Strategies and Methods Used to Improve Engagement: Mixed Methods Action Research in an Online Computer Applications Course

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STRATEGIES AND METHODS USED TO IMPROVE ENGAGEMENT: MIXED METHODS ACTION RESEARCH IN AN ONLINE COMPUTER APPLICATIONS COURSE

by

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DEDICATION

To my family and personal cheerleaders, Everette, Tre’, Sierra, and Josiah, whose encouragement and patience made this journey possible. Thank you all for being self-sufficient and understanding when Mommy had to disappear into her writing lab for long periods of times. You all are my “reasons”! Thank you for being my sources of inspiration and strength throughout this process. I will forever be grateful. Let’s celebrate.
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ABSTRACT

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. A mixed methods research model that included both quantitative and qualitative measures was used. Quantitative data were collected from 162 students who participated in the course discussion boards and forums and from 124 students who took part in the Online Student Engagement survey (OSE). Qualitative data were derived from interviews with five student focus groups and from open-ended questions included on the OSE.

Quantitative findings revealed that there was a significant positive correlation between final grade and required posts, \( r(162) = 0.61, p < .001 \). So, as the number of required posts increased, the final grade did as well. Furthermore, three prominent themes emerged from the analysis of the qualitative data. The three themes were: 1) the types of assignments and how they are structured have an impact on student engagement and interaction, 2) the management and implementation of the different methods of communication play an important role in interaction and engagement, 3) the use of technology is considered a mean to improve engagement, interaction, and collaboration in the course. Students in the course conveyed that course engagement was improved when
course assignments were related to real-world situations and when they were allowed to interact with their peers and instructor on the discussion board. Students consistently expressed their desires to have access to technology that allows for synchronous communication. Students’ suggestions about how engagement could be improved in the course align with prior research about online engagement that encourages meaningful interaction between learners, their instructor, their peers and the content on the course.

Implications from this action research study is important because of the potential they have to affect engagement and interaction in online courses. Implications include the ability to impact how instructors design online courses, how technology should be implemented to foster improved communications, and how discussion boards should be effectively managed online courses.
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CHAPTER 1
INTRODUCTION

National Context

Distance education, commonly referred to as online education, is providing new and exciting opportunities for institutions of higher education to meet the growing needs of diverse student populations. As the number of distance education programs continue to increase, colleges and universities must strive to ensure that the online classes they offer are meeting the needs of their students. Allen and Seaman (2015), directors of the Babson Survey Research Group’s 2015 Survey of Online Learning, revealed that the growth in online education is outpacing overall growth in higher education. Moreover, data collected on online learning uncovered that in 2014, almost 5.8 million undergraduate and graduate students were enrolled in some type of distance education program; this represented a 7% overall increase in distance education enrollments between fall 2012 and fall 2014 (Allen & Seaman, 2015; National Center for Education Statistics, 2016). Consequently, most institutions of higher education (70.8%) identified online education as a critical component of the institution’s long-term strategy, thus 7 out of 10 colleges currently offer distance education and online classes (Allen & Seaman, 2015; Lederman, 2013).

As the number of students enrolled in online classes continue to increase, it is imperative that courses are designed so that they are effective in engaging students.
Research suggests student engagement is a crucial component of online learning and professors and instructors must maximize student engagement if they wish to impact student achievement and learning outcomes (Bernard et al., 2009; Conrad & Donaldson, 2004; Dixson, 2010). Similarly, research literature on online learning indicates a strong correlation between engagement and improvements in specific desirable outcomes, such as cognitive development, persistence, student satisfaction, and improved grades (Carini, Kuh, & Klein, 2006; Trowler, 2010). Also, see Darabi, Arrasti, Nelson, Cornille, and Liang, 2011.

Course interactions play a significant role in engaging students in online courses. Maki and Maki (2007) maintained in their research that effective online instruction provides opportunities for students to interact with each other and their instructor. Other researchers have expounded on the idea that interaction in online courses positively influences engagement because it allows for the exchange of ideas and intellectual stimulation (Abraham, Bernard, et al., 2011; Croxton, 2014; Wanstreet, 2009; Woo & Reeves, 2007). Furthermore, research by Hill (2009) emphasized that establishing relationships by interacting with others in online courses is instrumental in engaging students and retaining them in the course.

Most studies on engagement in online courses in institutions of higher education have focused on three types of interaction: student-student, student-instructor, and student content (Bernard, Bures, Borokhovski, & Tamim, 2011; Banna, Lin, Stewart, & Fialkowski, 2015; Kang & Im, 2013; York & Richardson, 2012). Student-student interaction and student-instructor interaction refer to the relationship and dialogue among students and the instructor. These interactions help ensure that there is a sense of
connectedness and community established in the course, which plays an integral role in student engagement (York & Richardson, 2012). Student-content interaction occurs when students create knowledge by interacting with course content such as reading materials, watching course videos, listening to course audio content, and participating in discussion boards (Lin, Zheng, & Zhang, 2017).

The interactions between the student and the instructor help to cultivate the student’s interest in the course and stimulate their desire to learn; thus, the success and how students engage and interact in an online course can be attributed to the online instructor (Booliger & Wasilik, 2009; Purarjomandlangrudi, Chen, & Nguyen, 2016). Furthermore, studies have emphasized student-student interactions in online courses are positively related to student learning and satisfaction, which has an impact on engagement (Sher, 2009).

Local Context

At a large university in the southeast part of the United States where I teach, 19% of undergraduate and 7% of graduate students were enrolled in some type of online course in the fall of 2014 (U.S. Department of Education, 2016). I can positively impact some of these students because I teach an online course at this university. The course that I teach online is a required course for students enrolled in the Hospitality, Retail and Sports Management program. Currently, I have over 160 students ranging from freshmen to seniors enrolled in my course. There are two sections of the course available to students each semester, and I along with another professor teach one section each.

Online course creation and design at the university is handled by each individual department; however, most courses that are designed to be delivered online must
satisfactorily pass a quality review conducted by the Provost’s Office of Distributed Learning. The purpose of the review is to ensure that each online course meets the “basic standards for design quality and ADA accessibility, which are spelled out in a review checklist approved by the Provost's Committee on Distributed Learning” (https://www.sc.edu/about/offices_and_divisions/cte/distributed_learning/course_development/dl_quality_review/index.php). Before I started teaching the course, the course had already been designed, and as a new instructor, I was encouraged to use the model that had already been designed for the course.

Although it was determined that the course met the basic standards for quality design, there were indications that the design of the course needed to be updated. The indications were apparent in course evaluations completed by students enrolled in the course. Their feedback signified that there was room for improvement in student-student and student-instructor interactions. On the end of course evaluations, students were asked to rate from 1: strongly disagree to 5: strongly agree how satisfied they were with their interactions with other students in the course and with their instructor. Student responses to these questions were noticeably lower than their responses to other questions related to the design of the course. The rating for satisfaction for interactions between student-student and student-instructor averaged 3.6 for both categories. Overall ratings in other categories on the evaluation averaged 4.1. Ratings that focused on interaction between students and their peers and students and the instructor were ranked among the lowest of all categories on the evaluation.

To confirm that the issues were related to the design of the course, and not just to my specific class, I discussed the results of the course evaluations with the other
instructor in my department who teaches the class using the same method and course design. The instructor confirmed that in her section of the course, student responses to questions regarding course interactions were similar to the results that I received. Also, I have had face-to-face discussions with students enrolled in the course, and they have shared with me their concerns about feeling isolated and alone in the course.

Research studies in online education continue to produce information on how engagement positively affects teaching and learning in online environments. Research by Shea, Li, and Pickett (2006) demonstrated that the instructor's role in guiding and orchestrating student interaction is impactful in determining online students' engagement. As an educator, I believe it is my duty to provide my students with engaging learning environments that are conducive to active learning; this includes an opportunity to interact with me and other students in the course. Based on the evidence provided through course evaluations, other instructors, and conversations with students enrolled in my course, I am convinced more can be done to improve course interactions and engagement.

**Statement of the Problem**

Research on the design of distance education courses has proven that course interactions are vital components that must be included in online classes if they are to be successful in engaging students. It has been determined that online courses must provide opportunities for interactions that nurture students and motivate them to learn (Maki & Maki, 2007; Purarjomandlangrudi, Chen, & Nguyen, 2016). Furthermore, results from a study by Dixson (2010), concluded that there is a strong correlation between student-student and instructor-student interactions and engagement in online courses. A personal
examination of course evaluations from the course that I taught indicated that students are not satisfied with the interactions they have with their peers or their instructor. To improve engagement in the course, strategies must be implemented that will focus on improving course interactions.

**Purpose Statement**

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at large university in the southeast part of the United States.

**Research Questions**

This research will explore the following four questions:

1. Using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?

2. What recommendations and strategies do students have for faculty that they perceive will increase their engagement in the course.

3. How does the way Blackboard content is managed and facilitated effect interaction and the engagement of students enrolled in the course?

4. Is the frequency of discussion board posts related to engagement and performance in the course?

**Researcher Subjectivities and Positionality**

“Technology will not replace educators, but educators who use technology will replace those who do not” (Snehansu, 2013, p.1) Designing, integrating and managing technology are essential skills that all educators must possess in order to be effective in
their learning environments in the 21st century. I am an educator who is passionate about student success and intellectual growth; it is my personal mission to provide comfortable academic settings that are effective, interactive, engaging, and thought-provoking. I chose to pursue an advanced degree in Educational Technology because I believe that integrating technology into curricula is one way to accomplish my mission. I am interested in researching course design and its effects on improving student engagement in online learning environments.

Pragmatists, like myself, believe that researchers should study what interests them and what is important to them. It is important to me that I can provide engaging online learning environments where students are passionate, curious, and excited about learning. My personal experience as an online learner and my role as an online educator increased my interest and curiosity in student engagement in online environments; consequently, these experiences will have a profound impact on how I perform my research. From a pragmatic standpoint, I believe experience is the best teacher and problems are best solved when we reflect on prior experiences. Because of my experiences and interest in student engagement in online education programs, I have become an advocate for online learners. I have a strong interest and desire to make sure that learners thrive in their online environments.

My relationship to online learners is multi-faceted. I am in a unique position as a student, where I am personally affected by the design and quality of online teaching, and I am an educator who has an influence on how well my own students succeed in online learning environments. Therefore, because of the nature of action research, I take the position as an insider when performing research. As an insider, I am not just a bystander,
but an active participant in my own research (Dwyer & Buckle, 2009). I control the research topic, I choose the participants and methods of research, and I decide how the results of the research are reported. My actions and decisions will directly impact the outcome of my research. It is important to the integrity of my research that I can separate any personal preferences or biases I have toward engagement and online learning. It is equally as important, that I am able to respect and understand online course engagement from the viewpoint of my participants and not just my own. Likewise, in assessing an insider position, Asselin (2003) implied that it is best for the insider researcher to perform research with her or his “eyes open” (p. 101) but assuming if she or he knows nothing about the phenomenon being studied. This is vital to the validity of my research because if I am to bring about change and improve practice at a local level then I must be objective and allow the data to speak for itself.

Definitions of Terms

**Engagement** - Engagement is described using Dixson’s definition that states, engagement is a student’s willingness to actively participate in the course by thinking, talking, and interacting with the course content, other students in the course, and the instructor (Dixson, 2015). Engagement will be operationalized in this research project to include reading and responding to emails, participating in discussions, viewing course lectures, and completing assignments.

**Facilitation of discussion boards** - Facilitation of discussion boards is defined as creating environments where students get to know each other, creating learning activities that allow opportunities for students to demonstrate their knowledge and skill, and encouraging participation of all students (Rovia, 2007).
**Interactions** - Interactions are defined as mutual events that require two or more objects and actions. Interactions occur when the objects or actions have influence on one another (Wagner, 1994). In this research, the objects are referred to as the students enrolled in the computer applications course and the instructor of the course.

**Management of discussion boards** – Management of discussion board refers to the guidelines, rules, and protocols that dictate participation in online discussions (An, Shin, & Lim, 2009; Covelli, 2017; Rovai, 2006).

**Online Course** - An online course is defined as a course designed whereby students are not required to attend face-to-face meetings and all course activity is performed using asynchronous communications.

**Social Presence** - Social presence has been described as “the ability of learners to project themselves socially and emotionally as well as their ability to perceive other learners as “real people” (Boston et al., 2010). Social presence will be used to describe student-student and student-instructor interactions.

**Student-Content Interaction** – Student-content interaction refers to students’ interaction with the subject matter of the course in an effort to understand the course material. Interactions include accessing course materials, completing assignments, and watching course videos (Abrami, Bernard, Borokhovski, & Tamim, 2011; Murray, Perez, Geist, Hedrick, 2012).

**Student-Instructor Interaction** – Student-instructor interaction refers to the communication between students enrolled in the course and the instructor of the course.
Forms of communication include email, discussion board posts, virtual conferences, audio, and video communications and receiving encouragement and feedback from the instructor. (Abrami, Bernard, Borokhovski, & Tamim, 2011; Murray, Perez, Geist, Hedrick, 2012).

**Student-Student Interaction** – Student-student interaction refers to the communication among students and between groups of students. Forms of communication include audio and video communications, email communication, and interactions on the discussion board (Abrami, Bernard, Borokhovski, & Tamim, 2011; Murray, Perez, Geist, Hedrick, 2012).
CHAPTER 2
LITERATURE REVIEW

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications at a large university in the southeast part of the United States. This research focuses on the following research questions: a) using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?; b) what recommendations and strategies do students have for faculty that they perceive will increase their engagement in the course; and c) how does the way Blackboard discussion boards are managed and facilitated effect interaction and the engagement of students enrolled in the course; and d) Is the frequency of discussion board post related to engagement and performance in the course?

Research on engagement describes it as an essential part of a student’s learning process and an important factor in a student’s overall satisfaction with their course (Maki & Maki, 2007). The goal of this research is to describe how students enrolled in the course describe their course interactions and how those interactions affect engagement, to obtain recommendations from students on how to increase engagement in the course, and to describe how Blackboard facilitation and management affect engagement. The method I used for conducting the literature review was extensive and thorough. I relied on several sources to provide me a comprehensive view of published literature on engagement in
online courses. I used several databases to locate research information. Those databases included *Education Source, ERIC, ProQuest for Dissertation and Theses*, and *Google Scholar*. To obtain relevant resources on student engagement in online courses, I used a combination of keywords and search phrases. The keywords and phrases included: engagement, interaction online education, distance education, effects of engagement in online courses, student perceptions, discussion boards, effective strategies, and best practices. In most cases, I limited the searches to include only peer reviewed research published within the last ten years. I expanded the dates when I felt that I needed more published research about a topic. Upon finding relevant information using the keywords, I organized the research using an annotated bibliography template. The template included reference details, a summary of the information, keyword search phrases, and relevant references from each journal article or book. Reviewing the reference section of the individual resources, or reference mining, was very important to the research process because it provided me an opportunity to discover and review research that I had not found using my own search methods. Using the annotated bibliography, I organized the research into major topics and performed a more detailed search for each topic. The second keyword search included a combination of the following keywords: theory, engagement, constructivism, Community of Inquiry, discussion board management, Moore’s theory of engagement, social presence, instructor presence, and peer interaction. The search provided additional information that allowed me to conduct an in-depth review of the literature.

