Factor Analysis (EFA) and findings confirmed by Garrison et al. (2010). Three factors loadings were identified as significant (> .80) across each of the three forms of presence (Garrison et al., 2010, p. 33).

The Online Student Engagement (OSE) scale was initially tested for reliability and validity using Exploratory Factor Analysis (EFA) with 19 of the items loading into four factors (.60 or higher), all measuring some form of online student engagement (Dixson, 2010). In a later study, Dixson used the same scale with a larger sample and paired outcomes with student interactions with the online learning management system (Dixson 2015). Dixson found a significant correlation between application learning behaviors observed in online course activity and the OSE scale, which further validated the survey items (Dixson, 2015).   Five of the 19 items were used in this survey instrument.

Data Collection

Data collection was completed using the following procedures. Data collection occurred in August and September 2017. First, the community college administrators in distance education compiled a list of e-mail contacts of potential participants teaching in the

Fall 2017 semester. Next, a consistent cover letter was drafted and reviewed by the administrators, explaining the purpose of the study for potential participants. This letter was also included as the first page of the electronic survey (Appendix B).   All four administrators distributed the e-mail invitation to eligible participants on the same schedule. After the initial e-mail, two subsequent notifications were sent to all potential participants as reminders to complete the survey. All participants were asked to indicate their consent to participate in the study on the cover page prior to beginning the survey.   Participants could stop taking the survey at any time. All responses, including partial responses, were recorded in the Qualtrics system. There were no identifiers indicating the community college in which the online faculty was employed, nor any personal identifiers. All data were self-reported, and submitted anonymously by the participants.

After the survey was deactivated, data was exported from Qualtrics for data cleaning and analysis. The researcher deleted all 0 responses in the case that the participant opened the link but did not answer any questions.   The survey response rate was calculated based on the cleaned survey data, treated as raw data and used to conduct descriptive, correlational, comparative and qualitative analysis.

Variables Used in the Study

Dependent variable

Student Engagement. This research studied the relationship between online community college faculty demographics and teaching practices and perceptions. Survey question five measured the dependent variable: Thinking about the online courses you have taught over the past year, for each of the following statements, indicate how strongly you agree with each statement as it relates to student engagement in the primary online courses you teach. Faculty were asked to report whether their students logged in to the course

throughout the semester, regularly completed assignments by course deadlines, actively participated in discussions by responding to posts in meaningful ways and routinely used critical thinking for solutions to proposed problems. Course grades were not included in the engagement items because the focus was on student behaviors rather than performance.

In addition, faculty were asked to rate the overall level of engagement in their online courses on a scale of one through ten, with ten being the most engaged. This question sought to measure an overall impression of faculty perceptions of online student engagement.

Independent Variables

Demographic information. Demographic variables analyzed in this study included gender, age, ethnicity, employment status, highest degree earned, experience teaching in higher education, and experience teaching online.

Table 3.1 presents the description and scale of the demographic variables.

Table 3.1   *Scales of the Demographic Characteristic Variables in this Study*

Variable	Question number	Scale
Gender	Q20	1=male, 2=female, 3=another, 4= prefer not to answer
Age (years)	Q21	1=<30, 2=30-39,3=40-49, 4=50-59, 5=60 and older, 7=prefer not to answer
Ethnicity	Q22	1=African American, 2=American Indian, 3=Asian, 4=Hispanic, 5=Caucasian, 6=Multi-racial, 7=Other, 8=Prefer not to answer
Employment	Q11	1=full-time, 2=part-time
Highest degree earned	Q13	1=PhD or EdD, 2=Master's, 3=Professional degree, 4=Bachelor's degree, 5=Associate's degree, 6=Other credential
Experience teaching	Q9	1=1-3 years, 2=4-6 years, 3=7-10, 4=11-14, 5=15 or more
Experience teaching online	Q10	1=<1 year, 2=1-3 years, 3=4-6 years, 4=7-10 years, 5=11-14 years, 6=15 or more

Teaching information. These variables included questions about the number of course sections taught in an academic year, time spent each week responding to students, methods used to communicate with students, online tools used in the learning management system, expectations of student log-ins, orientation to online teaching, and prior training about online student engagement.

Table 3.2 presents the description and scale of the teaching characteristic variables used in this study.

Table 3.2   *Scales of the Teaching Characteristic Variables in this Study*

Variable	Question number	Scale
Number of courses	Q16	Text entry
Orientation	Q14	1= yes, 2=no
Training in engagement	Q15	1=yes, 2=no
Faculty interaction hours/week	Q18	1=1-4 hours, 2=5-8 hours, 3=9-12 hours, 3=13-16 hours, 4=13-16 hours, 5=17-20 hours, 6=21-30 hours, 7=31 or more hours
Expected student log-ins/week	Q19	1=daily, 2=3-4 times per week, 3=1-2 times per week, 4= less than weekly
Communication Tools	Q17	1=internal college e-mail, 2=phone, 3=students' personal e-mail, 4=text, 5=in-person meeting, 6=social media, 7=other, 8=web meetings
Teaching Tools	Q24	1=assignment dropboxes, 2=quizzes, 3=discussions, 4=blogs, 5=videos, 6=gradebook, 7=rubrics, 8=calendar, 8=announcements, 10=interactive text reading, 11=other
Total communication	New variable	continuous
Total tools	New variable	continuous

Community of Inquiry practices. These variables were grouped into statements that reflected those teaching practices described by the Community of Inquiry Framework and divided into teaching, cognitive and social presence (Arbaugh et al., 2008).   Questions 2a,

2b, 3 and 4 were structured as the dependent variable agreement/ disagreement 5-point

Likert-scale statements: *Thinking about the online courses you have taught over the past*

year. For each of the following statements, indicate how strongly you agree with each

statement as it relates to the primary courses you teach online. Teaching presence

statements (Q2a and b) included timely feedback to students, detailed feedback, multiple

instructional strategies, course organization, explanation of participation, corrected student

thinking about concepts, expression of opposing views, establishing a sense of community,

communication of availability and accessibility, communication using multiple methods,

expressed passion for the course content, getting to know the instructor, and inclusion of

personal photo or video of the instructor. Cognitive presence (Q3) statements included

statements about the online course being as rigorous as traditional delivery, incorporation of

thought-provoking questions, provision of course content that is relevant to real life,

application of course contents to real life, and opportunities for students to develop solutions

to proposed problems. Social presence (Q4) statements included students establishing good

rapport with one another, opportunities for dynamic interaction between students, faculty

expression of caring and attentiveness to students, active participation by the faculty in online

discussion, opportunities for peer review, participation in group projects, multiple

opportunities for student interaction, student academic or emotional support for one another,

and encouragement for students to share opposing points of view.

Quantitative Data Analysis

Descriptive analysis, reliability analysis, comparative analysis (independent sample t-

tests), missing data imputation, and multiple linear regression analysis were used to answer

the quantitative research questions. The data were analyzed using IBM SPSS 25.0 software.

(See code book Appendix C.)

Descriptive Analysis

For research questions one and three, background and demographic data listed above were analyzed using frequencies to gain a better understanding of online faculty teaching in community colleges.

Reliability Analysis

For research questions two and four, reliability analysis was conducted to determine how well sets of items in a scale is associated with the overall scale, using item-total correlation (Urdan, 2010). Reliability analysis was conducted for question items categorized into the Community of Inquiry categories of teaching, cognitive and social presence (Q2 a/b, Q3, Q4). The same analysis was completed for the reported student engagement practices (Q5). The Cronbach's alpha was used as a measure of reliability, with .70 or larger used as the cut-off point for acceptance of internal consistency between items.

Independent sample *t*-test

Comparative analysis was used to answer research question five. Independent sample t-tests were conducted to determine if there was a significant difference between means of the dependent variable and selected independent variables. In this case, the dependent variable (student engagement) was compared with independent variables of employment status (Q11), highest degree attained (Q13), orientation to online teaching (Q14) and prior training in student engagement strategies (Q15). Prior research supports a need for further study to compare these variables and online student engagement. Only the highest degree earned was recoded as PhD, MS, professional degree at "1", bachelors/associates degree/other as "2". The assumption of equal variance was analyzed using the Levene's test for equality of variances. A significant (p < .05) result of the Levene's test indicates that the variances of the dependent variable of significantly different and the assumption of equal

variances is violated (Urdan, 2010). Assumption of normality was evaluated based on the skewness of the ordinal variables with arrange of -1 to 1 has deemed to be appropriate to accept. For each test, t values were analyzed to determine if previous assumptions were met.

Multiple Linear Regression

Multiple linear regression was used to test the hypothesis to confirm the relationship between the independent and dependent variables in research question six. This equation would be: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + e$. Y is the predicted value for the dependent variable (online student engagement.) Each β value represents the slope of the lines. β_0 represents constant where the X intercepts the Y axis. X represents each of the independent variables in this equation. The error (e) is the distance between the variable and the regression line. In this study, there were fifteen independent variables selected based on previous literature and the findings of the reliability analysis. The independent variables were categorized into five blocks. Block 1 included employment status, highest degree earned, gender, age, and ethnicity. Block 2 included years of higher education teaching, years of experience online, orientation, training, number of course sections, number of communication modes, and number of teaching tools. Blocks 3, 4 and 5 consisted of the combined Teaching Presence variable, Cognitive Presence variable, and Social Presence variable. The equation for this research questions is: Online Student Engagement = $\beta_0 + \beta_{employment} X_{employment} + \beta_{degree} X_{degree} + \beta_{gender} X_{gender} + \beta_{age} X_{age} + \beta_{Caucasian} X_{Caucasian} + \beta_{teachexp} X_{teachexp} + \beta_{onlineexp} X_{onlineexp} + \beta_{orientation} X_{orientation} + \beta_{training} X_{training} + \beta_{numcourses} X_{numcourses} + \beta_{communication} X_{communication} + \beta_{tools} X_{tools} + \beta_{TeachingPresence} X_{TeachingPresence} + \beta_{CognitivePresence} X_{CognitivePresence} + \beta_{SocialPresence} X_{SocialPresence} + e.$

Qualitative Data Analysis

Qualitative research is typically used to describe the experiences of the subjects. This quantitative study included two open-ended questions, (Q7) and (Q8) that asked participants to define online student engagement in their own words and list or describe the teaching strategy that was the most effective in engaging online students. These questions were included to answer research questions three and seven. For these responses, key words and ideas were identified. Similar terms were grouped together to identify patterns. The findings about effective student engagement strategies were used to compare with the quantified question in research question three.