The review of the literature also aided me in answering my research questions. The review of the literature is organized to provide a thorough understanding of
Engagement in online and distance education courses. The information is organized into three sections: (a) a thorough review of the definition of engagement and how engagement is related to course interaction; it explains how engagement has been measured and includes research on strategies that have been used to increase student engagement in online course and research on what students have reported affect their engagement in online courses; (b) an in-depth review of the theoretical framework of student engagement based on a constructivist approach and the Community of Inquiry framework; (c) information and research on discussion boards and how the management and facilitation of them affect engagement in online courses.

**Engagement in Online Courses**

Student engagement in online courses is a prevalent topic in education research. With more than 20,000,000 students enrolled in online courses in the United States, the subject will continue to be a topic of conversation (Allen & Seaman, 2015). Engagement in online courses is necessary because research has shown that it positively affects student satisfaction, enhances motivation, improves performance, and fosters a positive learning experience for students (An, Shin, & Lim, 2009; Martin & Bolliger, 2018). Moreover, Banna, Lin, Stewart, and Fialkowski (2015) assert that positive engagement in online courses can reduce learner isolation and improve student drop, retention, and graduation rates.

**Online Engagement Defined**

Student engagement has been defined by several organizations and in most cases the definition is related to how students interact with one another (Axelson & Flick, 2011; Dixson, 2015). Research on engagement and interactions in the online environment
have focused on effective means to measure engagement and the strategies that can be implemented to increase engagement (Kuh, 2009; Ouimet & Smallwood, 2005; Roblyer & Wienck, 2004). Student perceptions and recommendations have also served to compliment the current research on student engagement in online courses.

Due to the drastic increase in the number of students enrolled in online courses there has been a need to redefine the term engagement so that it takes into consideration the unique nature of interactions in online environments. Interaction and engagement are closely associated and are often used interchangeably. In fact, some researchers suggest that student engagement is promoted through interaction; thus, nurturing and developing interaction is important in online learning (Martin & Bolliger, 2018). Early definitions of student engagement did not emphasize student interaction. Newman, Wehlage, and Lamborn (1992) describe student engagement as the “student's psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote” (p.12). Similarly, Gonyea and Kuh (2009) describe student interaction as the degree to which students take part in effective educational practices.

In online courses where there is little or no face to face interaction among participants, defining engagement must take into consideration the degree of interaction in these environments. More recent definitions of student engagement account for how students interact with course content, their peers, and their instructor. Dixson (2015) states,

engagement involves students using time and energy to learn materials and skills, demonstrating that learning, interacting in a meaningful way with others in the
class, and becoming at least somewhat emotionally involved with their learning.

Engagement is composed of individual attitudes, thoughts, and behaviors as well as communication with others (p.146).

Axelson and Flick (2011) state “engagement is an important means by which students develop feelings about their peers, professors, and institutions that give them a sense of connectedness, affiliation, and belonging, while simultaneously offering rich opportunities for learning and development” (p.41). In both definitions of engagement, interaction plays a significant part in forming a concrete definition of engagement. When investigating and reporting on course interactions in the course, I will use the definition provided by Dixson (2015) because it includes components of student learning, interaction, communication, and student behavior. All of these components are factors when investigating engagement in online courses.

**Student engagement measurement scales.** Although the ability to understand and define engagement is important, it is also imperative that there are instruments available to measure engagement and effectively describe its effect on student learning and success. Effectively measuring student engagement is significant because it provides feedback about the course, which can lead to improvements, and it plays a critical part in advancing research about online learning (Dixson, 2015). Prominent instruments used to measure engagement include the National Survey of Student Engagement (NSSE), Classroom Survey of Student Engagement (CLASSE), the Rubric for Assessing Interactive Qualities of Distance Courses (RAIQDC), and the Online Student Engagement Scale (OSE).
**NSSE.** The NSSE is a national survey that is used to measure student participation regarding learning and engagement in colleges and universities across the United States and Canada. The survey’s purpose is to provide information to institutions of higher education that can help them improve their students’ learning outcomes and engagement (Kuh, 2009). The data collected by the survey has implications for both traditional and online learning environments. The NSSE considers academic achievement, campus environment, educational experiences, interaction between faculty and students, and collaborative learning experiences when collecting and analyzing data (Robinson & Hullinger, 2008).

**CLASS.** The CLASS survey is a two-part tool used to measure engagement in the classroom. The tool measures engagement by comparing faculty expectations to student reported behavior. In the first part of the survey, students report on their behavior in and out of class. Questions on the CLASS survey address study habits and study styles to observe relationships between the study behaviors of students and their level of engagement. The second part of the CLASS survey is geared toward faculty and is intended to measure the value that they place on engaging activities. This section of the survey requires faculty to rate the importance of Bloom’s Taxonomy in relation to the course objectives. Items on the faculty portion of the survey also include questions about study habits, interest level, and the relationship between the content of the exams and course material. The CLASS survey is intended to be used to help teachers improve their teaching style and to help them better communicate to students the activities that can be used to help them learn class material (Dixson, 2010, 2015; Ouimet & Smallwood, 2005).
While the CLASS survey does provide useful data concerning student engagement, it has not been validated using psychometric methods (Rogers, Cravalho, & Boyajian, 2010).

**RAIQDC.** RAIDQ is a validated tool used to measure interactive qualities of online courses. The interactive qualities are measured through the use of five observable indicators. The indicators include social/rapport building, instructional design, interactivity of technological resources, evidence of learner engagement, and evidence of instructor engagement. The tool is designed to identify and access observable behaviors that can make courses more interactive for students (Dixson, 2010, 2015; Roblyer & Wienck, 2004). The rubric has been tested for convergent and divergent reliability in regards to the consistency of results among students. Two web-based courses with forty-three students was used to test the convergent and divergent reliability. Consistency was high. Ninety-five percent of students gave the course a numerical rating between 19-23 points on a scale of 1-25 with 25 points being the maximum points available (Roblyer & Wienck, 2003).

**OSE.** The OSE was developed to measure student engagement by surveying what “students do (actively and in their thought processes) as well as how they feel about their learning and the connections they are making with the content, the instructor, and other students in terms of skills, participation, performance, and emotion” (Dixson, 2015, p. 146). The results of the research on the OSE are mainly found in two reports by Dixson (2010, 2015). The information in the research by Dixson includes the process used to create and implement the survey, reliability and validity data, and the results of the survey. The process used to create the OSE consisted of the review of existing student engagement measures, the formation of a focus group whose task was to discuss how
current measures can be changed to apply to online environments, the creation of a pilot instrument, and the actual test of the instrument. One hundred and eighty-six students from a large midwestern university participated in the OSE survey. The survey was created to answer questions about the type of learning activities students find engaging and if there was a difference between the activities and course interactions of highly engaged students versus those who were less engaged. Students were also asked the following questions: a) what specific assignments they felt enhanced engagement; and b) what interactions between them and the course content, their instructor, and their peers were beneficial in engaging them in the course. The reliability of the pilot and the final survey was confirmed. The reliability of the pilot was significant (α = .95) and correlated strongly with items related to engagement (r = 0.73; p < 0.05) and social presence (r = 0.38; p < 0.05). An exploratory factor analysis was used to validate the scale measurement of the four categories of engagement, which included skills, emotional, participation, and performance. A Cronbach alpha, a measure of scale reliability, was α = 0.91 and was strongly correlated with course engagement items on the scale (r = 0.67; p < 0.001). The results of the administration of the OSE indicate that it is a valid scale for measuring student engagement in online courses (Dixson, 2010, 2015).

The results of the OSE found that there was not a specific action or activity that automatically increases student engagement in online courses, but that multiple communication channels could be related to higher engagement (Dixson, 2010, 2015). However, active application behaviors such as posting to forums, writing e-mails, and taking quizzes were significantly correlated with the OSE instrument. Furthermore, the results of the research on the OSE suggested that student-student and instructor-student
communication is strongly related to higher student engagement in online courses (Dixson, 2010, 2015; Shea, 2015.) The outcomes of the research pertaining to the OSE confirm that it is a valid, reliable tool for measuring student engagement in online learning courses.

**Strategies Used to Increase Online Engagement**

Given that student engagement is a crucial element for student learning and overall success in online courses, there is an abundance of research on the factors that affect student engagement and interaction in these environments (Cho & Cho, 2016; Dunlap, Sobel, & Sands, 2007; Er & Er, 2016; Jin, 2016; Sher, 2009; Yilmaz & Karatas, 2018; Zimmerman, 2012). Early research on online engagement can be found in an editorial that appeared in *The American Journal of Distance Education* in 1989, titled, “Three Types of Interaction”. In the editorial Michael Moore, introduced a framework for interaction that has been accepted and expanded on by several researchers in the area of engagement in online environments. In his editorial, Moore suggested that in order to achieve maximum effectiveness in distance education courses, educators must strive to create an environment where learner-content interaction, learner-instructor interaction, and learner-learner interaction are all present. Furthermore, Moore emphasized that these three types of interactions are vital in accommodating different student learning styles and different course topics. Moore’s framework for interaction initiated additional research on strategies that can be implemented to enhance engagement and improve interactions in online environments. Researchers’ data (e.g., Cho and Cho, 2016; Kang and Imt, 2013; Lear, Ansorge, and Steckelberg, 2010; and Sher, 2009) on online interactions demonstrate that learners who report a high degree of interaction have higher
satisfaction levels with the course, have higher learning outcomes, and are more active and engaged in their coursework. As online learning continues to become a prominent part of the curriculum in institutions of higher education, the importance of engagement and interaction will be emphasized as critical factors in the success of online programs and student satisfaction in these programs.

The success of engagement and interactions in online courses has typically been assessed based on the following types of interactions: learner-content interaction, learner-instructor interaction, and learner-learner. Each of these is discussed below:

**Learner-content interaction.** Learner content interaction refers to the way learners obtain information from the course material (Sher, 2009). It includes contact with material through audio, video, text, online media, chat rooms, discussion boards, and other available course materials (Jin, 2005; Sher, 2009; Xiao, 2017). Learner-content interaction is essential because it forms the basis as to how students acquire knowledge, skills, and abilities (Dunlap et al.; Miyazoe & Anderson, 2010). Moreover, according to Moore (1989), learner-content interactions lead to “changes in the learner’s understanding, perspective, and the cognitive structure of the learner’s mind” (p.1). Although, learner-content interaction is the least studied of the three types of interactions, there are studies that point to its significance (Xiao, 2017; Zimmerman, 2012). Research studies by Zimmerman (2012) and Xiao (2017) conclude that learners who have a high degree of interaction with the course content achieve higher test success in online courses. The authors emphasize that to increase learner-content interaction, instructors must discuss the course content’s importance in achieving success and must choose the appropriate materials for the course. Moreover, instructors should choose quality over
quantity when deciding what material will be included in the course because according to researchers Murray, Pérez, Geist, and Hedrick (2013), supplemental content added to online courses is largely ignored by students when they feel the material is not directly related to their success in the class. Subsequently, Murray et al. conclude that students tend to interact more with content they feel will help them obtain high grades in the course.

Other research studies also point to the importance of instructional strategies that can be implemented to support learner-content interactions. These strategies include ensuring that the course content is based on real-world applications that can be applied to classroom practice, activities that require subject mastery and critical thinking skills, and reviewing course materials to ensure they are complete, relevant, and accurate (Britt, 2015; Jin, 2005; Siragusa, Dixon, & Dixon, 2007; Murray et al., 2013). Likewise, Brown and Voltz (2005) call attention to the idea that course design elements can positively affect learner-content interaction. They list key components that should be included in online course design. These components include: a) designing the content in a manner that students regularly perform a content related activity; b) including a scenario that motivates students to perform; c) providing prompt feedback to students; d) designing suitable ways to deliver the content; and e) taking into consideration the context and impact the material will have on student learning. Finally, to foster learner-content engagement, instructors should use appropriate technology that is tied to student engagement and outcomes of learning (Chen, Boenink, & Guidry, 2010). Instructors
should also implement technology that supports student learning and provides opportunities for students to apply high order thinking skills (Britt, 2015; Martin & Bolliger, 2018).

**Learner-instructor interaction.** Learner-instructor interaction includes the various ways that students communicate and collaborate with their instructor. Of the three types of interactions in an online environment, it is considered to be the most valuable and most impactful type of interaction in helping students not feel isolated in the online environment. (Martin & Bolliger, 2018; Murray, Pérez, Geist, Hedrick, & Steinbach, 2012). Interaction between learners and instructors take place through various types of communications and collaborations. Communications and collaborations among students and instructors include interactions involving email, text, chat rooms, whiteboards, application sharing, the instructor providing information and feedback to students, students asking questions about course content, and the instructor delivering information and encouraging learners (Chakraborty & Nafukho, 2014; Sher, 2019).

Interaction and support among learners and instructors is important because Kang and Im (2013), and Martin, Wang and Sadaf (2018) report this type of interaction significantly improved students’ learning, course satisfaction, and confidence.

The degree of learner-instructor interaction must also be considered when investing online engagement. Lee and Choi’s (2011) research on learner-instructor strategies that improve interaction and engagement emphasize that instructors should participate in the course on a regular basis and should provide frequent and prompt feedback. Their research indicates that frequent instructor interaction can increase student persistence in the course. Instructors can be involved in the course on a regular basis by
posting frequent messages and announcements, encouraging dialogue, updating students on their progress, and by recognizing student success and contributions in the course (Cho & Cho, 2016; Ko & Rossen, 2010; Martin, Wang, & Sadaf, 2018). Quick reminders and frequent contact to students about upcoming assignments can also help them manage their time and help them stay engaged in the course (Ko & Rossen, 2010). Responding promptly to student questions and concerns has been shown to be significant in predicting student success in online learning (Miller, 2013). According to Miller, a response time between 24-48 hours is considered to be the most valuable to students. Finally, research on learner-instructor interaction signifies that instructors should invest efforts in designing assignments that are relevant to “students' real-life experiences, creating rich environments for interaction, and providing flexibility by fostering self-paced learning” (Jin, 2005, p.66)

**Learner-learner interaction.** Learner-learner interaction is the third type of interaction that is prominent in the literature on engagement and interactions in online environments. Learner-learner interactions consist of students working collaboratively together, sharing knowledge and ideas, and motivating each other in an online environment (Chakraborty & Nafukho, 2014; Sher, 2009; Yılmaz & Karataş, 2018). The interaction can take the form of communicating on a discussion board, video/audio chat, group activities, and team projects (Chakraborty & Nafukho, 2014; Shackelford & Maxwell, 2012). In addition to increasing student achievement in online courses (Jung, Choi, Lim, & Leem, 2002), learner-learner interactions have been shown to build a sense of community. Accordingly, studies by Haythornthwaite, Kazmer, Robins, and Shoemaker (2006) and Kurucay and Inan (2017) report that learner-learner interactions
cause students to enter mutually, supportive relationships with their peers. Similarly, the authors report the frequency of interactions between learners and peer evaluation scores in online collaborative groups have been shown to have a positive effect on student’s perceived learning, achievement in the course, and overall satisfaction of the course. The author’s research demonstrates that peer relationships can cause students to become responsible for their own learning as they seek resources outside of their instructor. Furthermore, Cho and Cho’s (2016) and Shackelford and Maxwell’s (2012) research on effective strategies that enhance learner-learner interactions imply that instructors play vital roles in fostering these relationships. The author’s findings suggest that instructors should assign activities that require students to introduce themselves to each other at the beginning of the course, assign collaborative group projects, set minimum rules for interaction, monitor students’ interactions, and ask thought provoking questions.

**Student Perceptions and Recommendations About Online Engagement**

Research has mostly focused on learner-content, learner-instructor, and learner-learner interaction and how they affect engagement. The research was conducted using surveys, observations, and information from instructors. One of the most valuable sources of information that helps determine if research and findings are accurate is feedback from the students who are affected by online instruction. Several studies have included responses from students about the types of activities they find engaging in online courses and have confirmed that the research on online student engagement is proceeding in the right direction (Cuthrell & Lyon, 2007; Dixson, 2010; Kurucay & Inan, 2017; Martin & Bolliger, 2018; Miller, 2013).
Data collected from several researchers indicate that students report that the following activities encourage and enhance online learning: a) activities where they are required to apply what they were learning to real-life situations (Martin & Bolliger, 2018), b) discussion forums where they discuss relevant course content (Miller, 2013), c) group projects, d) current event, collaborative, and self-paced assignments, and, e) peer review and evaluation of work (Dixson, 2010; Miller, 2013). The integration of technology was also important to students. They report assignments and course content that consist of interactive video lectures, interactive websites, and other interactive technologies such as Skype or Elluminate Live help keep them engaged in online courses (Curthrell & Lyon, 2007; Kurucay & Inan, 2017; Martin & Bolliger, 2018; Miller, 2013).

On the contrary, students emphasize that although technology is important to engagement, learning how to use technology to complete assignments should not take the focus or energy off learning the content of the course (Cuthrell & Lyon, 2007).

**Theoretical Framework with Online Engagement and Interaction**

Research on engagement in online courses is closely tied to several education theories and strategies about how students learn. The constructivist’s focus on student centered learning is critical in developing online courses that allow for active student engagement and knowledge construction. Equally as important to online student engagement is the Community of Inquiry (CoI) framework that focuses on collaboration and the promotion of deep and meaningful learning in the online environment (Garrison & Archer, 2010).

**Constructivism.** The Constructivist’s approach to learning focuses on how students construct knowledge based on their prior knowledge, experiences, perceptions,
senses, and personal reflections (Applefield, Huber & Moallem, 2000; Brown, 2014; Jonassen, Cernusca, & Ionas, 2007). It is a learner-centered approach where students take responsibility for their own learning. The theory can be traced back to the early works of cognitive constructivist, Dewey, Piaget, and Bruner who focused on how students learn and to social constructivist, Vygotsky, who focused on the social aspect of knowledge creation.

Proponents of constructivism assert that learning is an active process whereby learners acquire knowledge through experience and their interactions with the world (Miller-First & Ballard, 2017; Rovai, 2004). Active learning from a constructivist’s view means that learners take initiative and choose their own learning goals and objectives, identify the resources they need to learn, participate in activities that involve problem solving, collaborate, reflect, and assess the outcomes of their learning (Alley, 2004; Kerr, 2009; Miller-First & Ballard, 2017).

The social nature of learning is also an integral part of constructivism. Advocates of constructivism believe that learning is a social activity whereby learners interact with others to construct and gain knowledge (Applefield, Huber & Moallem, 2000; Miller-First & Ballard, 2017). Learners construct knowledge by engaging in groups where they collaborate, negotiate, and share with others who have varied interests and experiences (Brown, 2014; Jonassen et al., 2007; Miller-First & Ballard, 2017). Finally, supporters of constructivism argue opportunities for learning occur when students are placed in situations that encompass cognitive conflict, challenge, and where they are encouraged to solve problems for themselves (Brown, 2014; Miller-First & Ballard, 2017). Since
learners are encouraged to solve problems on their own and take responsibility for their own learning, the role of the teacher or instructor is integral in constructivist environments.

The role of the teacher in a constructivist focused classroom is to provide guidance and facilitate learning (Brown, 2014). They accomplish this by creating opportunities for students to think critically and arrive at their own answers to problems and situations (Schell & Janicki, 2013). Teachers act as coaches who guide students and allow them to self-discover, reflect, and evaluate their personal learning processes (Brown, 2014). Total dependence on the instructor in a constructivist environment is discouraged; rather students are encouraged to be independent learners and are urged to collaborate with their peers (Rovai, 2004).

Online learning environments are ideal situations where a constructivist approach to learning can be applied to enhance student engagement and interaction (Alley, 2004). Online classrooms by their nature foster independent learning. Students must be able to effectively set their own schedules and determine how and when they complete assignments. They are often left to work at their own pace on their own time. The ability to control the pace of their learning fosters independence and provides students control of their own learning, which is a necessity according to advocates of constructivism (Schell & Janicki, 2013). When the instructor is not available, students are required to seek out their own answers or interact and collaborate with their peers to actively find answers. Furthermore, in online classrooms students are encouraged to work in groups and collaborate with their peers on projects and evaluate other’s work.
Implementing constructivist principles to online learning courses has been shown to have many benefits. Research by Gazi (2009) concluded that a constructivist approach to learning encourages students to take responsibility of their learning, enhances group collaboration and interaction, and fosters an atmosphere of active learning. For example, Gazi’s assessment on the benefits of applying a constructivist approach to online learning is similar to the research by Sang (2010), who emphasizes that “constructivism is essential to the success of online learning” because it affords learners the opportunities to control and direct their own learning and provides an atmosphere that supports learning and promotes student success (p. 36).

The Community of Inquiry (CoI) Model. The Community of Inquiry model (CoI) is a framework that supports student learning by describing how collaboration produces deep and meaningful learning through the interaction of three elements: social, cognitive, and teaching presence (Breivik, 2016; Garrison, Anderson & Archer, 2010; Minor & Swanson, 2014; Swan, Garrison & Richardson, 2009). CoI has its roots in the constructivist view of learning that focuses on the importance of the development of community in the pursuit of knowledge construction (Swan et al., 2009; Garrison, 2007). The model was originally presented by Garrison et al. (2010) as a means to study engagement in computer-mediated learning environments; however, it is now considered to be one of the most significant tools used in the study of online education (Breivik, 2016; Garrison & Richardson, 2009; Maddrell, Morrison, & Watson, 2017; Swan, Garrison, & Richardson, 2009). A summary of current research on the CoI is listed in Table 2.1 below.
### Table 2.1 Summary of Current Research Based on the Community of Inquiry

<table>
<thead>
<tr>
<th>CoI Element</th>
<th>Research Focus</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Presence</td>
<td>A high degree of social presence in online courses is associated with student’s positive perception of their learning.</td>
<td>Shea, Li, and Pickett (2006)</td>
</tr>
<tr>
<td></td>
<td>Social presence has a positive impact on retention rates in online courses</td>
<td>Richardson and Swan (2003) and Liu, Gomez and Yen (2009)</td>
</tr>
<tr>
<td>Cognitive Presence</td>
<td>Cognitive presence is shaped by reflective inquiry and collaboration. Written communication can shape cognitive presence.</td>
<td>Garrison (2003)</td>
</tr>
<tr>
<td></td>
<td>Results indicate that in order to better understand metacognition in collaborative learning environments, metacognition in terms of complementary self and co-regulation that integrates individual and shared regulation must be considered.</td>
<td>Garrison and Akyol (2015)</td>
</tr>
<tr>
<td>Teaching Presence</td>
<td>Teaching presence significantly enhances students’ perceptions about learning and is a significant factor in constructive and active engagement behaviors.</td>
<td>Garrison and Akyol (2015).</td>
</tr>
<tr>
<td></td>
<td>Perceived presence of instructors is a more influential factor in determining student satisfaction than the perceived presence of peers.</td>
<td>Swan and Shih (2005)</td>
</tr>
</tbody>
</table>

**Social presence.** Social presence is the ability to project one’s self as a real person and to establish personal and meaningful relationships; thus, it involves effective communication and group cohesion (Breivik, 2016; Garrison, 2007). Students in online environments establish social presence by posting on discussion boards, responding to others, and by participating in online collaborative group activities (Kehrwald, 2008).
Social presence plays an important role in forming relationships with peers and is the basis for interaction in online environments. This idea is reflected in a study by Shea, Li, and Pickett (2006) whose research reveals that a high degree of social presence in online courses is associated with students’ positive perceptions of their learning and their social interaction with their peers. Students reported high levels of satisfaction with their online courses when they are socially active and participate in course activities and assignments. Peer support and forming communities in online environments helps students feel less isolated because they are aware that they have others in the course they can interact with and go to for support (Liu, Magjuka, Bonk, & Lee, 2007; Rovai, 2004). Social presence is an important aspect in the development of communities in online courses, thus it has a major impact on how students interact and engage in online courses.

**Cognitive presence.** In the (CoI) framework, cognitive presence refers to the learner’s ability to construct meaning through critical inquiry and collaboration; thus, it involves moving from just simply understanding a problem or issue to integration, application, and resolution of the problem (Akyol et al., 2011; Garrison, Anderson, & Archer, 2001; Garrison, 2007; Garrison & Akyol, 2015). For example, cognitive presence enables learners to develop higher order thinking skills and helps develop a connection to course materials (Garrison, 2007; Maddrell, Morrison, & Watson, 2017).

Developing a cognitive presence is vital if online courses are to provide students with the opportunities to apply high order thinking skills such as analysis, evaluation and synthesis. Darabi, Arrastia, Nelson, Cornille, and Liang (2011) concluded that a scaffolding strategy where teachers ask probing questions based on the learner’s responses during course discussion and online postings was effective in facilitating
cognitive presence in online courses. In their study, students were required to compare advantages and disadvantages of an alternative solution. The authors believe this scaffolding strategy is successful in developing cognitive presence because it requires a high degree of interaction between the members of the course and a high level of cognitive processing.

A study by Garrison (2003) also reflects the importance of cognitive presence. Garrison’s research confirms that in online learning environments cognitive presence is shaped by reflective inquiry and collaboration. The author suggests that written communication can be used in online environments to allow students to reflect and share information on problems and topics. Sharing and deep reflection on issues require students to go beyond understanding and forces them to apply higher order critical thinking skills, such as constructing ideas and explaining concepts. The researcher notes the importance of collaboration. He emphasizes that cognitive presence is enhanced and conditions for developing high order learning arise when learners feel they are not alone but are connected to others with whom they can share information.

**Teaching presence.** Teaching presence is the third element that comprises the CoI framework and it is considered to be the bridge that joins both social presence and cognitive presence in the online environment. Teaching presence is described as the “design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison, & Archer, 2001, p.5). The definition focuses on the importance that the instructor plays in the entire duration of the course.
According to the CoI model, the teacher is responsible for designing the course materials, facilitating discourse, and direct instruction (Garrison et al., 2000; Maddrell, Morrison, & Watson, 2017). Design and organization consist of setting course objectives and goals, choosing course materials, organizing course content, and planning individual and group activities (Anderson, Rourke, Garrison, & Archer, 2001; Tirado et al., 2016). Facilitating discourse encompasses the group of activities that the instructor engages in that allow students to engage in collaborative dialogue with other students. Activities include responding to students, encouraging and acknowledging student participation, focusing the discussions of the class, and raising relevant questions (Shea, Li, & Pickett, 2006). Finally, direct instruction is the manner in which an instructor shares content knowledge, provides instructional support, focuses and summarize course discussions, provides feedback, and confirms the understanding of course content (Garrison et al., 2001; Hosler & Arend, 2012; Garrison & Akyol; 2015). Designing and organizing course materials, facilitating discourse, and providing direct instruction collectively establishes teaching presence in the online environment and results in making learning engaging and purposeful.

Studies on teaching presence has established its significance in online courses. Zhang, Lin, Zhan and Ren (2016) revealed that teaching presence has a definite impact on students’ engagement behaviors. Information from their studies demonstrate that teaching presence not only significantly enhances students’ perceptions about learning, but it also is a significant factor in influencing activities that are considered to be constructive and active engagement behaviors. These activities include downloading course resources, uploading assignments, creating blogs, and commenting on course
assignments, resources, and class blogs. Shea, Li, and Pickett’s (2006) research on teaching presence also has implications on the effects of teaching presence in the online environment. Their research concludes that teaching presence plays a positive role in perceived learning and establishing learning communities. According to the authors, a learning community is a group of people who are assigned to work together and collaborate in order to meet shared goals. In their study, participants reported higher levels of learning and community when they felt their teacher exhibited behaviors associated with teaching presence (i.e., effective course design and directed facilitation). These studies confirm that teaching presence has a positive influence on interaction and engagement and the success of students in online learning courses.

**Discussion Board Management and Facilitation**

In online learning environments, students do not usually have physical contact with their instructor or their peers. Discussion boards are a popular means for discourse in online settings and most communications in online environments are carried out through the use of electronic discussion boards (Covelli, 2017). Discussion boards support the constructivist idea the students construct knowledge based off their own experience and by interacting with others (Jonassen et al., 2007; Miller-First & Ballard, 2017). Discussion boards require learners to put their ideas and thoughts into words and build upon these ideas when they share information, reply to responses from others, and evaluate the work of their peers (Rovai, 2004). For example, engaging students through the use of discussion boards aids in creating a community of learners who do not feel isolated in online courses. Moreover, research has proven that when students feel the presence of their peers and their instructors in the course, it enriches their overall learning
experience by positively influencing satisfaction, retention, and learning outcomes (Liu, Gomez & Yen, 2009; Richardson & Swan, 2003; Shea, Li, & Pickett, 2006; Zhang et al., 2016).

Research literature on the effectiveness of discussion boards on engagement specify that responsibility lies with the teacher to create atmospheres that support, encourage, and foster high-quality discussions in online courses (Reonieri, 2006; Levine, 2007; Steen, 2015). For example, teachers and instructors can accomplish the task of designing valuable discussion board learning experiences for students by adhering to the recommendations presented in the literature on the facilitation and management of discussion boards.

The facilitation and management of discussion boards are often discussed in the research literature. According to Aleksic-Maslac, Magzan, and Juric (2009) effective facilitation of discussion boards entails creating inquiry-based environments where students work to understand and explain what they are learning. It involves creating opportunities for students to reflect and interact with others. Methods that instructors can use to effectively facilitate online discussion boards include developing a social presence on the discussion board and encouraging student to student interaction, thus avoiding the instructor from being the center of all discussions. Furthermore, effective facilitation of discussion boards involves creating environments where students get to know each other, creating learning activities that allow opportunities for students to demonstrate their knowledge and skill, and encouraging participation of all students (Rovia, 2007).

The design of the discussion board plays an important role in its facilitation. Supporters of well-designed discussion boards advocate that discussion boards are a
significant factor in student satisfaction and learning (Choi & Tobias, 2016). They also imply that effective facilitation of discussion boards helps students identify problems, find solutions, and solve problems (Swan, 2001. Researchers (e.g., Ringler et al., 2015; Martyne, 2005) suggest that when instructors design discussion boards, content for discussions should be based on course objective and unit outcomes. This helps to ensure that the discussion assignments are relevant and applicable to the course content. Moreover, their research concludes that discussion assignments should be tied to other assignments in the course and should focus on understanding and applying course content rather than just general reflection.