Limitations/Delimitations

In the interpretation of the results of this study, there were several limitations to consider. First, self-reported data has its own set of limitations. Participants respond based on the totality of unique experiences and may have approached the survey thinking of their entire career teaching online, while others may have focused on one single course as specified in the directions. Each participant possesses a unique set of teaching skills which may impact their opinions of these strategies.

Second, this study was limited by the sample size and demographic characteristics of participants who completed the survey. The perceptions of faculty teaching in these community colleges may not be applied to other institutions with different demographic characteristics, specifically in another part of the country or in an institution with more diverse student and faculty populations. In addition, faculty in community colleges may have unique characteristics not generalizable to faculty nationwide. In this sample, a higher proportion of full-time faculty completed the survey and part-time faculty were underrepresented.

Third, the technological aspect of the online learning management systems was not compared or evaluated, although technology has been found to have an impact on faculty and student engagement (Coates, 2007). Previous research has been published addressing factors and outcomes related to faculty and student interactivity within learning management systems. Not all subjects in this sample were using the same learning management system. Based on the previous research about technical barriers with online education, these biases may impact faculty perceptions.

Fourth, there are limitations when asking questions about specific areas of basic job performance. Responses may be positively biased when reported behaviors are included as part of institutional employment or teaching requirements. For example, institutions may have minimum online course requirements for instructors which are imposed and influence teaching practices accordingly. Faculty may be implementing teaching strategies because they have no choice, despite truly buying in or believing in their success.

Finally, some questions in the survey were originally written for students and would seemingly be less accurate when faculty are being asked to estimate how they are impacting students than the opinions of student who are experiencing the outcomes directly. This concern was also identified in previous research which adapted student survey instruments for faculty use (Dixson, 2010).

Ethical Issues

Prior approve by the Iowa State University Institutional Review Board was required for this study since it involved human participants. The proposal for this research was approved on May 1, 2017. The approval document was sent to all four community colleges involved in the data collection. See Appendix D for approval letter. One of the community colleges required completion of its own approval, which was completed on August 2, 2017.

During the data collection, no personal identifiers (name, employer identification, social security number, date of birth) were collected. Anonymity of participants was maintained throughout the study. The primary researcher had no contact with participants other than in the introductory e-mail.

Significance of the Study

This study has theoretical, research and practical importance for all stakeholders impacted by online student engagement.   From the theoretical perspective, this research provides insight as to how the Community of Inquiry may be applied to online faculty perceptions of engagement and their teaching practices. Understanding how faculty can impact online student engagement ultimately impacts retention and the success of the student and the institution (Morris, Finnegan, & Sz-shyan, 2005). This research fills an important gap in literature, as it focuses on the challenges with engaging with students learning in a virtual environment through the lens of online faculty. In addition, the finalized survey instrument could be used in other settings to evaluate factors that motivate faculty to act in other areas than engagement.   In practice, this study can inform administrators, staff and faculty on how communication and teaching practices might be consistently implemented throughout the institution in a strategic way.

Summary

The purpose of Chapter 3 was to describe the methodology for collecting and analyzing demographic information, teaching information, teaching strategies and perceptions online community college faculty have about online student engagement. This study focused on the three areas of online "presence" using the Community of Inquiry framework to measure teaching, cognitive and social presence behaviors.   As online faculty continue to be the primary institutional connection students have with an institution, it is

important to collect data from these stakeholders. There is need to explore the engagement

behaviors of faculty as online course offerings continue to expand throughout higher

education institutions.

CHAPTER 4.   FINDINGS

This chapter includes a summary of detailed results, statistics and qualitative summary for all research questions in three sections using tables and descriptions. The first section contains the results of the descriptive analysis for the entire sample for demographic information, teaching information and practices. Also included are the results of reliability testing on the relationship between items measuring online student engagement and Community of Inquiry teaching practices. The second section includes the comparative analysis, summarizing the results of the independent paired t-tests. This section also includes the results of the regression analysis showing factor influence on student engagement. The final section includes a summary of faculty definitions of online student engagement and discussion of this open-ended question.

Missing Data Imputation

Some survey responses had missing data on specific items. For independent sample t-test and regression analysis, list-wise deletion was utilized.   For the short-answer questions, some responses did not directly correspond to the question and were not included in the analysis and summary.

Descriptive Analysis

Descriptive analysis was conducted for demographic and teaching information about the sample of community college faculty teaching online using frequencies, means, modes, standard deviations, and ranges, where applicable. The total sample of usable survey responses in this study was 268, a 49.9% response rate. The results of these analyses are found in Tables 4.1, 4.2 and 4.3.

RQ1: What are the demographic characteristics of community college faculty teaching online that participated in the survey?

Table 4.1   *Demographic Characteristics (n = 268)*

Variable		n	%
Gender	Male	106	39.6
	Female	140	52.2
	Another	1	.4
	Prefer not to answer	21	7.8
Age (years)	<30	4	1.5
	30-39	45	16.8
	40-49	68	25.4
	50-59	75	28.0
	60 and older	59	22.0
	Prefer not to answer	17	6.3
Ethnicity	African American	4	1.5
	American Indian	1	.4
	Asian	3	1.1
	Hispanic	2	.7
	Caucasian	231	86.2
	Multi-Racial	7	2.6
	Other	2	.7
	Prefer not to answer	18	6.7
Employment	Full-time	140	52.2
	Part-time	128	47.8
Highest Degree Earned	PhD or EdD	42	15.7
	Master's	187	69.8
	Professional degree	6	2.2
	Bachelor's degree	21	7.8
	Associate's degree	7	2.6
	Other credential	5	1.9
Experience Teaching (n = 267)	1-3 years	13	4.9
	4-6 years	35	13.1
	7-10 years	49	18.4
	11-14 years	38	14.2
	15 or more	132	49.3
	Missing	1	.4
Experience Teaching Online	<1 year	5	1.9
	1-3 years	46	17.2
	4-6 years	67	25.0
	7-10 years	63	23.5
	11-14 years	53	19.8
	15 years or more	34	12.7

According to Table 4.1, slightly more than half of the participants in this study were

female (52.2%). The most prevalent age group was ages 50-59, with 75% of participants

reporting ages 40 years and older and 22% reported 60 years and older. Most participants

reported to be Caucasian (86%). Employment status was divided evenly between the two groups

with 52.2% being full-time and 47.8% part-time. In the category of highest degree earned, more

than 85% had a Master's degree or higher, with 69.8% having a Master's degree and 17.9% a

PhD/ EdD or Professional degree when the two categories were combined. Participants reported

years of experience in higher education, with nearly half (49.3%) teaching fifteen years or more

and 81.9% of the sample reported at least seven years of teaching experience. Online experience

was more evenly distributed between groups with 25% teaching 4-6 years, 23.5% 7-10 years,

19.8% 11-14 years and 17.2% 1-3 years.

Teaching information was analyzed similarly and data are reported in Tables 4.2 and 4.3.

Table 4.2   *Teaching Characteristics (n = 268)*

Variable		n	%
Orientation	Yes	177	66.0
	No	91	34.0
Training in	Yes	228	85.1
Engagement	No	39	14.6
	Missing	1	.4
Faculty Interaction	1-4 hours	61	22.8
Time Spent/Week	5-8 hours	87	32.5
	9-12 hours	52	19.4
	13-16 hours	34	12.7
	17-20 hours	18	6.7
	21-30 hours	10	3.7
	31 or more	5	1.9
	Missing	1	6.3
Expected Student	Daily	59	22.0
Log-ins/ Week	3-4 times per week	176	65.7
	1-2 times per week	32	11.9
	Less than weekly	1	.4
Student Referrals	0	52	19.4
Support Services/	1-5	176	65.7
Semester	6-11	26	9.7
	12 or more	14	5.2

According to Table 4.2, two-thirds of survey participants reported that they had received training in online teaching and an even higher number (85.1%) reported having continuing education or training related to online student engagement. In reporting time spent responding or providing feedback to students, one third of faculty (32.5%) spend 5-8 hours per week with the next most common report being 1-4 hours per week (22.8%) and 9-12 hours (19.4%). Because this question was not created as a continuous variable, the mean score for this question was not meaningful. Two thirds of participants (65.7%) reported that they expected their online students to log in to their online courses 3-4 times per week and 22% expect daily log-ins. A small portion require less frequent log-ins (11.9%) 1-2 times per week and only one respondent indicated students should log in less than weekly. Approximately 80% of participants reported referring at least one online students to support services per semester.

Table 4.3   *Communication and Online Teaching Tools (n = 268)*

Variables		n	% Using
Communication Modes	Internal college e-mail	265	98.9
	Phone	129	48.1
	Student' personal e-mail	99	36.6
	Text	85	31.7
	In personal meeting	78	29.1
	Web meetings	65	24.3
	Other	16	6.0
	Announcements	11	4.1
	Social media	10	3.7
	Discussions	6	2.2
	Online chat	4	1.5
Teaching Tools	Gradebook	255	95.1
	Quizzes	237	88.4
	Announcements	224	83.6
	Discussions	220	82.1
	Assignment dropboxes	219	81.7
	Calendar	201	75.0
	Rubrics	159	59.3

Table 4.3 (continued)

Recorded video	134	50.0
Interactive text reading	57	21.3
Blogs	16	6.0
Other	16	6.0
Missing	3	1.1

Table 4.3 presents the types of communication methods online faculty reported that they use to communicate with students, as well as any of the tools used in their online courses. For this table, the percent of participants from the total sample (n=268) who reported using that tool or method is listed. Participants could select any options that applied. Three new options were created from multiple similar write-in responses: Discussions was coded as "9", Online_chat as "10", and Announcements coded as "11". With communication, nearly all online faculty participating report the use of the internal college e-mail (98.9%) and nearly 50% reported communicating with students by phone. The number of respondents reporting the use of students' personal e-mail (36.6%), texting (31.7%) and in-person meetings (29.1%) were more evenly distributed. Other methods listed by participants and not included in this list were forums, announcements and instant messaging within the learning management system.

The types of learning management tools are also listed in Table 4.3 and again participants could choose any options that applied. For this question, the responses were consistently higher than the communication reported. More than 80% of participants report using the gradebook, quizzes, announcements, discussions, assignment dropboxes, with more than 95% using the grade book tool. Additional tools faculty listed in the "Other" category included power point lectures, online chats, and videos.