In order for discussion boards to be effective in engaging students, students must participate in the discussion boards. Interaction on discussion boards helps build a sense of community and provide opportunities for active engagement in the course (Kerr, 2009; Swan et al., 2009; Garrison, 2007, 2006). Instructors can encourage interaction by posing thought provoking questions related to the content, asking follow-up questions to encourage additional discussion, offering opportunities to explore supplemental resources, and by setting up groups and teams (Choi & Tobias, 2016; Hew et al., & Ng, 2010; Levine, 2007; Ringler et al., Shea, Li, and Pickett, 2006). These actions collectively enhance online interaction by providing direction, support, and opportunities to connect with other students in the course.

Although course instructors are encouraged to interact with student learners on discussion boards, researchers offer different views on the degree of interaction. Participants in a study by Hew (2015) reported that they preferred discussion boards to be facilitated by instructors instead of their peers. In contrast, Fauske and Wade (2003)
reported that students favored not having instructors highly involved in discussion boards. Perhaps the constructivist and the CoI view of instructor interaction can bridge the gap in their views. The constructivist approach to learning and the CoI framework suggest that the instructor should act as a guide to assist students build knowledge and community versus them directing all aspects of learning (Kerr, 2009; Swan et al., 2009; Garrison, 2007). This approach to learning enables students to become responsible for their own learning and take part in experiences that help to construct individual knowledge.

In addition to the proper facilitation of discussion boards, discussions should also be managed properly. Management of discussion boards refers to the guidelines, rules, and protocols that dictate participation in online discussions (An, Shin, & Lim, 2009; Covelli, 2017; Rovai, 2006). Covelli (2017) suggests guidelines and rules should be constructed in a manner that the focus is on student learning and achievement. For example, he discourages the use of rigid rules and guidelines because they hinder active, open participation, and natural conversations. He recommends rules and protocols be set to encourage participation. The rules and protocol include student participation guidelines and determining the size of discussion board groups.

There is a consensus in the research that participating in discussion boards can enrich student learning and build community in online environments (An, Shin, & Lim, 2009; Covelli, 2017; Hew, Cheung, & Ng, 2010; Martyn, 2005). In order to ensure participation in discussion boards, students should be required to participate in them (Martyn, 2005). Hew et al., and Ng (2010) reported that when posting on discussion
boards was voluntary, there was a low amount of participation by students. In contrast, Birch and Volkov’s (2007) research reveals that students report they were more engaged when they were required to post on discussion boards.

The collaborative nature of discussion boards is important to student learning because it allows students to interact with their peers and their instructor. Discussion boards allow for students to share information, discuss ideas, and work on collaborative projects. In addition, discussion boards allow instructors to share information and provide feedback to students. Collaboration on discussion boards enhance course interaction, and some studies have shown that participation in discussion boards can also affect student performance. Research by Stack (2013) compared the number of posts submitted to the discussion board by low achieving students and high achieving students. Low achieving students were described as students whose exam scores were below the class mean. The results of the study showed that for lower achieving students, the greater the number of discussion board posts, the higher the academic performance in the course. Similar research by Davies and Graff (2005) revealed that students with high or medium passing grades participated more on the discussion board than students who had low passing grades or who failed the course. There was no overall association between the number of posts by high performing students and their performance in the course. Additional research by Palmer, Holt, and Bray (2008) suggest that active contribution, posting new discussion comments, rather than just reading comments was a significant factor in the final grade of students. The data implies that posting on the discussion board in online courses can have positive effect on student performance, especially the performance of low achieving students.
Assigning grades to discussion board posts motivates students to participate in discussion board forums (Martyn, 2005; Ringler et al., 2015; Rovai, 2006). When students know that their grade can be affected by their participation, they are more likely to post on discussion boards (Martyn, 2005; Ringler et al., 2015). Bolton (2006) and Ringler et al. (2015) recommend using a rubric when grading discussion boards. The authors’ research indicates that rubrics are beneficial because they provide direction as to how assignments will be graded, identify what information is considered important, connect the assignments to stated course outcomes and objectives, and identify criteria and expectations of the assignment. When rubrics are provided they identify to students the instructor’s expectations for each assignment.

Finally, guidelines regarding the number of students or group size participating in discussion board forums is a relevant topic when discussing the management of discussion boards. Proponents of small discussion board groups include Akcaoglu and Lee (2016). Their research indicates that students experience a high degree of social presence and are more sociable when group size is small. Similarly, Reonieri (2006) recommends that the ultimate group size for discussion boards should range between 10-15 participants. He rationalized that fewer than 10 students were not enough to offer varied responses, while more than 15 students seem to overwhelm students. Hew and Cheung’s (2010) research data also advocate for smaller class size. In their research smaller class size (two to ten participants) was correlated with a large number of posts displaying higher level knowledge construction.

In summary, the facilitation and management of online discussion boards have been found to have a positive impact on student learning (An, Shin, & Lim, 2009;
Researchers (e.g., Covelli, 2017; Levine, 2007) report when students are active participants in discussion boards it helps create a sense of community and promote higher order cognitive knowledge. The effective facilitation and management of discussion boards are key factors when teachers and instructors aspire to design discussion boards that encourage student engagement.

**Chapter Summary**

Engaging students in online courses by establishing and sustaining a strong community of learners is imperative to student learning, performance, perceived satisfaction, persistence and retention in online courses (Banna, Lin, Stewart, and Fialkowski, 2015; Haythornthwaite, Kazmer, Robins, & Shoemaker, 2006; Kurucay & Inan, 2017; Shea, Li, & Pickett, 2006). The literature and research about online student engagement continues to evolve as the dynamics of the student population, technology, and the academic institutional requirements change. In the literature, defining what it means to be engaged, and the method by which students interact in the online environment focuses on creating groups of active learners who take responsibility for their own learning (Gazi, 2009). Different tools have been created in an attempt to measure student engagement. These tools include the NSSE, CLASS, RAIQDC, and the OSE. While all the tools measure engagement, the OSE has been proven to be a valid and reliable tool for specifically measuring student engagement in online courses.

Popular learning theories can be applied to online learning environments. The literature on the constructivist theory emphasizes that engagement in online courses can be enhanced when they are designed so that students are responsible for their own learning and take part in experiences that help to construct individual knowledge.
Similarly, the CoI framework provides guidelines and principles on how to create environments that promote a sense of community and an environment where there is a high degree of interaction and participation (Garrison et al., 2001, Garrison & Akyol; 2015). Supporters of the CoI insist that in online environments there should be an interplay of social, cognitive, and teacher presence.

In order for engagement in online environments to occur and for principles from the constructionist view and the (CoI) framework to apply, conditions must exist that provide the opportunities for engagement. Research on discussion boards confirm they are valuable resources where engagement and interaction can be fostered (Covelli, 2017; Hew et al., & Ng, 2010; Levine, 2007).
CHAPTER 3

METHOD

Research Design

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. This research focused on the following research questions: a) using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?; b) what recommendations and strategies do students have for faculty that they perceive will increase their engagement in the course?; and c) how does the way Blackboard discussion boards are managed and facilitated effect interaction and the engagement of students enrolled in the course?; and d) Is the frequency of discussion board post related to engagement and performance in the course?

My goal was to improve the learning outcomes of my students and increase my effectiveness in the classroom in terms of teaching effectiveness. Performing action research was a method that was intended to help me achieve my goals. This section explains the goals of action research, the setting and participants of the study, my data collection methods, the procedures and timelines I followed, my data analysis plan, the process I used to ensure rigor and trustworthiness, and my plan for sharing and communicating my findings.
Action research is defined as a systematic reflection on one’s teaching effectiveness in order to enhance the education environment or improve an educational process (Mertler, 2016; Mills, 2014). It is significant because it allows educators to have a direct impact on a local level. Action research also is an effective means that bridges the gap “between theory and practice and encourage practitioners to engage in innovative practices” in their own personal learning environments (Manfra & Bullock, 2014, p.161). Unlike traditional research, where research is performed by a researcher outside an organization, action researchers are participants in their own research, and their goal is to effect local change rather than offer solutions that can be generalized across many disciplines (Mertler, 2007). According to Kemmis and Wilkinson (1998), action research is a reflective process that helps people “investigate and change their social and educational realities by changing some of the practices which constitute their lived realities” (p.21). The authors describe action research as a practice that includes planning change, observing the process and consequence of change, reflecting on the process and consequence of the change, and then re-planning. The goal of action research is to assist in improving the professional judgement of the researcher and to provide insight on how the researcher can achieve educational outcomes (Mertler, 2017). Action research can be used for professional development, to improve curriculum, and to help solve problems (Kemmis & Wilkinson, 1998).

At the conclusion of my action research project, I hoped to have uncovered meaningful practices and strategies that would be beneficial to me and my students. The benefits of conducting an action research project was that it provided me the opportunity to critically examine my practices, address challenges, and implement changes that have
a direct impact on the students that I interact with daily (Aldo, 2013; Mills, 2014). Furthermore, this action research project provided me with feedback that can be used to make immediate changes to processes that are not effective nor conducive to learning.

To uncover strategies that improved interactions and engagement in my course, I used a mixed methods research model that included both quantitative and qualitative measures. According to Creswell (2014), a mixed methods approach is an appropriate research method to pursue when you want to utilize the strengths of both quantitative and qualitative measures. I employed an explanatory mixed method design whereby I collected quantitative data and then collected qualitative data that supported and justified the quantitative results.

I participated in the study as both a researcher and a teacher. In my role as a teacher, I provided instruction, assessed student learning, monitored student progress, and provided guidance. As a researcher, I examined the current design of the course and made recommendations about how the course could be improved. Specifically, I investigated the elements of the course that impacted course interaction and engagement, and then based on my findings, proposed solutions on how to maintain or improve those elements in the course.

I was committed to obtaining accurate results and answers; therefore, it was important that I was able to remove biases and pre-conceived notions about the process and the potential results, but instead allow the research to speak for itself. Focusing on qualitative and quantitative data helped me remain focused on the actual results of my research.
Setting and Participants

This action research took place at a large university located in the southeast part of the United States. The participants were 162 students enrolled in a computer applications course. The course is a Microsoft Office introductory course that includes Microsoft Excel and Access. The course is a requirement for all students who are Hospitality, Retail, and Sports Management majors. The course is taught online and there are no required face-to-face meetings. Blackboard, a learning management system, is the platform that students use to access course information, submit assignments, monitor grades, and interact with their instructor and their peers. The Blackboard discussion board provides a mean by which students can introduce themselves to the class, ask questions, discuss course material, and receive feedback about all components of the course. Blackboard tracking data, along with student survey responses, and focus group interviews were the primary sources I used to evaluate course interaction and engagement.

Students enrolled in the twelve-week course were expected to spend at least nine hours a week dedicated to the course. The course consisted of 11 chapters of material related to Microsoft Office. Students accessed their assignments through MyITlab, course software created by Pearson Education. In MyITlab, students were required to complete an interactive tutorial, homework assignment, vocabulary and concept quiz, and a final assessment for each chapter. The assignments were automatically graded by the MyITlab software. I provided feedback to students based on their performance. The feedback consisted of explanations about why their answers were counted incorrect. I also
provided students with links to references, such as textbook links and websites, that provided additional information about the concepts covered on their assignments.

In order to successfully complete the course, students must have been comfortable using technology. All assignments for the course were required to be completed and submitted online. Students were required to have consistent and reliable access to a computer and the Internet. They must have been able to organize electronic files, save electronic files, check email daily, attach files to emails, download and upload documents, and locate information using a web browser.

I collected demographic information from students enrolled in the course. Students received via their email a survey that inquired about their age, gender, ethnicity, college classification, and the number of online courses they had taken. It was important that I had this information so that I can adequately describe my participant population and look for patterns in the data.

One hundred and twenty-eight students from the course voluntarily agreed to answer questions about their demographics. Students who participated in the study were diverse in gender, age, and ethnicity. The students who enrolled in the course were between the ages of 18 – 27 and were mostly sophomores. The number of online courses that students reported that they had taken ranged from 0 – 12, with the average being two. The demographic profiles of the students are listed in Table 3.1. The computer and technology skills of students enrolled in the course were above average, and they were required to have experience in a Microsoft Windows environment.
Table 3.1 *Demographic Profiles of Students Enrolled in Computer Applications (N = 128)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 - 21</td>
<td>119</td>
<td>92.9</td>
</tr>
<tr>
<td>22 - 27</td>
<td>9</td>
<td>7.1</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>71</td>
<td>55.47</td>
</tr>
<tr>
<td>Female</td>
<td>57</td>
<td>44.53</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White or Caucasian</td>
<td>100</td>
<td>78.13</td>
</tr>
<tr>
<td>Asian or Asian American</td>
<td>16</td>
<td>12.5</td>
</tr>
<tr>
<td>Black or African American</td>
<td>8</td>
<td>6.25</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>3</td>
<td>2.34</td>
</tr>
<tr>
<td>Another Race</td>
<td>1</td>
<td>.78</td>
</tr>
<tr>
<td>College Classification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>22</td>
<td>17.19</td>
</tr>
<tr>
<td>Sophomore</td>
<td>72</td>
<td>56.25</td>
</tr>
<tr>
<td>Junior</td>
<td>25</td>
<td>19.53</td>
</tr>
<tr>
<td>Senior</td>
<td>9</td>
<td>7.03</td>
</tr>
<tr>
<td>Number of online courses previously taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>18</td>
<td>14</td>
</tr>
<tr>
<td>1 - 3</td>
<td>86</td>
<td>67.2</td>
</tr>
<tr>
<td>4 - 6</td>
<td>22</td>
<td>17.2</td>
</tr>
<tr>
<td>More than 6</td>
<td>2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Data Collection**

I used a variety of data collection methods to evaluate the strategies that would improve interactions and lead to increased engagement in the computer applications course. I used the OSE along with an open-ended survey that inquired about student experiences in the course and their suggestions for improving the course, five student focus group interviews, and Blackboard discussion board data to measure engagement.
The information collected from students enrolled in the course aided in answering the research questions listed below. Specifically, the data included feedback from students concerning their interaction and engagement levels with the instructor, other students in the course, and their interaction with Blackboard. In focus group interviews and on the student survey, students provided suggestions as to how they felt the course could be improved. Song, Singleton, Hill and Koh (2004) conveyed that students reported course design, technology, online discussions, and opportunities to interact with others in the course increased their engagement in online courses. Furthermore, according to Santiago, Leh, and Nakayama (2011), discussion boards that are well designed can provide students with learning opportunities that cause them to use higher order thinking skills and increase the level of student engagement. By reviewing Blackboard discussion board posts, I was able to access students’ levels of engagement in the course.

The data collection methods include: 1) Online Student Engagement Scale (OSE) and an accompanying open-ended student survey, 2) student focus groups, and 3) statistical tracking and discussion board data from Blackboard. Table 3.2 describes the type of data I collected and the methods I used for collecting the data. Each of the data collection methods are described in further detail below.

Table 3.2  Data Collection Methods

<table>
<thead>
<tr>
<th>Types of Information</th>
<th>Requirements of Research</th>
<th>Method</th>
</tr>
</thead>
</table>
| Demographic Information    | Descriptive information regarding:  
  - Age, Race, Sex  
  - College classification (freshman, sophomore, junior, senior), the number of online classes taken | Survey   |
<table>
<thead>
<tr>
<th>Types of Information</th>
<th>Requirements of Research</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question #1</td>
<td>Student self-reported data regarding their level of engagement in the online course</td>
<td>Online Engagement Survey</td>
</tr>
<tr>
<td>Using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Question #2</td>
<td>Participants’ descriptions, perceptions, and recommendations about the methods that can be incorporated into the class that will help increase interaction and engagement</td>
<td>Student Focus Groups</td>
</tr>
<tr>
<td>What recommendations and strategies do students have for faculty that they perceive will increase their engagement and performance in the course?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Question #3</td>
<td>Blackboard statistics information that demonstrates how often students access and contribute to the course discussion boards.</td>
<td>Blackboard discussion board posts</td>
</tr>
<tr>
<td>How does the way Blackboard content is managed and facilitated affect interaction and the engagement of students enrolled in the course?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Question #4</td>
<td>Blackboard statistics information that details how often students access the discussion board, post on the discussion board, and student grades</td>
<td>Blackboard statistics tracking data; student grades</td>
</tr>
<tr>
<td>Is the frequency of discussion board postings related to engagement or performance in the course?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Student Online Engagement Survey.** I chose to use a survey to gather information from my research participants because surveys have been shown to be effective in gathering data about students’ attitudes, perceptions and opinions (Mertler, 2017). The Student Online Engagement Scale (Dixson, 2015) is a survey that is used by
students to self-report their engagement in online courses. The survey consists of 19 questions that relate to students’ behaviors in online courses. The survey seeks to uncover answers to such questions as how often students study, access course information, and engage with other students in the course. Questions included on the survey inquire about study skills, effort put forth in the course, organizational skills, application of course material to real life, desire to learn the material, the degree of note-taking on course material, participation in chats and discussion boards, helping other students, and doing well on assignments (Dixson, 2010). Using a Likert scale, students rate their behaviors from 1 (not at all characteristic of me) to 5 (very characteristic of me). The reliability and validity of the OSE was highlighted in a pilot study of students enrolled in online courses at a large midwestern university. The results of the pilot study are listed below.

The reliability of the pilot with 31 online students was strong, α = .95, and the scale correlated strongly with two global items of engagement with the course (r = 0.73; p < 0.1) and two global items of social presence (getting to know other students and your instructor) (r = 0.38; p < 0.05), thus supporting face validity (Dixson, 2010, p.4).

This information was important because it provided insights about the activities that students participated in when enrolled in their online course and how they felt their behaviors affected their engagement in the course. A copy of the survey is included in Appendix A.

**Focus Groups.** Five student focus group interviews were used to gather information about students’ descriptions, perceptions, and recommendations about the methods that could be used in the class to increase interaction and engagement. A focus
group is a type of organized interview that can be used to collect qualitative data for a specific research objective (Freeman, 2006). Focus groups typically consist of carefully selected groups of individuals who share common characteristics and who can share insights about a particular subject. The benefits of focus groups are that they stimulate new ideas, facilitate discussion, and promote interaction among the participants (Freeman, 2006; Krueger & Casey, 2015). Focus groups allowed me to probe and ask for clarification and obtain further explanations of students’ responses (Mertler, 2017). Moreover, focus group interviews allowed me to preserve data through audio and video recordings. Finally, during focus group interviews, I was able to observe body language that cannot be detected in a survey.

The format of the questions presented to the focus group was in the form of a semi-structured interview. In a semi-structured interview, the interviewer asks a standard set of questions, but has the option of asking follow-up questions. Semi-structured interviews are the most common type of interview structure used to collect qualitative data because the format is flexible and allows for reciprocity between the interviewer and the participants in the study (Kallio, Pietila, Johnson, & Kangasniemi, 2016). This is important because this allows the interviewee to ask follow-up questions based on the participants’ responses and it enables the interviewer to probe further by asking participants to explain or expand upon a previous answer (Kallio et al., 2016; Mertler, 2007).

Sixteen students agreed to participate in the focus group interviews. Students who chose to participate in the study received a letter from me explaining the nature of the study. A copy of the letter is included in Appendix C. Students signed up for a time
based on their availability. There was a total of five focus groups interviews conducted and the number of students in each focus group ranged from 1 – 5 students. In an effort to make participating in the focus groups convenient for students, I used Zoom for Business, a web-based audio and video conferencing tool to host the focus groups. The interviews were videotaped and then transcribed by Zoom. In order to protect the identity of the students when the videos were transcribed, I numbered the participants 1-16 and used their assigned number when I referred to them in the transcripts. For example, the first student in group one was labeled Student 1, the next student was referred to as Student 2. The interviews lasted approximately one hour. After the interviews were transcribed, they were uploaded to Delve, a web-based qualitative analysis tool.

When choosing the design and make-up of the focus groups, I consulted available research on best practices for forming focus groups. When designing focus groups, Krueger (1993) urges researchers to use a homogenous group of participants so that specific information can be captured. He cautions researchers that focus groups that are too diverse are not adequate enough to uncover trends of subcategories of people. All students in the focus groups for this study were students who were currently enrolled in the course. Research on the effective design of focus groups indicate that focus groups should consist of up to eight participants, because large discussion groups are more challenging to control and do not allow everyone enough latitude to participate (Freeman, 2006; Krueger, 1998). In addition, Mertler (2017) contends that participants in a small focus group are more comfortable speaking and that the small groups can yield valuable
information because the participants tend to interact more with one another and feed off others’ comments. None of the focus groups used in this study contained more than five participants.

Another aspect to consider when designing the make-up of focus groups is the number of focus groups to include in the study and the idea of saturation. Saturation is considered the point in which new data produces little or no new insights, themes, or issues for a category (Corbin & Straus, 1990; Guest, Namey, & McKenna, 2017). According to the analyses of focus group research performed by Guest, Namey, and McKenna (2017), two to three focus groups were sufficient enough to reveal more than 80% of all themes from the interviews and three to six focus groups were sufficient enough to reveal 90% of all themes from the interviews. For this study, data were collected from five focus groups.

Questions presented to the focus groups sought to uncover activities students perceived encouraged interaction and engagement in the course. Table 3.3 describes how the focus group questions aligned with my second research question. Questions such as 1) Describe the interaction you had with your instructor? Describe the interaction you had with your classmates? Do you feel these interactions helped you become more interested in the course? Why or why not? 2) What assignments in the course required you to think about and become more interested in the course content (Dixson, 2015)? 3) What assignments or activities were effective in facilitating interaction between you and your classmates and you and your instructor? 4) What assignments do you feel were ineffective in encouraging engagement in the course content? 5) What activities or assignments would you suggest can be included in the course that would help increase
interaction and engagement? 6) Is there anything else you would like to add that you think would improve interaction and engagement in the course? The interview protocol I used is attached in Appendix D.

Table 3.3  *Research Question 2 and Interview Alignment*

<table>
<thead>
<tr>
<th>Research Question 2</th>
<th>Interview questions aligned with RQ 2</th>
</tr>
</thead>
</table>
| What recommendations and strategies do students have for faculty that they perceive will increase their engagement and performance in the course? | 1. Describe the interaction you had with your instructor? Describe the interaction you had with your classmates? Can you provide an example of the interactions you have had with your instructor and your classmates?  
  - Do you feel these interactions helped you become more interested in the course? Did the interactions increase your performance in the course? Why or why not?  
  
  2. Give an example of an assignments in the course required you to think about and become more interested in the course content (Dixson, 2015)?  
  
  3. Can you think of a time when you had to complete an assignment or activity that was effective in facilitating interaction between you and your classmates and you and your instructor?  
  
  4. What assignments do you feel were ineffective in encouraging engagement in the course content?  
  1. Can you provide an example?  
  
  5. What activities or assignments would you suggest can be included in the course that would help increase interaction and engagement?  
  1. What characteristics of these assignments make them more engaging?  
  2. Is there anything else you would like to add that you think would improve interaction and engagement in the course? |

**Blackboard statistics tracking information / discussion board data.** Blackboard discussion board posts provided information on how often students accessed and contributed to the course discussion boards. Gathering this information was important to my research because it provided insights to the various ways and methods students
attempted to make learning meaningful to them. Research has demonstrated that learning management systems, such as Blackboard, can increase student involvement, improve the learning experience, and help students develop a keen sense of community with other students in the classroom; all of which can positively affect student engagement in online courses (Williams & Whiting, 2016). I also used the Blackboard gradebook data to review student grades in order to make correlations between the frequency of postings on the discussion board and their performance in the course.

**Data Analysis**

Quantitative and qualitative methods of data analysis were used with the four types of data sources collected in this action research study. Table 3.4 outlines the research questions, data sources, and methods of analysis to be used throughout the research study. A full description of the quantitative and qualitative data analyses are within Chapter Four.

Table 3.4 *Research Questions, Data Sources, and Analysis Methods*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Sources</th>
<th>Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Question #1</strong>&lt;br&gt;Using the Student Online Engagement Scale (OLE), how do students enrolled in the computer applications course describe their course interactions and the effect those course interactions have on engagement?</td>
<td>• Online Student Engagement Survey</td>
<td>Descriptive Statistics</td>
</tr>
<tr>
<td><strong>Research Question #2</strong>&lt;br&gt;What recommendations and strategies do students have for faulty that they perceive will increase their engagement and performance in the course?</td>
<td>• Focus group interviews</td>
<td>Inductive / Thematic Analysis</td>
</tr>
</tbody>
</table>
### Research Question

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Sources</th>
<th>Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Question #3</td>
<td>Blackboard discussion board posts</td>
<td>Descriptive Statistics</td>
</tr>
<tr>
<td>How does the way Blackboard content is managed and facilitated affect interaction and the engagement of students enrolled in the course?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Question #4</td>
<td>Blackboard gradebook</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td>Is the frequency of discussion board post related to engagement and performance in the course?</td>
<td>Blackboard discussion board posts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Online Student Engagement Survey</td>
<td></td>
</tr>
</tbody>
</table>

### Procedures & Timeline

I used the following timeline to conduct my action research on interactions and engagement in online courses:

- **Phase 1:** Participant Identification;
- **Phase 2:** Data Collection; and
- **Phase 3:** Data Analysis.

Each phase along with an anticipated timeline is described in Table 3.5

**Table 3.5 Timeline for Participant Identification, Data Collection, and Data Analysis**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Procedure</th>
<th>Estimated Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: Participant Identification</td>
<td>1. Verify course roster is correct</td>
<td>3 Weeks</td>
</tr>
<tr>
<td></td>
<td>2. Identify and confirm student participation in the Online Student Engagement Scale (OSE)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Review of course grades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Identification of potential participants for focus groups</td>
<td></td>
</tr>
</tbody>
</table>
Phase 1: Participant Identification

Participant identification began in the Spring of 2019. Participants in the study were students who enrolled in a computer applications course. The course had an enrollment of 162 students. The course is a required course for all students in the HRSTM department. All students enrolled in the course were invited to participate in the OSE Survey (see Appendix A). I also sent a letter explaining the purpose of the focus groups and asked students to volunteer to participate (see Appendix C).

Phase 2: Data Collection

Data collection occurred in two phases. The first phase consisted of using the OSE to gather information from students about their engagement activities in the course. I sent an email to all students asking for volunteers to participate in the OSE survey.

Students who were interested in taking the survey received a consent form via email. (see
Appendix B). Attached to the OSE survey were also open-ended questions that asked students to comment on their experiences in the course. Students had a week to complete the survey. The survey was created using Survey Monkey, an online survey instrument. Survey Monkey was convenient and easy to use. The survey allowed students to anonymously complete the survey.

During Phase 2 of the data collection procedure, I gathered information from the focus group interviews. I had five different focus groups. The interviews took place over a two-day period. The focus groups interviews lasted approximately one hour and took place in a virtual environment using Zoom for Business. I used the same set of base questions for each group. Follow-up probes were different based on the participants’ responses. The focus group interviews were video recorded and transcribed by Zoom. I reviewed the transcripts for accuracy.

**Phase 3: Data Analysis**

Data analysis took place in several stages. First, I analyzed student’s post on Blackboard. I organized the data into total posts, optional posts, and required posts. This data was entered into an Excel spreadsheet for analysis. Students’ final grades that were listed on Blackboard was also entered into a spreadsheet. The data was then uploaded to JASP, a statistical software analysis tool. Using JASP, I calculated the minimum, maximum, mean, and standard deviation of the total, optional, and required posts. A Pearson product-moment correlation coefficient was computed to assess the relationship between students’ final grades in the course and the number of required posts, optional posts, and total posts. This analysis provided information about student behaviors in the course.
Next, I analyzed the data from the OSE. The final phase of the data collection process took place using the data gathered from the focus groups. The transcribed interviews were uploaded to Delve. Using a constant comparative method, I analyzed the data. The benefits of this type of method is that by using raw data and then constantly comparing the data, practical theory and themes in the data will emerge (Kolb, 2012).

**Rigor & Trustworthiness**

It is important that trustworthiness, “accuracy, and believability” are established so that a clear picture of the subject under research is presented (Mertler, 2017, p.140; Shenton, 2004). Several methods were used to ensure the rigor and trustworthiness of the data. These methods include valid and reliable surveys, thick rich descriptions that describe interview data, and peer debriefing.

A mixed methods approach was used whereby quantitative data was collected using information from the Student Online Survey (OSE) and summary statistics from Blackboard, while qualitative data was collected from student focus group interviews and open-ended questions that accompanied the OSE. This method of using a mixed methods approach to research supports triangulation.

Triangulation is defined as the use of more than one method to corroborate findings and ensure the findings from research are valid (Johnson, Onwuegbuzie, & Turner, 2007). The use of the Online Student Engagement Scale (OSE) and Blackboard statistic data promote triangulation. The OSE was used to obtain feedback about the reported levels of engagement of students enrolled in the course (Dixson, 2015). Blackboard statistics data were used to provide information about how often students engaged in discussions on the discussion board and communicated with me and their
peers. Blackboard statistics data were used to verify or confirm if students’ reported behaviors from the OSE correlated with their actual behaviors.

Qualitative data were collected from focus group interviews. The purpose of collecting the data was to attempt to uncover methods students believed supported interaction and engagement in the course. Thick, rich descriptions that made the data more realistic and believable was used to communicate the accuracy of the results from the interviews (Creswell, 2013). Direct quotes, descriptions of scenarios, and specific student examples were used to convey students’ beliefs and perceptions about engagement and online learning.

Finally, peer debriefing, a reflective process whereby another professional reviews and critiques my decisions and actions throughout all phases of the research process was used to ensure the trustworthiness and rigor (Collins, Onwuegbuzie, Johnson, & Frees, 2013; Mertler, 2017). The purpose of the debriefing sessions was to verify and substantiate the findings of the research. Debriefing sessions were held with the Educational Technology Program Coordinator whereby the results and findings of my research was thoroughly analyzed, discussed, and evaluated.