To investigate the demographic data in a more meaningful way, the means, modes, ranges and standard deviations (SD) of selected teaching variables are shown in Table 4.4.

Three new variables were created for each response by adding the total number of course

sections, total communication methods and total tools used into CourseTotal, CommTotal and

ToolTotal, respectively.

Table 4.4   *Means, Modes, Ranges and Standard Deviations of Teaching Demographic Variables (n = 268)*

Variables	Mean	Mode	Range	SD
Number of Course Sections per Year*	5.02	2.00	44.50	4.87
Total number of communication methods	2.86	3.00	6.00	1.37
Total number of teaching tools*	6.50	7.00	10.00	1.77

* = missing 3 responses in these two variables

Participants were asked to report the number of course sections they teach within an

academic calendar year. The mean number was five course sections.   It should be noted that the

range in course number was 44, as one participant reported teaching 45.5 sections per year, and

the least reported was one. To further analyze responses about communication methods, a new

variable of "total number of communication methods" was created to quantify the number of

different methods used per participant. As noted in Table 4.4, the mean total number of

communication methods used was 2.86, with standard deviation 1.37, range of 6.0 and most

common number of communication methods was three. As noted in the previous question, to

further analyze these responses about online teaching tools, a new variable of "total number of

tools" was created to quantify the number of different used according to each participant. The

mean number of methods used was much higher than the communication methods with a mean

of 6.50, standard deviation of 1.77, range of 10. The most common number of tools utilized was

seven.

RQ2: Among survey participants, to what degree of engagement do community college faculty

rate their students in the online courses they teach?

Items five and six on the survey instrument were used to answer this question by asking participants to respond to a series of five-point Likert-scale statements about online student engagement and then providing an overall rating from one to ten about how engaged their students to be in their courses.   Table 4.5 presents to means and standard deviations of the responses to these questions.

Table 4.5   *Means and Standard Deviations of Engagement Variables (n = 256)*

Variables (Engagement)	Mean	SD
My students regularly log in to the online course throughout the semester.*	3.88	,910
My students regularly complete assigned work and assessments by course deadlines.*	4.12	.752
My students actively participate in online course discussions by responding to other students' posts in meaningful ways.*	3.81	.983
My students get to know one another throughout the course.*	3.35	1.123
My students routinely use critical thinking for solutions to proposed problems.	4.03	.779
Overall student engagement rating**	7.34	1.36

Note: *Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree **Rating scale for overall student engagement was 1-10, 1= least engaged, 10= most engaged

In comparing the five student engagement activity statements, regular completion of work and use of critical thinking received the highest mean scores. Participants reported that students were less likely to get to know one another as compared to the other statements, and this statement also had the highest standard deviation. The overall engagement scores ranged from as low as two and as high as 10, with 8 being the most common rating (32%) with 78.2% of participants rating their courses seven or higher and 17.6% rating online student engagement at nine or higher.

RQ3: Among survey participants, to what extent are community college faculty using teaching practices supported by the Community of Inquiry framework?

To better understand the extent to which faculty report using teaching practices supported by the Community of Inquiry framework, responses to statements about the three forms of presence are shown in Tables 4.6, 4.7 and 4.8. A total of 27 Likert-scale items were analyzed ranging from 1 = strongly disagree to 5 = strongly agree.

Table 4.6   *Means and Standard Deviations Teaching Presence Variables (n = 260, missing =8)*

Variables (Teaching Presence)	Mean	SD
I provide timely feedback to students on written assignments (within 1 week of submission.)	4.63	.634
I provided detailed feedback that guides students toward learning objectives.	4.41	.641
I incorporate multiple instructional strategies into my online course (videos, web links, discussion).	4.24	.799
My course is set up in an organized way, using the appropriate tools within the learning management system.	4.59	.610
I provide explanation to students (in any format) about how to participate in the course and use of its components.	4.50	.687
I correct student thinking about concepts based on performance on assignments and assessments.	4.22	.755
I present opposing views about my course topics when appropriate.	3.99	.904
I work to establish a sense of community among students.	3.93	.861
I communicate my availability and accessibility to students throughout the course.	4.59	.623
I communicate with students in multiple ways (e-mail, text, phone).	3.98	1.054
I express passion for course content.	4.50	.610
Throughout the course, students get to know me as a person.	3.70	.977
I have incorporated a personal photo and/or video in the course so students can "visualize" their instructor.	3.49	1.436
Overall mean (all teaching presence items)	4.22	.471

Note: Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree

Based on the Community of Inquiry framework (Garrison, Anderson, & Archer, 2000), teaching presence involves strategies about course design and organization, facilitation and direct instruction. Of the thirteen statements about teaching presence, participants reported most agreement with statements about providing timely feedback, course organization, explanation

about participation, passion for course content and providing detailed feedback toward learning

objects (all with means of 4.41 or higher).   Participants reported lowest agreement with

statements about establishing community, promoting student getting to know the instructor as a

person and incorporating a photo or video into the course.   These items also had the highest

standard deviations, indicating a greater variance in responses.

Table 4.7   *Means and Standard Deviations Cognitive Presence Variables (n = 260,
missing =8)*

Variables (Cognitive Presence)	Mean	SD
My online course is as rigorous as a similar course presented in a traditional lecture format.	4.38	.746
I provide thought-provoking questions as part of assignments and discussions.	4.42	.735
I provide course content that is relevant to real-life situations.	4.53	.597
I provide ways for students to apply course material to real-life situations.	4.39	.683
I promote ways for students to develop solutions to problems presented from course material.	4.21	.698
Overall mean (all cognitive presence items)	4.39	.519

Note: Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor
disagree, 4= agree, 5= strongly agree

Cognitive presence involves strategies that trigger thinking, exploring new information,

integrating the information and obtaining a resolution to proposed problems. Of the five items in

this category, providing course content relevant to real-life situations was the highest and

developing solutions to problems the lowest, although all questions scored 4.21 or higher.

Table 4.8   *Means and Standard Deviations Social Presence Variables (n = 261, missing =7)*

Variables (Social Presence)	Mean	SD
My students establish a good rapport with one another.	3.48	.962
My course provides opportunities for dynamic interaction throughout the course.	3.61	.971
I express care and attentiveness to students' needs.	4.46	.604
I actively participate in online discussions by responding to individual posts.	3.86	1.017
My students have opportunities within the course for peer review.	3.23	.779
My students have opportunities to participate in group projects that involve problem solving.	2.58	1.184
My students have multiple opportunities to interaction with one another throughout the course.	3.69	1.161
My students have opportunities to provide academic and emotional support for one another.	3.29	1.120
My students are actively encouraged to share differing points of view.	4.03	.966
Overall mean (all social presence items)	3.58	.726

Note: Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree

Social presence focuses on techniques that promote interaction and community with other students. These sets of statements have lower means that the previous two sets of statements about teaching and cognitive presence. Only two questions scored higher than four and those included faculty expressing care for students and encouraging students to share different points of view. One question scored below three (2.58) which asked about opportunities for group projects within their courses. This question also had the largest standard deviation. In comparing the overall means of each set of Community of Inquiry items, social presence fell below 4.0, agree or higher.

Participants also had the opportunity to write in their most engaging strategy and these results in presented in Table 4.9. Responses to this open-ended question were individually reviewed and coded, combining common terminology and themes. Then, these items were

categorized according to the form of presence consistent with the Community of Inquiry

framework (Arbaugh et al., 2008).

Table 4.9   *Summary of "Most Effective" Online Faculty Engagement Strategies (n = 212)*

Online Engagement Strategy	Frequency	Community of Inquiry Presence
Discussions/student interaction/peer review/group work	39	Social
Clear, in-depth, timely, effective feedback provided by faculty	38	Teaching
Thought-provoking questions/ challenging, meaningful, engaging material/ promotion of critical thinking	32	Cognitive
Frequent, timely, personalized contact	26	Teaching
Course organization, structure, alignment with course goals	19	Teaching
Use of media/technology/videos	19	Teaching
Variety of teaching strategies/ delivery methods	18	Teaching
Relevance of course material to real-life, career, future	17	Cognitive
Faculty availability/ "presence"	14	Teaching
Clear objectives/ expectations	13	Teaching
Interesting, motivating course material	11	Cognitive
Sense of community/ students get to know one another	11	Social
Faculty engagement/ participation	10	Social
Self-expression/ Self-reflection	9	Social
Faculty expression of caring/support/ encouragement	8	Social
Reach to students when they fall behind, stop participating or are having difficulty in the course	8	Social
Faculty work to get to know the students/ students get to know faculty	6	Social
Personalization of the course information	6	Cognitive
Virtual meetings between faculty and students	4	Teaching
Learning focused on process/ progression	2	Cognitive
Texting	1	Teaching
Study guides	1	Teaching

(Missing = 56)

The three most common strategies reported by participants fell into each of the presence

categories – social, teaching and cognitive (in that order). Clearly, there is no "best way" to

engage students, with 22 unique response themes. Several responses included more than one

strategy and these were added to the totals for that response.

Reliability analysis

Better understanding of Likert-type items is gained by analyzing multi-item measures instead of a single item (Gliem & Gliem, 2003). McIver and Carmines (1981) report that not only is single item analysis less accurate and unreliable, but sufficient information to estimate their measurement properties is lacking (McIver & Carmines, 1981). Reliability analysis was conducted to answer research questions four a through d.

RQ4:   *4a. Among survey participants, what inter-relationships exist among variables measuring online faculty perceptions of student engagement?*

4b. Among survey participants, what inter-relationships exist among variables measuring strategies that promote teaching presence?

4c. Among survey participants, what inter-relationships exist among variables measuring strategies that promote cognitive presence?

4d. Among survey participants, what inter-relationships exist among variables measuring strategies that promote social presence?

Table 4.10   *Reliability Analysis for Student Engagement Variable*

Variable	Corrected Item Total Correlation	Cronbach's Alpha if item deleted
Student Engagement (n=254) (α = .800)		
My students regularly log in to the online course throughout the semester.	.566	.767
My students regularly complete assigned work and assessments by course deadlines.	.558	.773
My students actively participate in online course discussions by responding to other students' posts in meaningful ways.	.734	.710
My students get to know one another throughout the course.	.642	.747
My students routinely use critical thinking for solutions to proposed problems.	.448	.800

Note: Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree

Table 4.10 reports the corrected item correlation and Cronbach's Alpha for the combined Student Engagement statements (Q5_1,2,3,4,5). The stronger the correlation between items, the closer the Cronbach's Alpha will be to 1.0. A Cronbach's Alpha of .70 or higher is considered acceptably reliable and .80 is considered to have good reliability (Urdan, 2010). This combined alpha for this construct (the dependent variable) was .800 and the deletion of items did not provide an improved result so all five items were included in the Student Engagement variable construct.