**Plan for Sharing and Communicating Findings**

As stated, the purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. I will share my results with my student participants online through email and virtual meetings. I also plan to share my findings with my colleagues in the Hospitality, Retail, and Sports Management and Integrated Information
Technology Departments at the university. During the research process, I consulted with
the professors in my department about the purpose of my research and sought to obtain
their feedback concerning what they observed in their online classes and how it coincided
with what I witnessed in my course. Most of my colleagues are experienced online
educators, so their thoughts and recommendations had an impact on how I interpreted the
research and how I implemented the findings in my own online course. Upon completion
of my research, I requested a meeting with my colleagues to discuss how my research
was used to improve the design of my course and discuss how they can apply the research
to their own courses. Although, my research focused on the computer applications
course I taught, I believe the findings from the study can have implications for all courses
that are taught online. Finally, when I presented my research findings to others, it was my
ethical duty to protect my participants’ identity; therefore, I limited the type of
information I uses to describe the participants. I did not include their names or their
member institutions, but I instead referred to the institution as a large public university
located in the South.
CHAPTER 4
FINDINGS AND INTERPRETATIONS

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. The results of this study were intended to provide an assessment of current strategies and methods used in the course that affect engagement and to make recommendations on what strategies and methods could be used to improve engagement in the course. The research explored the following research questions:

1. Using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?
2. What recommendations and strategies do students have for faculty that they perceive will increase their engagement in the course?
3. How does the way Blackboard discussion boards are managed and facilitated effect interaction and the engagement of students enrolled in the course?
4. Is the frequency of discussion board posts related to engagement and performance in the course?

Quantitative and qualitative data gathering methods were used to answer the research questions. The data is described in two distinct sections. Part one discusses the quantitative data that was collected from students who actively participated in the course,
Blackboard discussion boards and forums, and from students who voluntarily took part in the Online Student Engagement survey (OSE). The quantitative data were analyzed using descriptive statistics and the Pearson correlation coefficient. Part two discusses the quantitative research methods used to uncover three emerging themes that resulted from the review of five student forum interviews and a course survey.

**Part One: Quantitative Data – Analysis and Findings**

Quantitative data were collected from 162 students who actively participated in the course discussion boards and forums and from 124 students who voluntarily took part in the Online Student Engagement survey. Qualitative data were derived from interviews with five student focus groups and from open-ended questions included on the OSE. The quantitative data were analyzed using data from Blackboard and from the Likert scale results from the OSE.

**Blackboard Data**

Blackboard data were reported for 162 students who completed the class and whose grades were reported to the university’s final grade reporting system. Data from students who withdrew from the course before it concluded were excluded from the analysis.

Data regarding the frequency of discussion board posts were taken from Blackboard, the university-wide learning management system. The data were divided into required posts and optional posts. Total posts were calculated by summing the required and optional posts. Required posts were identified as posts that were posted on the required discussion board. There were 2499 required posts made for the entire class. Required posts consisted of application type questions where students were required to
discuss, explain, and apply their knowledge of course-related content. In addition to discussing the selected topic in their post, students were required to reply and critique the post of at least one of their classmates. Students were divided into small groups consisting of 17-21 students per group.

Optional posts were general open discussion boards that students used to seek assistance on course content from the instructor or other members of the course and to discuss the course content with other students. Optional posts were identified as student posts that were on the optional question-and-answer discussion board. There were a total of 178 posts on the optional discussion board. Students were not divided into groups and posted on a general discussion board that the entire class could view. Students did not receive a grade for the optional posts.

Students frequently posted on the discussion board. There were 162 students who participated on the required discussion boards. When analyzed by individual student, posts on the required discussion board \((M = 15.4)\) outnumbered posts on the optional question-and-answer discussion board \((M = 1)\). Students were required to have a minimum of 14 required posts. For example, one student posted 23 times on the required discussion board. That student had the most posts on the required discussion board when compared to other students in the course. Table 4.1 provides descriptive data for the final grades and Blackboard posts for students in the course.

Table 4.1 Descriptive Statistics – Final Grades and Discussion Board Posts

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>(M)</th>
<th>(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Grade</td>
<td>26.1</td>
<td>99.7</td>
<td>87.1</td>
<td>14.3</td>
</tr>
<tr>
<td>Required Posts</td>
<td>3</td>
<td>23</td>
<td>15.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Optional Posts</td>
<td>0</td>
<td>9</td>
<td>1.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Total Posts</td>
<td>3</td>
<td>29</td>
<td>16.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>
A follow-up analysis was conducted to determine if there was any relationship among individual student’s posts on the discussion board postings and their final grade in the course. The final grade that students received from the course was an accumulation of all course assignments. Final grades (see Table 4.2) ranged from 26.1 to 99.7, with a mean of 87.1 ($SD = 14.3$).

Table 4.2 Descriptive Statistics – Final Grades in the computer applications course

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Grade</td>
<td>26.1</td>
<td>99.7</td>
<td>87.1</td>
<td>14.3</td>
</tr>
</tbody>
</table>

A Pearson product-moment correlation coefficient was computed to assess the relationship between students’ final grades in the course and their number of required posts, optional posts, and total posts. Table 4.3 provides the correlation results for the data. There were positive correlations between final grades and required posts, optional posts, and total posts. A significant positive correlation was found between final grade and required posts, $r(162) = .61, p < .001$. So, as the number of required posts increased, the final grade did as well. A significant positive correlation was also found between the final grade and total posts, $r(162) = .59, p < .001$. So, as the number of total posts increased, the final grade did as well. This is not surprising given the small proportion of optional posts that were completed. Correlations between final grade and optional post were not strong and were not significant $r(162) = .13, p < .08$.

Table 4.3 Pearson Correlation – Final Grades and Number of Discussion Board Posts

<table>
<thead>
<tr>
<th>Discussion Board Posts</th>
<th>Correlation Statistic</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Posts</td>
<td>Pearson's r</td>
<td>0.608</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Optional Posts</td>
<td>Pearson's r</td>
<td>0.137</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>&lt; 0.082</td>
</tr>
<tr>
<td>Discussion Board Posts</td>
<td>Correlation Statistic</td>
<td>Final Grade</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Total Posts</td>
<td>Pearson's r</td>
<td>0.585</td>
</tr>
<tr>
<td></td>
<td>p-value</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

**Likert Scale Survey Data – Online Student Engagement Scale (OSE)**

The Online Student Engagement Scale (Dixson, 2015) was used to measure student engagement in the computer applications course. The Online Student Engagement Scale is a survey comprised of 19 Likert-type items that measure student engagement in an online learning environment. The scale ranges from 1: Not at all characteristic of me to 5: Very characteristic of me. One hundred and thirty-two students responded to the survey; eight student’s data were removed because they were incomplete. In order to confirm internal reliability of the scale, a Cronbach’s alpha coefficient was calculated from students who participated in the survey \((n =124)\). Results indicated that the scale has strong internal consistency with \(\alpha = .92\).

The results from the OSE serve as reliable indicators of student engagement in online courses. The scale provides data about student interactions with their instructor, peers, and the course content in terms of skills, emotional, participation, and performance (Dixson, 2015). Table 4.4 lists the categories and statements that appeared on the survey.

**Table 4.4 Likert Scale Questions – Online Student Engagement Scale**

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emotional</td>
<td>Putting forth effort</td>
</tr>
<tr>
<td>2</td>
<td>Skills</td>
<td>Staying up on the textbook chapter readings</td>
</tr>
<tr>
<td>3</td>
<td>Skills</td>
<td>Looking over class notes between getting online to make sure I understand the material</td>
</tr>
<tr>
<td>4</td>
<td>Skills</td>
<td>Being organized</td>
</tr>
<tr>
<td>5</td>
<td>Skills</td>
<td>Taking good notes over readings, PowerPoints, or videos</td>
</tr>
<tr>
<td>6</td>
<td>Skills</td>
<td>Listening/reading carefully</td>
</tr>
<tr>
<td>Question Number</td>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Emotional</td>
<td>Finding ways to make the course material relevant to my life or work</td>
</tr>
<tr>
<td>8</td>
<td>Emotional</td>
<td>Applying course material to my life or work</td>
</tr>
<tr>
<td>10</td>
<td>Emotional</td>
<td>Really desiring to learn the material</td>
</tr>
<tr>
<td>11</td>
<td>Participation</td>
<td>Having fun in online chats, discussions or via email with the instructor or other students</td>
</tr>
<tr>
<td>12</td>
<td>Participation</td>
<td>Participating actively in small-group discussion forums</td>
</tr>
<tr>
<td>13</td>
<td>Participation</td>
<td>Helping fellow students</td>
</tr>
<tr>
<td>14</td>
<td>Performance</td>
<td>Getting a good grade</td>
</tr>
<tr>
<td>15</td>
<td>Performance</td>
<td>Doing well on the tests/quizzes</td>
</tr>
<tr>
<td>16</td>
<td>Participation</td>
<td>Engaging in conversations online (discussions, email)</td>
</tr>
<tr>
<td>17</td>
<td>Participation</td>
<td>Posting in the discussion forum or on the discussion board regularly</td>
</tr>
<tr>
<td>18</td>
<td>Participation</td>
<td>Getting to know other students in the class</td>
</tr>
<tr>
<td>19</td>
<td>Skills</td>
<td>Making sure to study on a regular basis</td>
</tr>
</tbody>
</table>

The skills category results are displayed in Table 4.5. The category measured engagement by assessing what students actually did in the course. The category inquired about study habits and listening and organization skills. Students reported that they were highly organized ($M = 4.17$) and listened and read carefully ($M = 3.91$). The emotional category presented in Table 4.6 evaluated how connected students were to the material and inquired about how interesting and relevant the course material was to students. Items ranked high by students include putting forth a good effort ($M = 4.16$) and finding ways to make the content relevant to their life and work ($M = 3.73$). The participation category presented in Table 4.7 consisted of items related to student’s interaction with others in the course and the different methods they used to interact with their peers. Results from the survey items demonstrated that students valued interacting in small group discussion boards ($M = 3.6$) and posting in discussion boards and forums regularly ($M = 3.4$). It was characteristic of students to enjoy helping fellow students in the course ($M = 3.51$); however, they also reported that getting to know other students in the course
was not as important \((M = 2.93)\). The performance category presented in Table 4.8 received the highest ratings from the scale. The category measured student’s views of achievement in the course. Students reported that it was very important to them to get good grades \((M = 4.35)\) and to do well on tests and quizzes \((M = 4.36)\).

Table 4.5 *Online Student Engagement Scale – Skills Category*

<table>
<thead>
<tr>
<th>Skills</th>
<th>(M)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3.15</td>
<td>1.11</td>
</tr>
<tr>
<td>3</td>
<td>3.32</td>
<td>1.07</td>
</tr>
<tr>
<td>4</td>
<td>4.17</td>
<td>.88</td>
</tr>
<tr>
<td>5</td>
<td>3.39</td>
<td>1.09</td>
</tr>
<tr>
<td>6</td>
<td>3.91</td>
<td>.86</td>
</tr>
<tr>
<td>19</td>
<td>3.59</td>
<td>.98</td>
</tr>
</tbody>
</table>

Table 4.6 *Online Student Engagement Scale – Emotional Category*

<table>
<thead>
<tr>
<th>Emotional</th>
<th>(M)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.16</td>
<td>0.76</td>
</tr>
<tr>
<td>7</td>
<td>3.73</td>
<td>1.03</td>
</tr>
<tr>
<td>8</td>
<td>3.6</td>
<td>1.1</td>
</tr>
<tr>
<td>9</td>
<td>3.62</td>
<td>1.07</td>
</tr>
<tr>
<td>10</td>
<td>3.62</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.7 *Online Student Engagement Scale – Participation Category*

<table>
<thead>
<tr>
<th>Participation</th>
<th>(M)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>2.85</td>
<td>1.22</td>
</tr>
<tr>
<td>12</td>
<td>3.6</td>
<td>0.99</td>
</tr>
<tr>
<td>13</td>
<td>3.51</td>
<td>1.03</td>
</tr>
<tr>
<td>16</td>
<td>3.32</td>
<td>1.05</td>
</tr>
<tr>
<td>17</td>
<td>3.4</td>
<td>1.14</td>
</tr>
<tr>
<td>18</td>
<td>2.93</td>
<td>1.13</td>
</tr>
</tbody>
</table>
Table 4.8 *Online Student Engagement Scale – Performance Category*

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>4.35</td>
<td>0.82</td>
</tr>
<tr>
<td>15</td>
<td>4.36</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Part Two: Qualitative Data – Analysis and Findings

Qualitative results were gathered from five focus group interviews with students who were enrolled in the computer applications course and from course surveys sent to students. The purpose of the interviews and the surveys was to receive feedback from students concerning how their behaviors, experiences, and preferences affected engagement and interaction in computer applications. Student interviews allowed me to ask open-ended questions and to follow-up and clarify information received from students. All interviews were recorded and transcribed verbatim. Student surveys were utilized because they allowed me to gather direct responses from a large, diverse pool of students. In order to process and organize the data from the transcripts and surveys, the information was organized and coded using Delve, a web-based qualitative analysis tool.

Table 4.9 describes the quantity and source of the 1021 analytical codes applied during analysis of the gathered data. Some of the same codes were applied multiple times. The remainder of this chapter describes the analysis of the qualitative data and themes that emerged from the review of the qualitative data.

Table 4.9 *Quantity of Qualitative Data by Source*

<table>
<thead>
<tr>
<th>Types of Qualitative Data</th>
<th>Number</th>
<th>Total Number of Codes Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus group interview transcripts</td>
<td>5 groups</td>
<td>725</td>
</tr>
<tr>
<td></td>
<td>15 students</td>
<td></td>
</tr>
<tr>
<td>Survey open-ended transcripts</td>
<td>132 responses</td>
<td>296</td>
</tr>
</tbody>
</table>
Analysis of Qualitative Data

To gather qualitative data, I conducted five student focus group interviews and sent surveys to all members of the course. The focus group interviews were video recorded and were transcribed by Zoom for Business which is a web-based audio and video conferencing tool. The tool recorded and transcribed the videos and I reviewed the transcriptions for accuracy. The qualitative data I collected and transcribed from the five focus group interviews and course surveys were analyzed using several different methods. First, the transcripts from the focus group interviews and the responses from the surveys were uploaded to Delve. I reviewed the collected data and wrote analytical memos. Analytical memos are an important part of the coding process, because they can aid in the discovery of new codes (Saldana, 2009). Analytical memos allowed me to record my thoughts and ideas as I read through the transcripts. After reviewing the transcripts several times and reviewing analytical memos, I started first cycle coding. During first cycle coding, I used descriptive coding where I used a single word or phrase to describe student responses. Instead of coding line by line, I coded by individual student response. I found that coding by individual student response resulted in more accurate codes because when the codes were organized in Delve, I could see the context of the entire response instead of just one line of the response. When I used this method, several of the students’ responses had multiple codes applied to them. Figure 4.1 listed below, displays a response from a student in group two that has seven different codes applied to it.
I continued applying codes as I progressed through the transcripts in Delve. After my first cycle of coding, I had 111 individual codes. Several of the codes were used multiple times. I continued to review the codes in an effort to reduce the volume of codes so that I could better examine the data. I combined codes that were similar, removed duplicate codes, and removed codes that did not accurately describe the data. Figure 4.2 shows how the individual technology codes were group together to form one code. I combined technology, tech savvy, comfortable with technology, and technology challenges into one code. As a result of several cycles of open coding, the 111 codes were reduced to 31 codes.

In addition to coding the transcript data in groups by student response, I also used structural coding. Structural coding is suited for organizing data around research questions and is appropriate for coding interview transcripts (Saldana, 2009). Using structural coding, data were organized by my research questions. Going through the
process of structural coding increased my confidence that the data I collected was adequate in helping me answer my research questions because I was able to connect student responses in the focus group interviews and surveys to specific research questions. Figure 4.3 below is a screenshot taken from Delve. The screenshot shows that there were 71 student responses associated with research question number two: What recommendations and strategies do students have for faculty that they perceive will increase their engagement in the course.

![Figure 4.3 Structural coding from Delve on research question number two.](image)

After first cycle coding was completed, I began the process of second cycle coding. The purpose of second cycle coding was to organize the results of first cycle codes into categories, themes, concepts, and or theories (Saldana, 2009). During second cycle coding I focused on organizing and arranging the 31 codes into categories based on thematic similarities. When organizing the codes into categories, I asked myself several questions, including: 1) What is the meaning of the code or category?, 2) Do several codes fall under the same category?, and 3) How are the codes and categories related to each other? In order to get a better overall view of the codes and have the ability to move the codes around and organize them freely, I typed the codes on individual sheets of paper and arranged them on the floor. Figure 4.4 below is an illustration of this process.
I continued to arrange the codes until I felt that they were organized in related categories. After the ongoing process of arranging the codes, seven categories emerged.

Figure 4.5 shown below displays the 31 codes and the seven categories (course challenges, course interactions, meaningful engagement, course content feedback, student success, course management, and technology) that emerged as a result of second cycle coding.

**Figure 4.4** Codes arranged on the floor in an effort to create categories from codes

**Figure 4.5** Categories that emerged from my 31 codes
In order to get additional feedback about my categories, I engaged in peer debriefing by meeting with my dissertation chair. My dissertation chair reviewed, analyzed, and discussed the categories with me and made suggestions as to how some of the categories could be combined. After exhausting all possibilities, my final analysis resulted in four total categories (course challenges, course interactions, meaningful engagement, and technology). The meaningful engagement, course content feedback, student success, and course management categories were combined into one category titled meaningful engagement. The categories were combined because in general, their content related to student experience with the course assignments. Figure 4.6 below shows how the categories were combined.

**Combined Categories**

*Figure 4.6 Final four categories that resulted from second cycle coding.*
After finalizing the four categories, I studied and examined the content of the categories in an attempt to uncover themes. I asked myself, “what is the data telling me; what are students saying about their experiences?” For example, when I reviewed the technology category and its associated codes, there was consistent feedback from students about how innovative technology could enhance the course, the types of technology they thought should be added to the course, and their comfort with using technology. Student feedback about technology led to the emergence of theme three: the use of technology is considered a means to improve engagement, interaction, and collaboration. In total, three themes emerged from my data.

**Themes and Interpretations**

Three themes emerged from the focus group interviews and the student survey responses: 1) the types of assignments and how they are structured have an impact on student engagement and interaction, 2) the management and implementation of the different methods of communication play an important role in interaction and engagement, 3) the use of technology is considered a means to improve engagement, interaction, and collaboration in the course. The themes and their associated categories are described in Figure 4.7 below. The themes and are described and explained in more detail in the next section. When describing student feedback, student pseudonyms are used instead of the real names of the students. Students are referred to as Student 1, Student 2, Student 3, etcetera. Student responses are presented verbatim from the transcripts uploaded to Delve.
Figure 4.7 Themes and associated codes that emerged from my qualitative data

Theme One: The types of assignments and how they are structured have an impact on student engagement and interaction. The types of assignments and activities that students are required to participate in and complete in the computer applications course affect engagement and interaction. Theme One, the types of assignments and how they are structured have an impact on student engagement and interaction in the course emerged as students described their experiences with the assignments and learning activities that they were exposed to during the course. In all five focus group interviews and in all the student surveys, students consistently expressed how their learning experiences were affected by the course assignments. While all the themes that will be discussed have an impact on student engagement, Theme One is unique in that it provides feedback and responses about actual student behaviors and interactions with course content.

Accordingly, learner-content interaction is essential because it forms the basis as to how students acquire knowledge, skills, and abilities (Dunlap, Sobel, & Sands, 2007; Miyazoe & Anderson, 2010). Students’ abilities to acquire and apply knowledge is an important aspect of their learning process because they promote the use of higher-order thinking skills. Furthermore, student experiences and feedback align with the CoI framework that emphasizes learners should be introduced to content that allows them to
construct meaningful experiences in online courses (Garrison & Archer, 2010). The CoI implies that these experiences should move students from simply understanding a problem or issue to integration, application, and resolution of the problem (Akyol et al., 2011; Garrison, Anderson, & Archer, 2001; Garrison, 2007; Garrison & Akyol, 2015). This is important because in addition to promoting higher order thinking skills, the integration, application, and resolution of problems allow students to use the skills and knowledge they have acquired to solve future problems and it allows them to apply the skills to similar situations. Student responses on how the types of assignments affected their learning experiences, engagement, and interaction were focused on two prominent categories: 1) meaningful engagement associated with course assignments and 2) course interactions and engagement in required discussion forums. Each of these is explained further below.

**Meaningful engagement associated with course assignments.** Meaningful engagement describes how students interacted with the specific course assignments. Students consistently replied that they were more involved and engaged in authentic assignments where they were required to perform and apply course content to their careers and real-world experiences. This category is an important part of Theme One because it explains how the different assignments in the course affected engagement and how those assignments affected student learning.

The manner in which students interacted with the course assignments affected engagement. Students were introduced to the course content using a structured format whereby they first completed chapter readings and simulation exercises where the course material was explained and demonstrated. Next, they completed multiple choice quizzes
that assessed their knowledge of the content presented. Last, students completed hands-on grader assessments. The hands-on grader assessments were assignments where students were required to apply what they had learned in the course to a real-world authentic situation. The assignments were automatically graded by the course software and students received immediate feedback about their responses. An example of a grader assignment project that required students to apply, integrate, and solve a realistic problem is presented in Figure 4.8.

**Directions:** You are an analyst for the airline industry. You created a workbook that lists overall airline arrival statistics for several years. In particular, you listed the percentage and number of on-time arrivals, late arrivals, canceled flights, and diverted flights based on information provided by the Bureau of Transportation Statistics. You want to create charts and insert sparklines that show the trends so that you can discuss solutions with airline and airport managers on how to best manage the airport.

**Figure 4.8** An assignment from the computer applications course that requires students to analyze and apply information to real-world problem.
Feedback from students on the grader assessments confirmed these assignments positively affected engagement and helped them become more interested in the course material. Students reported the grader assessment projects were engaging because of their applicability to real-world, real-life, practical situations. Students provided the following feedback about the grader assessment projects:

Focus Group 2 – Student 6: I feel like, especially the grader projects helped me just because I feel like that’s something I could use in my real-life career as a tourism professional.

Focus Group 3 - Student 11: After doing the grader project, I would say, I became interested in the assignment and course.

Student Survey Response: The grader assignment really made me think because it is a realistic assignment.

The quotes from students listed above provide examples of the impact of the grader assignments on student experiences in the course. Students explained they became more interested in the assignments because the assignments were realistic, interesting, and were applicable to real-life situations. These attributes are important because they have a positive impact on student engagement in the course.

Feedback on the impact of the quizzes and simulations were not as consistent as it was with the grader assessments. In all the focus group interviews and student surveys, students only provided positive feedback on the grader assessments’ impact on engagement. Some students reported the simulations and quizzes were beneficial and
helped them learn the content, but not to the same degree as the grader assessments. They reported the assignments did not have the same impact on engagement as the grader assessments. Students responses consisted of the following:

Student Survey Response: The small quizzes really helped me learn about the course content.

Focus Group 1 - Student 4: So yes, I think the quiz helps me learn the terms, but less for real life application, more for just taking the test.

Focus Group 3 - Student 10: The grader assignment. It is basically doing it on your own, not like the simulation training that shows you exactly how to do it. The grader helps you understand actually how to do it on your own.

Student Survey Response: The simulation training really helped me get a good understanding of what to do and made the grader assessments easier.

Student Survey Response: I liked the simulations because it made it easy to learn the material.

Students’ experiences, as explained by their comments about the quizzes and simulations, demonstrate that these assignments were useful in helping students learn the course material. The quizzes and simulations did not impact the acquisition of higher order thinking skills in the same manner as the grader assessments. The quizzes and simulations were useful in helping students gain knowledge; which is a lower level
cognitive skill as compared to the ability to apply knowledge to real-life experiences. Students also felt that the quizzes and simulations were less effective in helping them apply the course information when compared to the grader assignments that required students to apply and integrate course content to real-world situations. The experiences that students describe are an important part of Theme One because they explain the impact that these assignments had on their engagement in the course. When students could relate to the assignments and were actively involved in the assignments, they reported they were more engaged in the course.

Course assignments had varying impacts on student engagement. Students consistently reported that assignments, such as the grader projects, were impactful because they were actively engaged when they were able to apply course content and “do work on their own” as expressed by Student 10 in discussion forum 3. Feedback from students enrolled in the course is consistent with prominent research on engagement in online courses. Research in online student engagement supports strategies that ensure that course content is based on real-world applications that can be applied to classroom practice, and activities that require subject mastery and critical thinking skills (Britt, 2015; Dixon, & Dixon, 2007; Jin, 2005; Murray et al., 2013). Furthermore, Jin (2005) emphasized that instructors should invest efforts in designing assignments that are relevant to “students’ real-life experiences” (p.66). This is important because students in the computer applications course specifically expressed that being able to apply information learned in the course encouraged them to become more interested in the course.
Course interactions and engagement in required discussion forums. The course required discussion board forums were an additional assignment that had an influence on student engagement and interaction. Student-student interaction was accomplished through the use of forum group discussions. In the forum group discussions, students were presented with scenarios that required them to explain, discuss, and apply course related content in a written format. Students were also required to reply and provide feedback to the responses of their peers. An example of a question presented on the discussion board forum was: Microsoft Excel allows you to use charts to visually depict data in your spreadsheets. 1) In your opinion, why is this an important feature of Excel?, 2) Describe an example of when you might use Excel to visually depict data in your major / career. Be specific., 3) Comment on at least (1) post made by your peers. The discussions that students had about the topic above in the required group discussion forums on Blackboard are listed in Figure 4.9.

<table>
<thead>
<tr>
<th>Student #1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Excel deals a lot with formulas, numbers, and visual comparisons. Being able to represent graphs allows us to visually and numerically display how amounts increased or decreased over the years.</td>
</tr>
<tr>
<td>2) Some people are more visual learners and the ability to put numbers into visuals creates a new understanding. It was a teacher who wanted to see the progress of our class throughout the semester so a graph would be suitable in order to see the progress in numbers and visually.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your answer to the first question provides a detailed description of exactly what graphs are in excel. Something I would have done is shown how these are used in the real world by providing examples. I agree that teachers can benefit greatly from data that is shown through a graph. I myself am a visual learner which is why I agree with them so much.</td>
</tr>
</tbody>
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<th>Student #3</th>
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<tr>
<td>The answer to the first question is a good overview of how we formulate graphs from the building blocks. In regards to question two, I liked your example and how you conveyed it to being a teacher as this is a good way information could be shared with others.</td>
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<th>Student #4</th>
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<tbody>
<tr>
<td>I feel the exact same way as you about your answer to the first question. I am a visual learner so being able to physically see something mapped out and depicted visually helps me fully comprehend what is happening.</td>
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Figure 4.9 Student discussions in a required group discussion board from the computer applications course.
In each of the five focus group interviews that I conducted with students, I received positive feedback about the impact the forums had on engagement and interaction. Students reported that the group forums provided meaningful interactions with their peers, enhanced engagement, and helped them to apply their skills to other experiences. Student feedback about the discussion forums relate to Theme One because their feedback explains how participating in the forums impacted their engagement in the course.

Students responses consisted of the following:

**Student Survey Response:** The smaller group forums required students to work actively together on discussing various topics.

**Student Survey Response:** The group discussion forums required us to introduce ourselves to our class and comment on their ideas about the course.

**Student Survey Response:** The group discussion forums have made me think about what we are learning and how it applies to real life situations.

**Student Survey Response:** The group discussion forums have made me actually think and reflect on the material being taught.

**Focus Group 2 – Student 7:** I would say the forum because you have to relate it to real life and stuff like that. So,
you must think of what to do with it in the real world and focus on how you were going to use it.

Focus Group 3 - Student 9: The discussion boards I felt like it was like a good way for us to summarize the information we were learning and then share it with each other and then be able to understand from other student’s perspectives.

Providing course assignments, such as the group discussion forums, that allowed students to interact in the course, influenced student engagement because student interactions with one another enhanced social presence in the course. Shea, Li, and Pickett (2006) explained that a high degree of social presence in online courses is associated with students’ positive perceptions of their learning and their social interaction with their peers. Students who participated in the course focus groups and surveys shared positive feedback about the required group discussion forums. They explained the forums allowed them to interact socially by working actively together on assignments, sharing information, and viewing different perspectives on topics in the course.

**Theme Two: The management and implementation of different methods of communication play an important role in interaction and engagement.**

Communication was a vital part of student success in the computer applications course. Various methods of communication enabled students to engage with their instructor and their peers. Research in engagement in online courses reveals that when learners feel the
presence of their peers and their instructors in the course, it enriches their overall learning experience by positively influencing satisfaction, retention, and learning outcomes (Liu, Gomez & Yen, 2009; Richardson & Swan, 2003; Shea, Li, & Pickett, 2006; Zhang et al., 2016). This occurs because engaging with their instructor and peers helps students in the course understand course content, become familiar with course logistics, view perspectives of others, and clarify information by asking questions. Consistent communication also creates a supportive environment that promotes a strong learning community within the course.

Students in computer applications course expressed that engagement and interaction was positively influenced in the course when they effectively communicated with me, as their instructor, and their peers through different communication methods. Theme Two emerged as students described how they interacted with me and their peers in the course, how they received and shared information, and how they sought and received assistance in the course. Although this theme addresses the assignments that were contained in the course, it is different from Theme One because this theme describes the logistics of how course content was shared, communicated, received, and discussed; whereas, Theme One specifically discussed the different types of assignments and the required discussion boards.

Student feedback about communication from the focus group interviews and the student surveys all described scenarios that had both positive and negative effects on engagement and interaction. Feedback from students in the computer applications course was comprised in two related categories. The first category describes the significance that communicating through email, newsletters, and the optional question and answer
discussion board had on student engagement, while the second category describes the obstacles students faced in communicating with me and their peers and how that affected interaction and engagement.

Effects of communicating through email, newsletters, and the optional question-and-answer discussion board. Constant and frequent communication is an important aspect of helping keep students engaged in online courses. Research by Dixon (2010) and Shea (2015) found that student-student and instructor-student communication is strongly related to higher student engagement in online courses. I communicated with students in the course through email, an optional question-and-answer discussion board, and a weekly newsletter. One student opted to meet with me through a video conference to discuss her grades at the end of the semester. Students communicated with other students in the course using the required discussion boards and the optional question-and-answer discussion boards. The required discussion board assignments were discussed in Theme One. The optional question and answer discussion boards are discussed here in Theme Two because they relate to how students communicated with me and their peers. Ensuring that there were multiple methods that students could use to communicate with me and their peers was a vital part of the course. These various methods of communications are related to Theme Two because they explain the effects that these methods had on engagement and interaction in the course.