Table 4.11   *Reliability Analysis for Community of Inquiry Presence Variables*

Variable	Corrected Item Total Correlation	Cronbach's Alpha if item deleted
Teaching Presence (n=260) (α = .818)		
I provide timely feedback to students on written assignments (within 1 week of submission.)	.399	.810
I provide detailed feedback that guides students toward learning objectives.	.536	.802
I incorporate multiple instructional strategies into my online course (videos, web links, discussion).	.519	.801
My course is set up in an organized way, using the appropriate tools within the learning management system.	.516	.804
I provide explanation to students (in any format) about how to participate in the course and use of its components.	.606	.797
I correct student thinking about concepts based on performance on assignments and assessments.	.586	.797
I present opposing views about my course topics when appropriate.	.399	.811
I work to establish a sense of community among students.	.550	.798
I communicate my availability and accessibility to students throughout the course.	.491	.805
I communicate with students in multiple ways (e-mail, text, phone).	.366	.815
I express passion for course content.	.591	.800
Throughout the course, students get to know me as a person.	.554	.797
I have incorporated a personal photo and/or video in the course so students can "visualize" their instructor.	.286	.839

Table 4.11 (continued)

Cognitive Presence (n=263)		
(α = .803)		
My online course is as rigorous as a similar course presented in a traditional lecture format.	.443	.812
I provide thought-provoking questions as part of assignments and discussions.	.622	.753
I provide course content that is relevant to real-life situations.	.687	.740
I provide ways for students to apply course material to real-life situations.	.669	.739
I promote ways for students to develop solutions to problems presented from course material.	.546	.777
Social Presence (n=261)		
(α = .867)		
My students establish a good rapport with one another.	.733	.841
My course provides opportunities for dynamic interaction throughout the course.	.694	.844
I express care and attentiveness to students' needs.	.333	.872
I actively participate in online discussions by responding to individual posts.	.371	.873
My students have opportunities within the course for peer review.	.621	.851
My students have opportunities to participate in group projects that involve problem solving.	.519	.861
My students have multiple opportunities to interaction with one another throughout the course.	.785	.833
My students have opportunities to provide academic and emotional support for one another.	.701	.842
My students are actively encouraged to share differing points of view.	.653	.848

Note: Responses in 5-point Likert scale, 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, 5= strongly agree

Table 4.11 reports the corrected item correlation and Cronbach's Alpha for the combined

Community of Inquiry teaching practice statements for teaching presence (Q2a_1,2,3,4,5,6,

2b_1,2,3,4,5,6,7, cognitive presence Q3_1,2,3,4,5), and social presence (Q4_1,2,3,4,5,6,7,8,9).

All Cronbach's Alpha levels were .80 or higher, with the highest being social presence at .867.

The deletion of specific items in each presence variable only minimally improved the alpha

level. Each presence construct was accepted as reliable and used as independent variables to answer subsequent research questions.

Independent samples t-test

RQ5: Are there any significant differences among survey participants in reported student engagement based on full-time or part-time employment, highest degree attained, orientation to online teaching, or training in student engagement practices?

Research question five sought to compare how the means of two independent variables differ when measuring online student engagement. Previous research has been conducted about how the demographics of faculty such as employment status, education, orientation and training may impact online student engagement (Allen, Seaman, Lederman, & Jaschik, 2012; Batts, Pagliari, Mallett, & McFadden, 2010.) Independent *t*-tests were conducted to compare online student engagement with full-time and part-time employment, higher degrees of PhD/Masters/Professional and Bachelors/Associates/Other, orientation to teaching online and prior training in online student engagement.

Table 4.12   *Independent Sample t-test Results Comparing Teaching Variables and Online Student*

Independent Variable							95% CI
	n	Mean	*SD*	*t*	df	*p*	
Employment				.391	252	.696	[-0.13, 0.20]
Full-time (1)	129	3.85	.665				
Part-time (2)	125	3.81	.709				
Highest degree earned				1.95	247	.052	[-0.02,0.54]
PhD/Masters/Professional (1)	222	3.86	.686				
Bachelors/Associates/Other (2)	27	3.59	.684				
Orientation to Online Teaching				1.07	252	.286	[-0.82,0.28]
Yes (1)	171	3.86	.703				
No (2)	83	3.76	.650				
Training in Engagement				2.73	251	.007	[0.09,0.56]
Yes (1)	215	3.88	.687				
No (2)	38	3.55	.633				

(Significance = *p* <.05)

Table 4.12 reports the difference between means of the grouped independent variables for online student engagement. The analysis only produced a significant *t* value (*t* =2.73, df=251, *p* = .007) for the training in engagement variable. Examination of means indicated that those faculty who have training have a higher mean (M = 3.88) than those who have not had training (M=3.55). From this analysis one could conclude that those faculty who have had training in online student engagement reported higher online student engagement than those that had not had training.

Regression analysis

RQ6: Among survey participants, to what extent do the demographic characteristics and online teaching practices predict perceived online student engagement?

Multiple linear regression was used to answer research question six, about the extent that demographic factors, teaching factors and Community of Inquiry practices predict online student engagement. Based on the reliability analysis reported in Tables 4.10 and 4.11, the student engagement items were recoded to a new Student Engagement (dependent) variable and teaching presence items recoded into new variables Teach, Cognitive and Social (independent) variables. Table 4.13 represents the detailed results of the sequential multiple regression.

Table 4.13   *Predictors of Online Student Engagement*

Variable	B	β	t	p	Adjusted R^2
Demographics (Block 1)					0.000
Constant	4.246		14.358.	.000	
Gender	-.002	-.002	-.031	.975	
Age	-.040	-.0069	-1.036	.301	
Caucasian	-.022	-.011	-.154	.878	
Employment status	-.026	-.019	-.293	.770	
Highest degree earned	-.097	-.125	-1.931	.055	
Teaching Information (Block 2)					0.116
Constant	3.897		9.808	.000	
Gender	-.020	-.022	-.327	.744	

Table 4.13 (continued)

Age	-.026	-.046	-.632	.528	
Caucasian	.028	.014	.206	.837	
Employment status	-.065	-.047	-.738	.461	
Highest degree earned	-.056	-.072	-1.129	.260	
Years teaching higher ed.	-.028	-.050	-.633	.528	
Years teaching online	.025	.049	.601	.549	
Orientation	-.054	-.036	-.562	.574	
Training in engagement	-.237	-.121	-1.882	.061	
Communication total	-.038	-.076	-1.220	.224	
Teaching tools total	.097	.246	3.765	.000*	
Number of course sections	.025	.170	2.427	.016	0.337
C of I Teach (Block 3)					
Constant	.768		1.553	.122	
Gender	-.022	-.024	-.414	.680	
Age	-.034	.060	-.945	.346	
Caucasian	-.003	-.001	-.023	.981	
Employment status	-.113	.082	-1.481	.140	
Highest degree earned	-.017	.022	-.398	.691	
Years teaching higher ed.	-.033	-.060	-.876	.382	
Years teaching online	.035	.067	.943	.347	
Orientation	.006	.004	.071	.943	
Training in engagement	-.028	-.014	-.248	.804	
Communication total	-.073	-.144	-2.652	.009	
Teaching tools total	0.58	.147	2.553	.011	
Number of course sections	.013	.091	1.491	.137	
Teach presence	.772	.518	8.881	.000*	
C of I Cognitive (Block 4)					0.364
Constant	.110		.209	.835	
Gender	-.027	-.030	-.533	.594	
Age	-.038	-.066	-1.062	.289	
Caucasian	-.020	-.010	-1.70	.865	
Employment status	-.087	-.063	-1.158	.248	
Highest degree earned	-.010	-.013	-.245	.807	
Years teaching higher ed.	-.028	-.050	-.741	.460	
Years teaching online	.020	.038	.545	.586	
Orientation	.022	.015	.268	.789	
Training in Engagement	.034	.018	.310	.757	
Communication total	-.073	-.143	-2.691	.008	
Teaching tools total	.052	.133	2.341	.020	
Number of course sections	.013	.092	1.525	.129	
Teach presence	.620	.417	6.360	.000*	
Cognitive presence	.286	.211	3.271	.001	

Table 4.13 (continued)

C of I Social (Block 5)				0.571
Constant	-.023		-.054	.957
Gender	.005	.005	.115	.908
Age	-.034	-.060	-1.180	.239
Caucasian	.177	.085	1.808	.072
Employment status	-.067	-.048	-1.084	.280
Highest degree earned	-.004	-.005	-.108	.914
Years teaching higher ed.	-.005	-.009	-.157	.876
Years teaching online	.035	.067	1.163	.246
Orientation	.079	.053	1.178	.240
Training in Engagement	.000*	.000*	-.001	.999
Communication total	-.044	-.086	-1.955	.052
Teaching tools total	.005	.012	.243	.808
Number of course sections	.016	.112	2.267	.024
Teach presence	.228	.153	2.579	.011
Cognitive presence	.172	.127	2.370	.019
Social presence	.560	.577	10.551	.000

Note. $n= 268$ p-value is significant at <.05, *value is <.001   See codebook (Appendix C).

The first block of independent variables included gender, age, Caucasian, employment status, and highest degree. Block two included teaching demographics which included years teaching, years in online education, online orientation, training in engagement, total number of courses teaching, total number of communication methods and total number of online teaching tools used. These were selected based on the literature review, however, this exploratory study fulfills a gap in the literature about the combination of these variables and the impact on online student engagement. Block three included the Teach variable, block four included the new Cognitive variable and block five included the new Social variable.   Together, these predictors accounted for 57% of the variance in online student engagement. A significant improvement in the model was noted after Block 5 (social presence) was added, as the β value improved by more than four times. The only independent variables that were significant predictors were the number of course sections taught, and the Teach, Cognitive and Social variables. The

Community of Inquiry Social variable (β =.58) was the highest predictor and positively associated with online student engagement.

Qualitative Analysis

RQ7: How do online community college faculty define online student engagement in their current courses?

Qualitative analysis was completed on the final open-ended survey question, defining online student engagement.   Responses were reviewed and coded by themes and common words. Of the total number of participants, 71% completed the open-ended question (n=211). Response themes were grouped together with similar ideas and when synonyms were used. The length of responses varied from one single word to a multiple-sentence paragraph that included a detailed explanation of that participant's definition of engagement and examples. Eight responses indicated that online student engagement could not be defined or not be achieved.

Table 4.14   *Summary of Faculty Definitions of Online Student Engagement (n = 211)*

Definition of Online Student Engagement	Frequency	%
Combination of frequent log-ins, timely completion, discussion/blog participation, asking questions /Active participation all course activities	75	35.5
Active learning /engaged in learning/motivation for learning/ excited or passionate about topic, seeks further understanding	43	20.3
Interaction with other students and instructor	42	19.9
Timely coursework completion	17	8.1
Evidence of growth as a learner/ culminating final course project	11	5.2
Evidence of application of information	10	4.7
Discussion participation	9	4.2
Depends on the course structure, students, limited engagement, can't be defined for a group, not accomplished	8	3.6
Sense of community established, get to know student personally	6	2.8
Doing more than the minimum/ put forth effort	6	2.8
Share, understand opposing viewpoint	4	1.9
Ongoing communication	4	1.9

(Missing = 57)

Table 4.14 lists the commonalities of statements in descending order. The most comment definition (n=75) included two combined similar responses about active course participation. These two were a listing of active participation in specific aspects of the course or a statement about being engaged in "all course activities." This definition was combined because both focus on activities and active participation. The second most common definition focused on aspects of learning (n=43) and the third related to interaction with other students and the instructor (n=42).

Examples of the diversity of responses are noted below. The first two examples are those responses that focused on the active participation and expand on aspects of learning and application. "Ongoing participation in the course activities as noted by their progress reports; timely submission of assignments and quizzes; their responses to the feedback that I provide to them once their completed assignments are graded; personal comments they may send as to how the course material is relevant to their life." "They log on. They check in. They talk to one another. They talk to me. They do the work. They ask questions. They check their grades. They improve based on feedback. I can see that they have grown. They show interest in what they are doing."

The third example focuses on the sense of community and learning as a group. "My students become excited about the topics we explore, encourage and communicate with each other, apply what they learn to their lives from the first week of class, and truly enjoy the overall experience, even though there is a lot of work. We are engaged in learning, exploring, and understanding as a group."

The fourth example includes a statement about the importance for the faculty to be engaged. "Active and timely participation to really understand the course material and content. This will come through active participation in the discussion threads and challenging students

through a myriad of means. Then, it's important for the instructor to be engaging and active in the class as well. This includes proper, timely and DETAILED feedback. You can't expect outcomes from the students that you, the instructor, are not willing to achieve yourself."

The final example includes a response about the skepticism of achieving student engagement in an online environment. "Online student engagement is a misplaced goal emphasizing clicks, likes, and interactions, rather than subject matter and real world tools or problem solving. By definition, online = second life, and thus "second life student engagement" inherently detaches a student from greater humanity."

Summary

This chapter presented the results of this study. Descriptive results illustrated the demographic characteristics of the faculty participating in this study and the extent to which they perceived online student engagement and implementation of the Community of Inquiry online teaching practices. Reliability testing produced a single factor to measure online student engagement and three factors corresponding with the Community of Inquiry forms of presence. Independent t-test results indicated that only faculty training produced a significant difference in online student engagement. The regression analysis model predicted an improvement in online student engagement based on the number of course sections taught in an academic year and the three forms of presence. Social presence contributed most to the predictability of the model. Qualitative results of open-ended questions were summarized. Discussion of the quantitative and qualitative results will be examined in more depth in Chapter 5, concluding with implications for practice and recommendations for future research.

CHAPTER 5.   DISCUSSION AND CONCLUSION

This final chapter summarizes and discusses the results and significance of the seven research questions, as presented in the previous chapters. Based on this discussion, implications for practice and policy will be presented, followed by recommendations for future research.

Discussion

As identified in Chapter 1, the goal of this exploratory study was to address the problem of online student engagement and the need for better understanding about online faculty strategies used to achieve better outcomes. Chapter 2 reviewed literature describing the evolving role of online faculty, faculty perceptions on online teaching, characteristics of students, the Community of Inquiry framework, and the impacts of teaching practices. Online student engagement has previously been studied extensively to understand its impact on success, but the focus has primarily been on student data.   A gap in literature identified the need to better understand faculty perceptions and teaching practices in this area.

There were four overarching goals of this study. First, there was need to understand how faculty perceive engagement of online students in their own courses. Second, using the extensively-researched Community of Inquiry framework, the extent to which online faculty have implemented teaching practices that support teaching, social and cognitive presence was measured. Third, independent variables were measured in the comparative and regression analyses to understand the impacts on online student engagement. The final goal was to capture how faculty define online student engagement.

Demographic Descriptive Analysis

The results of participants' demographic characteristics were used to answer the first research question. These data were compared with college, state and national demographic

faculty data in higher education. There is limited comparison data about online faculty, specifically. National Center for Education Statistics (NCES) data includes faculty teaching in all higher education institutions nationwide. The statewide community college annual report has some data which apply specifically to faculty but the report does not identify online faculty as a sub-group (*The annual condition of Iowa's community colleges*, 2016, p. 89). Additional national demographic data is also available from the Center for Community College Student Engagement (Center for Community College Student Engagement, 2014).

Gender, age and ethnicity data reflected similar findings statewide. A slightly larger proportion of participants in this study were female. In this study, 52% of participants reported gender as female, 39.6% male, and another 8.2% did not disclose. According to NCES, in fall 2015, 49% of higher education faculty were female, 51% male (National Center for Education Statistics, 2017, p. 1.) The largest age groups in the sample were 50-59, 40-49 and 60 years and older, which was slightly older than the statewide averages. The mean age of community college instructors state-wide in 2016 was 49.5 years and median age was 50 years (*The annual condition of Iowa's community colleges*, 2016, p. 92). For ethnicity, the sample was less diverse than faculty nationwide, with 86.2% of the sample reported identifying with Caucasian. This was consistent with statewide demographics (U.S. 2010 Census Data, 2010). NCES data indicate that nationwide, 77% of faculty identify as Caucasian (National Center for Education Statistics, 2017, p. 2). This is not unexpected based on the demographic makeup of the state in the 2010 census was 91.4% (U.S. 2010 Census Data, 2010).

In comparing employment, the composition of full-time to part-time faculty closely aligned with national data about all higher education faculty but differed from the demographics in the four participating community colleges. NCES report indicates that 52% of faculty in all

higher education institutions were employed full-time and 48% part-time and this study produced a nearly identical result. However, statewide, part-time community college faculty far outnumber full-time faculty, with 30% employed full-time, 70% part-time (*The annual condition of Iowa's community colleges*, 2016, p. 94). According to the most recent (2015-2016) Integrated Postsecondary Education Data System (IPEDS) data from the four participating community colleges in this study, 74.8% of faculty were employed part-time and 25.2% employed full-time (IPEDS Institution Profile, 2016). This indicates that a greater proportion of full-time faculty completed the survey than part-time faculty.

In comparing the highest degree earned for faculty participating in this study, 85.5% of participants reported having a master's degree or higher, which is higher than the current 65% of community college faculty statewide (*The annual condition of Iowa's community colleges*, 2016, p. 90). Previous data published about online faculty indicated that online faculty were more likely to have an advanced degree, however this was based on analysis of 2004 demographics when online education was less mainstream (Akroyd, Patton, & Bracken, 2013).

Participants in this study had teaching longevity in higher education, as nearly half of all participants had been teaching for 15 years or more. Data from the Center for Community College Student Engagement (2014) reported that 75% of full-time and part-time faculty combined had at least four years of experience teaching in higher education while in our study it was 95.1% (Center for Community College Student Engagement, 2014). Of those participating in our study, 12.7% of the sample had been teaching online for more than 15 years and have experienced the transformation of distance education as previously described. More than 80% of participants had been teaching online at least four years.

Teaching Demographic Descriptive Analysis

Orientation and training are known to be a crucial part of faculty success in online teaching (Batts et al., 2010; Hoekstra, 2014; Meyer, 2014). Participants were asked to report whether they had received orientation to online teaching and prior training in student engagement practices. Two-thirds of participants reported being oriented to teaching online and 85.1% reported having prior training in student engagement practices. This may indicate that training is a priority in community colleges. If faculty have been teaching online since its inception, orientation may not have been available at that time. There is little national data to compare other than institutional reports indicating that training is inconsistent and may not be strategic (Lammers et al., 2017). However, Lichoro (2015) found that community college faculty in this same population lacked preparedness to teach online. Previous data has indicated that part-time faculty may be less likely to receive training (Peters et al., 2011; Meyer & Murrell, 2014) yet in this sample, a slightly higher proportion of part-time faculty (86.6%) had received training than full-time faculty (84%).

Teaching demographic data were analyzed to provide a more in-depth description of the sample. Timeliness of teaching online has been identified as a challenge for faculty. Participants in this study estimated the amount of time spent each week responding to and interacting with online students. More than half of the participants reported spending eight hours or less each week. It was assumed that time spent by online faculty would vary depending on the number of course sections assigned. Number of course sections taught in an academic year for this sample ranged from 1 – 45.5 sections, with a mean of five course sections per academic year. Published data about time spent on teaching activities has compared full-time and part-time faculty in all teaching modalities (Center for Community College Student Engagement, 2014). These reports indicated that part-time faculty spent just as much time preparing for in-

class activities but less time providing feedback and responding (CCCSE, 2014, p.10). It is unclear how this might apply to online faculty. In this study, the time spent per course section could not be calculated because weekly time estimates were set as ranges. In addition, the number of reported sections taught varied in the number of credit hours per course and number of students per section, both of which would impact the time spent by faculty.

One of the teaching descriptive questions asked participants to report expectations of the frequency in which online students needed to log in each week to be successful. Dixson (2015) evaluated her Online Student Engagement scale against the number of student log-ins and interactions within the learning management system. Responses from this sample indicated that nearly two-thirds expected students to log-in 3-4 times per week and another 22% expected daily log-ins. As noted by Dixson (2015) and others, these expectations were difficult to evaluate in this study because the frequency of logging in did not capture the quality of the interaction within the course itself.

Communication has continued to be a critical aspect of faculty-student interaction and influential on engagement (Young, 2006; Dixson, 2010; Huang & Hsiao, 2012). Young (2006) and Dixson (2010) concluded that an increased number of communication methods correlated with higher student engagement. Our study asked faculty about the different modes used to communicate with students. The mean number of total communication methods was three. Nearly all participants reported using e-mail communication and nearly half used phone communication. Nearly one-third of participants reported using text communication with students. In previous studies, texting has been found to improve perceptions of learning (Swartzwelder, 2014) and promote a sense of community among students (Kovalik & Hosler, 2010). Research about faculty-student communication indicates that is critical to use the

communication mode preferred by individual students and this may be more important than the number of methods used (Young, 2006; Huang & Hsiao, 2012).

Multiple researchers have analyzed how teaching tools of the online learning system impact student engagement (Coates et al., 2005; Revere & Kovach, 2011; Jaggars et al., 2013; Meyer, 2014). Participants indicated which tools within the learning management system they used in their primary online course. More than 80% of all participants reported using at least five online tools, with the mean of 6.5 total tools used. There was a higher number of teaching tools utilized than communication modes. This is expected as the teaching tools encompass the entire course, while communication is one aspect of course delivery. Coates et al. (2005) concluded that tools with the learning management system are only effective if used in optimal ways to promote learning and engagement. Evaluating the types of tools used only provides a small piece of the engagement puzzle. Teaching strategies utilizing these tools are explored in more depth in the comparative analysis of the Community of Inquiry framework later in this discussion. Meyer (2014) reported that online faculty have experienced improvements in student learning through employing a variety of approaches. Her findings indicated that "although the same online teaching tools were available, faculty used the tools differently, depending on the subject and course" (Meyer, 2014, p. 584-585).

Student Engagement Analysis

Research question two sought to discover how participants rated their online students in activities of engagement, as well as overall engagement in their courses. Based on the Likert-scale ratings, two activities rated four or higher ("Agree"). These were completion of assigned work and assessments by the deadlines and routine use of critical thinking for problem solving. The lowest rated item on the scale was students getting to know one another in the course. This is not surprising, as the challenges of online student-student interaction and building a sense of

community have been extensively studied (Garrison, 2017)   In the overall ranking, participants rated online student engagement as 7.4 on a scale from one to ten.   Previous research has not rated student engagement in this way. However, Bolliger and Wasilik's (2009) survey of online faculty reported, "The majority of faculty believed that their online students are actively involved in their learning, participate at a good level, and communicate actively with course instructors" (Bolliger & Wasilik, 2009, p. 113). This finding also concurred with Berger's (2014) unpublished data about overall positive faculty perceptions of online student engagement.

Community of Inquiry Analysis

Research question three was answered by the Likert-scale questions in the three areas of presence within the Community of Inquiry framework. These faculty were more likely to have implemented teaching presence and cognitive presence practices within their courses than social presence practices. All the cognitive presence ratings averaged a 4.0 (agree) or higher and many of the teaching presence ratings were 4.0 or higher. The two lowest teaching presence items were interrelated in that they focused on the personal aspect of students getting to know the professor as a person and having a personal photo or video within the online course.

As noted above with the student engagement scale items, the social presence activities were less likely to have been implemented. Of the social presence items, faculty-student interactions such as expressing care for the student or encouraging differing points of view were more likely to be implemented than activities promoting interaction with, support for or getting to know other students. This is consistent with the findings of the Carlon et al. (2012) study in which the Community of Inquiry instrument produced two factors within social presence: social comfort (instructor-driven) and social experience (student-driven).   Faculty have more influence and ability to impact student-instructor interaction than to student-student interaction.

Group projects that involved problem solving had the lowest score and the highest

standard deviation, indicating that faculty either had these activities in their courses or they

didn't occur at all. Morgan et al. (2014) collected data from online instructors' perceptions about

group work and concluded that while faculty believed in the importance of online group work,

more support was needed to implement them into their courses (Morgan, Williams, Cameron, &

Wade, 2014).

Discussion of Independent *t*-tests

Research question five sought to determine if significant differences in online student

engagement existed between groups based on employment status, highest degree, orientation to

online teaching and training in online student engagement. All null hypotheses were accepted

except for training in student engagement. A significant positive difference was found between

those faculty who had prior training in student engagement. This finding is consistent with

previous citations that faculty training can improve online teaching and impact online student

engagement (Wolf, 2006; Meyer & Murrell, 2014; Bigatel & Williams, 2015). Our study did not

inquire about the extent or content of the training and this could impact this finding. We would

concur with the conclusions of Bigatel and Williams (2015), that other faculty attributes (beyond

training) may also contribute to higher student engagement.

Discussion of Regression Model

Research question six was answered by determining to what extent the independent

variables of faculty demographics, teaching characteristics and the three forms of presence

established in the Community of Inquiry framework predict online student engagement. As

reviewed in Chapters 3 and 4, five blocks were added sequentially to the model and findings

reported in the previous chapter indicated that the number of courses and each of the forms of

presence were positive predictors of online student engagement. Based on the R-square of .571,

this means that more than 57% of the variation in online student engagement was explained by the final model. The findings of the model are consistent with previous Community of Inquiry research that supports these strategies in improving student learning but the first study to support faculty perceptions of higher student engagement. Hostetter and Busch (2006) found that social presence in online and face-to-face courses did not have a significant effect on learning outcomes.

Number of courses

Number of course sections taught was grouped with block two and was the only teaching descriptive variable to be a significant predictor of higher student engagement. There is research to support that online faculty with more experience teaching online were more positive overall about online education and teaching (Windes & Lesht, 2014). The finding that more course sections taught led to increased engagement supports the general theory that "practice makes perfect." Previous literature has described the unique characteristics and skills for successful online teaching (Conceicao, 2006) and teaching more sections may allow faculty to hone these skills. Perhaps those faculty teaching full-time online have had the opportunity to implement consistent pedagogies that support engagement if this is their primary teaching modality.

Teaching presence

Teaching presence activities had a significant and positive effect on student engagement score. Teaching is the backbone of the Community of Inquiry model (Garrison, 2016) and is defined as a type of online instructional orchestration (Shea et al., 2010). Participants in this study readily reported implementing teaching practices that established teaching presence. These findings are consistent with previous studies supporting teaching presence and increased perceptions of higher learning and satisfaction in online courses (Garrison, Cleveland-Innes, &

Fung, 2010; Garrison, 2016). In our study, student learning could not be assessed, but increased teaching presence predicted higher perceived student engagement.

Cognitive presence

Cognitive presence variable also had a significant and positive effect on student engagement. This variable encompasses activities of deep thinking and learning that are established by the instructor. These survey items had the highest overall mean, indicating that participants reported implementing cognitive presence strategies more than the other two forms of presence. In terms of predictability, there was little improvement in the model when the cognitive variable Block 4, was added. This supports the interconnectedness of the forms of teaching and cognitive presence from an instructor's perspective, as those measures of cognitive presence were implemented by the instructor.

Social presence

Social presence had the most significant and positive effect on student engagement scores. A marked improvement in the final model was shown when the final social presence variable Block 5 was added. Social presence has been deemed to be a mediating factor in the Community of Inquiry framework (Garrison et al., 2010; Garrison, 2016). Previous researchers have concluded that social presence was the most important factor within the framework but difficult to isolate since it is innately embedded in cognitive and teaching presence (Armellini & De Stefani, 2016). Many have concluded that social presence and its relational aspects are complex and the impact of high instructor teaching presence increases students' social presence (Shea et al. 2010). This study would conclude that the impact of social presence activities within an online course are a key determining factor in predicting online student engagement.

Qualitative Summary Analysis

Two open ended questions were included in the survey instrument and both questions received a nearly 80% response rate among those participating in the survey. This is perhaps a testament to the engagement of faculty about this topic. The first item asked participants to list the teaching practice that they believed had the most impact on student engagement. Nearly every strategy listed has been evaluated and promoted in previous literature. As reported in Chapter 4, the top three answers were divided between each of the three forms of presence. The most common answer fell into the social presence realm, where participants listed discussions, group work or activities that promote interactivity with one another. The second and fourth most common answers were related to timeliness of feedback and frequency of faculty interactions. The third most common answer was in the cognitive category and included posing thought-provoking questions, providing challenging material or promoting critical thinking. The findings of this open-ended question consistently mirror the Community of Inquiry statements, however, there is certainly no consensus about "one best way" to engage students. This supports the theory that learning tools must be individualized to meet the unique needs of the students and a variety of strategies must be employed (Chakraborty & Nafukho, 2014)

The final survey item answered research question seven to understand how online faculty define online student engagement. More than one-third defined engagement as active participation in all of the course components including items such as discussions, learning activities, and assessments. This definition is consistent with Cole and Chan (1994), that focused on involvement and participation in learning activities. Approximately 20% defined engagement within the cognitive category, focused on active learning and seeking further understanding about course material and concepts. Nearly 20% defined engagement strictly as interaction with other students and the instructor. Few participants provided a definition that

encompassed all aspects of presence specifically, but the most common definition included some component of social interactivity, such as online discussions. Eight participants indicated that student engagement couldn't be defined or was not achievable in an online setting. It is logical that faculty would report micro-level definitions of engagement rather than definitions that encompassed institutional outcomes such as Kuh's (2003) definition.

Implications for Practice and Policy

Based on the findings of this study, there are numerous implications for practice that can impact all community college stakeholders.

First, implementation of teaching strategies that promote social presence should be the focus of online courses. In our study, online engagement activities that promote social presence were the least likely to be implemented yet had the most impact as a predictor of online student engagement. It was not clear as to why social presence activities were not as readily included in these online courses but the problem may be multi-faceted. First, faculty may be unaware of the impact these teaching strategies have on student engagement and may lack practical knowledge of ways to incorporate them into their courses. Second, online faculty may have previous barriers from their own experiences or anecdotes from other facility in which the social interaction didn't seem meaningful or perhaps found it too time-consuming to coordinate and moderate. In this study, faculty were less likely to incorporate a personal photo or video into their online courses, which may indicate hesitancy in promoting their own social presence.

Identifying barriers and providing faculty with practical ways to incorporate interaction between students, moderate group work and promote community would be most impactful. In previous literature, online faculty expressed concern about the time involved in reviewing and communicating via written text. In a Gates Foundation survey of approximately 4,000 higher education faculty in 2015, barriers to implementing teaching strategies included perceptions

shared by colleagues, lack of time and resources, lack of knowledge of techniques and known

benefits (FTI Consulting/ Gates Foundation, 2015).   The 2015 FTI/Gates Foundation survey

identified that faculty are goal oriented and driven by student success. Faculty training about

social presence techniques should address these barriers and include course goals which include

social presence activities with proven outcomes. In addition, social presence should be promoted

through faculty learning circles, support from course designers and continuing education offered

in college and university teaching and learning centers.

Second, training in online student engagement is crucial, as affirmed by this study and

previous researchers. Previous data about online faculty training indicated that online faculty are

woefully undersupported and that implementation has not been strategic nor consistent

(Lammers, Bryant, Michel, & Seaman, 2017).   However, in our study 85.1% of participants

reported receiving prior training in student engagement practices.   The extent, quality or focus

of the training is unclear.   A significant improvement in perceived online student engagement

was found in those participants who reported having received training in engagement practices.

In addition, utilization of the Community of Inquiry framework teaching practices predicted an

increase in student engagement.   These findings support the case for ongoing emphasis on

training about the Community of Inquiry strategies but should also include general background

of online pedagogy and learning theory, as noted by Mandernach et al., (2015).

Third, orientation and training for both full-time and part-time faculty should be

implemented consistently for all. Part-time faculty outnumber full-time faculty within

community college settings so it is critical that training be conducted consistently. Because the

number of course sections taught in an academic year was a significant predictor of higher online

student engagement in this study, those faculty who teach only a few online courses or teach

part-time should be a priority for training and course audits. Orientation and training should be scheduled at times that meet the needs of all faculty through a variety of training modes. Part-time faculty can provide valuable insight into teaching approaches based on their diverse experiences and these ideas should be incorporated into the training curriculum.

Fourth, online course standards along with faculty expectations for teaching online should focus on building relationships with students. As noted throughout the literature, connectivity, interaction and open communication were all key to engaging online students. Successful engagement appears to require the right set of teaching skills and instructor attributes. In addition, with the myriad of learning management system tools readily available, the key is to utilize them effectively to accommodate a variety of learning styles. Through support of course designers, centers for teaching and learning, and faculty mentoring, online courses should be built and revised with relationship-building as a priority. Pre-course checklists should be utilized to audit online courses to determine how standards for interactivity, communication and sense of presence are met through tools, course policies and pedagogy. Review of student feedback should also be used to coach faculty in trending areas that may be lacking.

Finally, institutions and academic programs should embody and promote a consistent definition of online student engagement both on the macro and micro level; one that encompasses all aspects of online presence so faculty have a clear mission to engage online students. Faculty have been found to be goal oriented and long-term goals should be aligned with the global institutional mission and support teaching strategies that promote online success throughout all disciplines. A clear understanding of online student engagement course and program outcomes promotes those critical connections with students that impact course success and ultimately retention.

Recommendations for Future Research

This exploratory study sought to evaluate online student engagement through the community college faculty lens. The findings of this study contributed to existing literature in the areas of online teaching practice, the Community of Inquiry, and an understanding of factors that may impact online student engagement. There are several implications for future research in this area.

First, the survey instrument used in this study should continue to be tested, particularly in estimating online student engagement. There were only five items used to estimate online student engagement and did not include student performance. Additional items measuring students' online activities should be added for improved reliability. In addition, comparing online faculty perceptions with actual student outcome data would further validate this instrument as recommended by Dixson (2015).

Second, part-time faculty in community colleges outnumber full-time faculty as much as three to one and continues to be the highest growth sector of higher education employment in Iowa community colleges (*The annual condition of Iowa's community colleges*, 2016). In this study, a higher proportion of full-time faculty responded to the survey. Additional study should further analyze the training and attitudes of part-time faculty, as their perceptions and behaviors may differ from full-time faculty. Emphasis could include orientation and training since training in online student engagement was found to impact online student engagement in this study.

Third, further analysis should focus on teaching strategies that promote social presence as described in the Community of Inquiry framework. Participants in this study were less likely to report social presence strategies in their courses yet these activities were a significant predictor of online student engagement in our model. In addition, interactive student engagement

activities in other areas of the Community of Inquiry framework also received lower scores. Further study is needed to understand barriers and challenges in implementing these social presence activities, particularly group work and peer-to-peer interactions that move beyond online discussions. It is unclear if faculty understand the impacts of online social presence and interaction, as well as how to implement and assess these strategies efficiently.   Faculty attitudes about the goals, outcomes, and moderation of student-student interaction may impact how readily these activities are implemented.

Fourth, the work of Arbaugh (2008) and Carlon et al. (2012) applied the Community of Inquiry framework to business students and healthcare professions. Both reported that online student engagement is highly dependent on the course topic or program discipline. In this study, all online faculty throughout the community colleges were invited to participate. Data were not collected about course subjects or career pathway programs.   The subject of the course may impact students' ability to interact, particularly in online social engagement. In addition, students in remedial courses have been found to be at higher risk of stopping out. It is important to understand how teaching strategies focused on these specific courses might impact online student engagement.

Fifth, faculty perceptions and beliefs about online student engagement were uncovered in this study but it is unclear if the definition of engagement led to practices that aligned with their definition.   Online faculty reported definitions that fell into each area of the Community of Inquiry framework. Further analysis of the current data from this study could investigate whether those faculty who believed that engagement was contingent upon social presence and interaction between students as a community of learners led to increased teaching strategies in this area.

Finally, this study captured faculty perceptions of student engagement. Additional research should include a student outcome component that could connect engagement activities with online course retention and academic success. In this study, faculty readily reported being trained and using teaching strategies that promoted engagement. However, the critical question is "do they really make a difference?"

Conclusion

This study set out to determine how online community college faculty perceived student engagement in their own courses, the extent to which they had implemented engaging teaching strategies, factors that impacted perceptions of online student engagement, and faculty definitions of online student engagement. The goals of the study were achieved and provided evidence that online faculty were engaged in this topic, as shown by the high participation in the study. Overall, faculty believed that their students were engaged in their courses, as evidenced by reported participation and interactivity by their students. Most faculty had received training on online student engagement practices and had implemented strategies that supported the Community of Inquiry framework of teaching, social and cognitive presence. All three presence factors were positive predictors of higher perceived online student engagement, as were the number of online course sections taught in a semester. Social presence strategies were found to be more significant than any other factor. Training was also found to have a significant correlation with higher perceived engagement. These findings provide insight for higher education administrators for continued training and online teaching standards, and need for further study to compare these findings with student outcomes in online course retention and success.

The path forward may best be described by Meyer (2014) in her own recommendations for future research in online student engagement, "Despite its many years of development, online

learning is always new to someone: new instructors, new legislators, new parents and new students… the work of researchers in online learning - and those who communicate findings to the public – will never be done" (p. 101).

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APPENDIX A.   ONLINE STUDENT ENGAGEMENT SURVEY

Online Faculty Student Engagement Survey Instrument (8/17)

Demographic Information

9.   How long have you been teaching in higher education?
   1. First year
   2. 1-3 years
   3. 4-6 years
   4. 7-10 years
   5. 11-14 years
   6. 15 years or more

10.   How long have you been teaching online?
   1. Less than one year
   2. 1-3 years
   3. 4-6 years
   4. 7-10 years
   5. 11-14 years
   6. 15 years or more

11.   Employment status at your primary institution:
   1. Full-time   2. Part-time

13.   Highest degree held?
   1. Doctoral degree (PhD or EdD)   2. Master's degree
   3. Bachelor's degree   4. Professional degree (MD, JD, PharmD)
   5. Associate's degree   6. Other

14.   Did you participate in an orientation geared toward online teaching? 1. Yes 2. No

15.   Have you received continuing education about how to increase student engagement in an online learning environment?   1. Yes   2. No

16.   On average, how many online courses (sections) do you teach each year? _____

17.   What communication methods do you utilize with online students? (Check all that apply)
   1. Internal college e-mail
   2. Student's personal e-mail
   3. Phone
   4. Text
   5. Personal meeting
   6. Social media
   7. If using social media, which platforms?_____ _____

18.   On average, how many hours in a typical seven-day week do you spend giving feedback to students about any aspect of the online course?
   1. None   5. 13-16
   2. 1-4   6. 17-20
   3. 5-8   7. 21-30
   4. 9-12   8. 31 hours or more

19. How frequently (minimum) do you expect students to log in to your online course?
    1. Daily
    2. 3-4 times weekly
    3. Once a week
    4. Less than weekly

24. What online teaching tools do you readily use in your online courses (select all that apply)

1. Assignment dropboxes	6. Gradebook
2. Quizzes	7. Rubrics
3. Discussions	8. Calendar
4. Blogs	9. Announcements
5. Recorded lectures/ video	10. Interactive text reading
	11. Other _____

20. Gender:

1. Male	2. Female
3. Another	4. Prefer not to answer

21. Age:

1. Under 30 years	2. 30-39
3. 40-49	4. 50-59
5. 60 and over	6. Prefer not to answer

22. Ethnicity: (Check all that apply)

1. Hispanic/Latino/Latina	2. White, non-Hispanic
3. African-American, non-Hispanic	4. American Indian/Alaskan Native
5. Asian/Pacific Islander	6. Multi-racial
7. Other	8. Prefer not to answer

Teaching, Cognitive and Social presence

Think about online courses you have taught during the past year. For each of the following statements below, indicate how strongly you agree with each as it relates to the primary course you teach.

	Faculty Engagement Behavior	5	4	3	2	1
#2	**Teaching Presence**	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
1	I provide continual, immediate feedback to students (within 1 week of submission)					
2	I provide detailed feedback to students about all areas of learning assessment.					
3	I incorporate multiple instructional strategies into my online course (videos, web links, virtual discussions)					
4	My course is set up in an organized way using the appropriate tools within the learning management system.					
5	I provide explanation about how to participate in the course and its components					
6	I clarify student thinking about concepts based on assignments and assessments.					
7	I present opposing views about my course topic when appropriate for students to analyze.					
8	I work to establish a sense of community among students within the online course.					
9	I communicate my availability and accessibility to students throughout the course.					
10	I communicate with students in multiple ways.					
11	I express passion for the course content					
12	Students get to know me as a person.					
13	I have incorporated a personal photo and/or video in the course so students can visualize their instructor.					
#3	**Cognitive Presence**					
1	My online course is as rigorous as a similar course presented in the traditional format					
2	I provide thought-provoking questions in online discussions.					
3	I provide course content that is relevant to real-life situations.					
4	I promote ways for students to apply coarse material to real-life situations.					
5	I promote ways for students to develop solutions to problems presented from course material.					
#4	**Social Presence**					
1	My students establish a good rapport with one another within my course.					
2	My course provides opportunities for dynamic interaction throughout the course.					
3	I express care and attentiveness to students' needs.					
4	I actively participate in online discussion.					
5	My students have opportunities for peer review.					
6	My students have opportunities to participate in group projects that involve problem solving.					
7	My students have multiple opportunities to interact with one another throughout the course.					
8	My students have opportunities to provide support for one another.					
9	My students are encouraged to share differing points of view about course topics.					

Think about online courses you have taught during the past year. For each of the following statements below, indicate how strongly you agree with each as it relates to student engagement in the primary course you teach.

#5	Perceived Student Engagement	5	4	3	2	1
		Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
1	Students regularly log into the online course throughout the semester					
2	Students regularly complete assigned work and assessments by course deadlines.					
3	Students actively participate in online discussions					
4	Students get to know other online students					
5	Students use critical thinking to provide solutions to proposed problems.					
6	Students perform well on quizzes and tests.					
7	Students receive good grades.					

Overall Engagement Question

6. Thinking about overall engagement with your online students this past semester, how would you rate their level of engagement on this scale, with 10 being the highest/most engaged and 1 being the lowest/least engaged. Slide bar to rating.

    1 2 3 4 5 6 7 8 9 10

Open-ended Questions

7. In a sentence of two, how do you define online student engagement?

8. Briefly describe what you believe is the most important teaching strategy you use to engage online students.

APPENDIX B.   SURVEY INTRODUCTION

Dear Online Faculty,

_____ Community College is participating in some very applicable education research, conducted through Iowa State University School of Education. The study focuses on online student engagement in Iowa Community Colleges. The research is being conducted by a long-time distance education instructor at Kirkwood Community College, Alicia Vance Aguiar.

As the busy Fall 2017 semester begins, we are asking that you take **about 10 minutes** to complete a survey regarding your current online teaching practices and how engaged you estimate your online students have been in your recent online teaching experiences.

This research will guide how we orient and train faculty by gaining a better understanding about teaching practices that engage students and hopefully improve course success and ultimately, online student retention.   We will to send a summary of the results later in the semester so you can review the findings.

Your responses are confidential and there are no college identifiers associated with the survey. Please visit the following link to complete this brief survey.

Link to Online Faculty Engagement Survey Iowa Community Colleges

Thanks so much for your time!

Alicia Vance Aguiar, PhD Candidate
Iowa State University

APPENDIX C.   SURVEY VARIABLE CODE BOOK

Variable Label	Description	Format	Variable Name/Values	Purpose
Experience teaching in higher ed.	Demographic	Numeric, ordinal Width = 1	**YrsExpEdu** 1 = "1st year", 2 ="1-3 years", 3 = "4-6 years", 4 = "7-10 years", 5 = "11-14 years", 6 = "15 years+"	Descriptive
Experience teaching online	Demographic	Numeric, ordinal Width = 1	**YrsExpOE** 1 = "<1 year", 2 ="1-3 years", 3 = "4-6 years", 4 = "7-10 years", 5 = "11-14 years", 6 = "15 years+"	Descriptive
Employment Status	Demographic	Numeric, categorical, binary Width = 1	**Fulltime** 1 = "full-time", 2 = "part-time"	Descriptive, correlation, regression
Highest Degree Attained	Demographic	Numeric, categorical Width = 1	**Degree** 1 = "Doctoral", 2 = "Master's", 3 = "Bachelors", 4 = "Professional", 5 = "Associates", 6 = "other"	Descriptive, correlation, regression
Online Orientation	Demographic	Numeric, categorical, binary Width = 1	**Orient** 1 = "yes", 2 = "no"	Descriptive, correlation, regression
Engagement Training	Demographic	Numeric, categorical, binary Width = 1	**Train** 1 = "yes", 2 = "no"	Descriptive, correlation, regression
Number Course Sections NEW	Demographic	Numeric, continuous Width = 2	**Courses** (Code number of course)	Descriptive, regression
Communication with Students	Demographic	Numeric, categorical Width = 1	**ComMethds** 1 = "College e-mail", 2 = "Personal e-mail", 3 = "Phone", 4 = "Text", 5 = "Face-to-face Meeting", 6 = "Social media", 7 = "other", 8 = "Web Meetings", 9 = "Discussions", 10 = "Online Chat", 11 = "announcements"	Descriptive
Total Communication Modes NEW	Demographic	Numeric, continuous Width = 2	**CommTotal** (Code number of total modes)	Descriptive, regression
Student Log-in Frequency	Student Engagement	Numeric, ordinal Width = 1	**LogInFreq** 1 = "<weekly", 2 = "1-2 times/week", 3 = "3-4 times/ week", 4 = "daily"	Descriptive
Online Teaching Tools Utilized	Demographic/ Faculty Engagement	Numeric, categorical Width = 1	**Tools** 1 = "assignment drop boxes", 2 = "quizzes", 3 = "discussions", 4 = "blog", 5 = "video", 6 = "grade book", 7 = "rubrics", 8 = "calendar", 9 = "announcements", 10 = "interactive text reading", 11 = "other"	Descriptive

Total Teaching Tools NEW	Demographic	Numeric, continuous Width = 2	**ToolsTotal** (Code number of total tools)	Descriptive, regression
Gender	Demographic	Numeric, categorical, binary Width = 2	**Gender** 1 = "male", 2 = "female", 3 = "another", 4 = "not answered"	Descriptive
Age	Demographic	Numeric, ordinal Width = 2	**Age** 1 = "30 or under, 2 = "30-39", 3 = "40-49", 4 = "50-59", 5 = "60 years or more ", 6 = "not answered"	Descriptive
Ethnicity	Demographic	Numeric, categorical Width = 2	**Ethnic** 1 = "African American/non-Hispanic", 2 = "American Indian/Alaska Native", 3 = "Pacific Islander", 4 = "Hispanic, Latino/Latina", 5 = "white, non-Hispanic", 6 = "multi-racial", 7 = "other", 8 = "not answered"	Descriptive
I provide timely feedback to students on written assignments (within 1 week of submission)	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP1** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I provide detailed feedback that guides students toward learning objectives	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP2** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I incorporate multiple instructional strategies into my online course (videos, web links, virtual discussions)	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP3** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My course is set up in an organized way, using appropriate tools within the learning management system.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP4** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I provide explanation to students (in any format) about how to participate in the course and	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP5** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression

use of its components.				
I correct student thinking about concepts based on performance on assignments and assessments	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP6** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I work to establish a sense of community among students.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP7** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I communicate my availability and accessibility to students throughout the course.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP8** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I communicate with students in multiple ways (e-mail, text, phone)	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP9** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I express passion for the course.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP10** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
Throughout the course, students get to know me as a person.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP11** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I have incorporated a personal photo and/or video in the course so students can "visualize" their instructor.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP12** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I present opposing views about my course topics.	Teaching Presence	Numeric, ordinal Width = 2 Decimals = 2	**TP13** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My online course is as rigorous as a similar course	Cognitive Presence	Numeric, ordinal Width = 2 Decimals = 2	**CP1** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither	Frequency, reliability, regression

presented in a traditional lecture format.			agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	
I provide thought-provoking questions as part of assignments or discussions.	Cognitive Presence	Numeric, ordinal Width = 2 Decimals = 2	**CP2** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I provide course content that is relevant to real-life situation.	Cognitive Presence	Numeric, ordinal Width = 2 Decimals = 2	**CP3** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I provide ways to students to apply course material to real-life situations.	Cognitive Presence	Numeric, ordinal Width = 2 Decimals = 2	**CP4** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I promote ways for students to develop solutions to problems presented from course material.	Cognitive Presence	Numeric, ordinal Width = 2 Decimals = 2	**CP5** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students establish good rapport with one another with my course.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP1** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My course provides opportunities for dynamic interaction throughout the course.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP2** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I express care and attentiveness to students' needs.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP3** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
I actively participate in online discussion by responding to individual posts.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP4** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students have opportunities	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP5** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither	Frequency, reliability, regression

within the course for peer review.			agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	
My students have opportunities to participate in group projects that involve problem solving.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP6** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students have multiple opportunities to interact with one another throughout the course.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP7** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students have opportunities to provide academic or emotional support for one another.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP8** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students are actively encouraged to share differing points of view about course topics.	Social Presence	Numeric, ordinal Width = 2 Decimals = 2	**SP9** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students regularly (3-4x/wk) log in to the online course throughout the semester.	Online Engagement	Numeric, ordinal Dependent variable Width = 2 Decimals = 2	**OE1** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students regularly complete assigned work and assessments by course deadlines.	Online Engagement	Numeric, ordinal Dependent variable Width = 2 Decimals = 2	**OE2** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students actively participate in online discussions by responding to other posts in meaningful ways.	Online Engagement	Numeric, ordinal Dependent variable Width = 2 Decimals = 2	**OE3** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
My students get to know other online students in the course.	Online Engagement	Numeric, ordinal Dependent variable Width = 2 Decimals = 2	**OE4** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 =	Frequency, reliability, regression

			"Agree", 5 = "Strongly agree"	
My students routinely use critical thinking to provide solutions to proposed problems.	Online Engagement	Numeric, ordinal Dependent variable Width = 2 Decimals = 2	**OE5** 1 = "Strongly disagree", 2 = "Disagree", 3 = "Neither agree nor disagree", 4 = "Agree", 5 = "Strongly agree"	Frequency, reliability, regression
Overall Engagement Scale	Engagement Scale	Numeric, continuous Width = 2 Decimals = 2	**OESCALE** (Number 1-10)	Descriptive
Most Effective Engagement Strategy	Online Engagement	Text Entry Width = 2000	**EngageStrat**	Qualitative
\Definition Online Student Engagement	Online Engagement	Text Entry Width = 2000	**Definition**	Qualitative

APPENDIX D   IRB DOCUMENT

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 5/1/2017

To: Alicia Vance Aguiar   **CC:**   Dr. Linda Serra Hagedorn
                 1448 Parkwood Drive SE   E262 Lagomarcino Hall
                 Cedar Rapids, IA 52403

From: Office for Responsible Research

Title: Faculty Impacts on Online Student Engagement in Community Colleges

IRB ID: 17-185

Study Review Date: 5/1/2017

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
    - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
    - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**

- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

    Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

    Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. **Only the IRB or designees may make the determination of exemption,** even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.**

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.