The weekly newsletter outlined the current chapter objectives, provided due dates, and contained important details and notes about each chapter. The newsletter also provided contact information that students could use to get help with technical errors with their personal computer and the course software. The optional question and answer
A discussion board was available for students to communicate with both me and their peers. The discussion board was used by students in the course to ask questions about the assignments and to provide help or advice to other students in the course. Instead of emailing me with specific questions about the course assignments, students were encouraged to post their question on the optional question-and-answer discussion board. I provided answers to questions students posted. My answers were available for all students to view. Other students in the course also provided information and assistance to questions posted by their peers on the discussion board. An example of an optional discussion board post is listed below in Figure 4.10. In the post, a student asks a question about an assignment and I and other students in the course provide help and suggestions to the student.

<table>
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<tr>
<th>Student #1</th>
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<td>I am having difficulty trying to understand Step 7 on the first grade assessment. It states: If cell D9, enter a formula to calculate the number of days for the first workshop. Add 1 to the results to include the total number of days, including the start and end dates.” I know I have to create a formula but I don’t quite understand this question.</td>
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<tr>
<td>In cell D9, enter a formula to calculate the number of days for the first workshop. Add 1 to the results to include the total number of days, including the start and end dates. Copy the formula to the range D10:D</td>
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<th>Student #3</th>
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<tr>
<td>The question is asking that you find the number of days between the Start Date and the End Date for each workshop. So in cell D9, you should enter a formula that subtracts the Start Date from the End Date and then add 1 to the formula. You add 1 to the formula so that all days will be included. What formula did you enter in D9?</td>
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<th>Student #4</th>
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<tr>
<td>I have tried the equation =D5-05+1 but nothing works</td>
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<th>Student #5</th>
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<tr>
<td>I don’t know if you already found the answer, but take the parentheses out so the equation is just =D-05+1 and it should work.</td>
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<th>Student #5</th>
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<tr>
<td>This is correct. The next step will have you change this into an actual number format.</td>
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Figure 4.10 Optional question and answer discussion board that depicts student discussion and interaction.
Students in each of the focus group interviews reported that the different methods of communication used in the course had an impact on engagement and interaction. In only two student focus group interviews did students mention the positive effects of email; however, there were more frequent and more positive mentions of the newsletters and the optional question-and-answer discussion board. Student responses included the following:

Focus Group 4 - Student 12: I read the newsletter every single week. I thought it was extremely helpful because it laid out the guidelines of what was going on for the week. It explained how you could prepare yourself properly to do well for what was upcoming for the week.

Focus Group 5 – Student 15: Newsletters were helpful. I liked them. I mostly just used them to get help with the questions that people have a lot of hard times on. Just reading the newsletter beforehand gives you a heads-up about what to expect.

Focus Group 5 - Student 16: Using the discussion board, you can see everyone's questions and it's public and cohesive and everyone's sort of working together. I definitely use the discussion boards, even if I wasn't posting. I would read them sometimes before doing like the projects, just to give myself a heads up about what
others were struggling with. I would then focus on that part of the chapter more.

Focus Group 3 – Student 9: The discussion boards. Any questions that any other students had that I had the same question. I could see your response. That really helped a lot because if any other student had the same problem as me, I can just see what you responded to them.

Student Survey Response: I think the discussion board was a great way to promote student interaction throughout the course. The discussion board is a good tool to ask other students questions and interact with the students discussing concepts and ideas.

In all five student focus group interviews, students provided positive feedback about the optional question-and-answer discussion boards, and in four of the five student focus group interviews, students provided positive feedback about the newsletters. Their responses align with Theme Two because they demonstrate that constant, frequent, and multiple communication methods did impact interaction and engagement in the computer applications course. Furthermore, student feedback on different methods of communication in the course corroborate previous research that details student-student and instructor-student communications help ensure that there is a sense of connectedness and community established in online courses which play an integral role in student engagement (York & Richardson, 2012) and that students in online environments establish social presence by posting on discussion boards and responding to others.
(Kehrwald, 2008). Not only did email and the newsletters allow students to interact with me, but the optional discussion board provided an avenue for students to ask questions and get help from both me and their peers.

**Communication obstacles.** Although students reported that incorporating different modes of communication in the course positively influenced engagement, they also articulated that communication was negatively impacted due to the delay in receiving responses from me and their peers. This category is related to Theme Two because it contains responses from students about the negative effects that the lack of timely communication had on engagement. It is important that students in online courses receive timely feedback to their questions because an instructor’s immediate response can influence student learning experiences and course satisfaction (Küçük, Genç-Kumtepe & Taşcı, 2010); thus, student experiences and satisfaction influences student engagement. The most consistent communication obstacle students expressed about the computer applications course was the lack of immediate feedback. Their responses and feedback in focus group interviews reflected a desire for real-time, synchronous communication. Their responses included the following.

Focus Group 5 - Student 16: I think people don't like waiting, because not many people will get emails right away. So, if someone post a question, it will take a little bit for someone to respond. It can be frustrating waiting for someone to respond to your questions.
Focus Group 2 - Student 8: If we had a GroupMe with our discussion groups, it would be easier to quick fire questions that we had instead of having to go in on Blackboard for the discussion board and wait for a reply.

Focus Group 4 - Student 16: We are used to instant gratification and I know when you're on Blackboard you feel like you need to be super formal and stuff but sometimes you just need a quick answer. Like, you don't need to make a whole ordeal about it you just need an answer right now while you are working on an assignment.

Focus Group 1 - Student 4: I kind of like the idea of pairing up with someone. So that you have someone to like ask questions. So, like you can get a quick response from another person versus waiting on 200 other people to answer your question.

The lack of instant and quick feedback in the computer applications course negatively impacted communication. Students responded that they desired quick responses to their questions in the course. Incorporating other technologies in the course can help to alleviate this issue. Students did recommend incorporating different types of real-time communication into the course. Recommendation about synchronous communication will be discussed as apart of Theme Three.

Theme Three: The use of technology is considered by students as a means to improve engagement, interaction, and collaboration in the course. Technological
applications continue to play a role in the management and facilitation of online courses. Chen, Boenink, and Guidry’s (2010) research revealed that there was a strong, positive correlation between the use of technology and engagement in online courses. As the use of applicable technology increased, so did student engagement. Students enrolled in online courses do not have the advantage of interacting in a face-to-face environment with their instructor and their peers; therefore, in online courses it is important that students have access to technological resources that aid them in collaborating and engaging with others in the course. Theme Three describes ways technology affected engagement, interaction, and collaboration in the computer applications course.

Theme Three’s emphasis on technology is connected to both Theme One and Theme Two. Findings in Theme One describe the assignments. Technology such as Blackboard and MyITlab was used to access and complete assignments in the course. MyITlab is an application created by Pearson that contains the course content. Theme Two describes how students used technology applications, such as Blackboard and email, that were already a part of the course to communicate with me and their peers. Theme Three emerged as students discussed how additional technological applications can be incorporated into the course. The category technological enhancements that affect engagement and interaction specifically describes ways in which real-time synchronous communication could be added to the computer applications course in order to improve collaboration, engagement, and interaction in the course.

*Technology enhancements that affect engagement.* In the computer business applications course, students were required to use Blackboard and MyITlab. Within MyITlab, students had access to videos, simulations, and instant feedback to submitted
assignments. Although students communicated with me, as their instructor, and their peers using the features in Blackboard and MyITlab, they consistently provided feedback that they desired more synchronous communications in the course. Regarding technology enhancements in the course, students reported the following:

Focus Group 5 – Student 15: I feel like that (GroupMe) would help because a lot of people are familiar with it and are comfortable using it.

Focus Group 2 – Student 8: I also like the whole GroupMe thing again because we could just text, instead of having to go on the discussion board because there’s a lot of times where I was working on the grader project where I was stumped. And I wanted someone like right there to help me with the question.

Focus Group 4 – Student 12: Maybe if we had a GroupMe with our discussion groups, it would be easier to quick fire questions that we had instead of having to go online on Blackboard for the discussion board.

The desire to have a synchronous application such as GroupMe was mentioned by students as a method to improve communications in the computer applications course. Students stated they were comfortable with using the technology and that they felt
incorporating the technology into the course would allow them to get faster responses to
their questions. Student feedback about the benefits of synchronous communication
coincides with the findings of Ko & Rossen (2010) who suggested that quick feedback
and frequent contact with students can help them manage their time and help them stay
engaged in the course.

Students also shared their desires to communicate using webcam and videos.
They felt that webcam and video technology could help them communicate better in the
course. Students responses about webcam and videos include:

Focus Group 1 – Student 2: I think it would be useful to add the use of
webcams or another way we can meet and
talk to others through video interaction. I
feel like that would be the best way to help
us get to know others.

Focus Group 4 – Student 13: I almost feel like it would be better off
taking a small sample of people in the class
for each chapter and having them do one
video. Everyone does a different video.
People who are really good at a specific part
of the course, can create a video and post it.
It would help if someone else is having
trouble in that part of the class. They can
explain it well and they can post the video.
Focus Group 2 – Student 6: I feel like it would have been nice and helpful to be able to do a video chat within our discussion groups. It's not just a discussion board but actual like conversation like a video chat with the people in our group and our classmates.

The desire to have access to technology that allows students in the computer applications course to work collaboratively using synchronous/real-time communication was a common suggestion students proposed when they were questioned about ways to improve the course. In multiple focus group interviews, students mentioned the desire to collaborate with their peers through technology. In focus group interviews students mentioned GroupMe, a group messaging application, video conferencing, video chats, and the use of webcams as means to increase collaboration and engagement. Student feedback about technology enhancements corroborates research by Baker (2004) who suggests instructors should integrate technological tools such as, instant messaging and virtual meeting software, to help foster immediate communication in online courses. The researcher emphasized that students feel more assured when they have someone on hand available to provide immediate, just-in-time support and answers. When instructors are more readily available to students, their availability increases instructor presence in the course and a strong instructor presence enhances student engagement in online courses (Lin, Zhan & Ren, 2016). Students in the course communicated that they wanted access to more tools that enabled them to effectively communicate and with others using
synchronous/real-time communication. Student 16 from Group 5 mentioned that the ability to meet other students in the course through a video would make the class more like a “real” class.

Student’s primary responses about the technology applications used in the course were focused on additions that could enhance communication in the course. Most students in the course responded positively to the current technology such as Blackboard and MyITlab that was used in the course; however, a few students did express frustrations with MyITlab, the course software that was used to access and complete assignments. A response from a student on the course survey stated that MyITlab was “difficult to use” while Student 3 from Group 3 expressed concerns with MyITlab not being compatible with MacIntosh computers. Student 15 from Group 5 suggested that a meeting be held at the beginning of the course to review the course software. Although technology can have an impact on engagement, it should not take away or be a barrier to student learning (Cuthrell & Lyon, 2007). In the computer applications course, responses from students indicate that in some instances MyITlab had a negative impact on learning and engagement.

**Chapter Summary**

The collection and examination of quantitative and qualitative data were critical in helping me to further the purpose of this action research study. This chapter presented qualitative data that were gathered by reviewing descriptive statistics from student optional and required posts on Blackboard. A Pearson product-moment correlation coefficient was computed to assess the relationship between final grades in the course and students’ postings on the discussion board. The final analysis of quantitative data
occurred with the review of the results of student responses on the OSE which was intended to measure student engagement in the course. Qualitative data were gathered through the use of open coding, descriptive coding, and structural coding from data that were transcribed and analyzed from student focus group interviews and a course survey completed by student. Three prominent themes that describe student experiences, preferences, and insights emerged from the analysis of the qualitative data. Both quantitative and qualitative research methods produced valuable information that will be critical to helping answer the research questions presented in this study.
CHAPTER 5

DISCUSSION, IMPLICATIONS, AND LIMITATIONS

The purpose of this action research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. This chapter discusses the findings from the quantitative and qualitative data and situates the findings within existing research literature and theories. The findings resulted from an analysis of discussion board posts, student final grades in the course, results from open-ended survey questions, student focus group interviews, and student responses on the Online Student Engagement Scale (OSE). The discussion of the findings, the implications of the findings, and the limitations of the study are discussed and examined below.

Discussion

In order to understand the findings of this action research study, it is important that the results focus on the purpose of the study and the research questions upon which the study was based. The findings from the research questions take into account existing research on methods that are used to encourage engagement in online courses and qualitative and quantitative data gathered during the course of the study. The findings from the study are explained in the four research questions discussed below.
Research Question 1 - Using the Online Student Engagement Scale, how do students enrolled in the computer applications course describe their course interactions and the effect that those interactions have on their engagement?

The Online Student Engagement (OSE) scale (Dixson, 2010) was chosen to help identify student behaviors because the scale was proven to be an effective and reliable tool to measure engagement in online courses. The OSE contends that student engagement consists of four factors: skills, emotional, participation, and performance. Results analyzed from student responses on the OSE are discussed below.

**Skills category.** The success of engagement and interaction in online courses has traditionally been assessed by three factors: learner-content interaction, learner-instructor interaction, and learner-learner interaction (Sher, 2009). Students’ interaction with the course content as described in the skills category is related to learner-content interaction. Learner-content interaction is essential because it forms the basis as to how students acquire knowledge, skills, and abilities (Dunlap, Sobel, & Sands, 2007; Miyazoe & Anderson, 2010). Students reported that they actively took steps, including studying and reading carefully, that enabled them to acquire the knowledge they needed to effectively learn the course material. Research by Zimmerman (2012) on learner-content interaction also concluded that students who spent time interacting with course content achieved higher grades than those who spent less time. Students’ willingness to spend time engaged in the course content aligns with their desire to get good grades in the course as reported in their responses in the performance category of the OSE that will be discussed later in this chapter.
The skills category reported actual behaviors of students and how they interacted with the course material. The category included items related to their study habits and their efforts to learn the course material. Behaviors included looking over notes, taking good notes from the chapter material, and being organized. Students reported that they were highly organized ($M = 4.17$), listened and read carefully ($M = 3.89$), and made sure that they studied on a frequent basis ($M = 3.59$). Their behaviors indicate they were engaged in the course material and that they put forth an effort in learning the content of the course.

**Emotional category.** Students responses in the emotional category demonstrate the importance of learner-content interaction and corroborates research by Martin and Bolliger (2018), who concluded that students are more engaged in course content that required them to apply what they were learning to real life situations. Students reported that content related to real-life circumstances encouraged them and enhanced their online learning experience. The emotional category focused on students’ responses about the relevancy of the course material. Student responses described what characteristics and interactions related to the course were important to them and what helped them become more engaged in the course. Items ranked high by students included putting forth a good effort ($M = 4.16$), finding ways to make the content relevant to their life and work ($M = 3.73$), and applying course material to my life and work ($M = 3.6$). Responses from students in the emotional category of the OSE align with qualitative data collected from focus group interviews with students enrolled in the computer applications course. The
qualitative data collected from students in interviews confirmed they were more engaged in the content of the course when they could relate to the subject. The qualitative data will be discussed later in this section.

**Participation category.** Students reported that interacting with their peers was important to them and that it enhanced engagement. Their views are related to the relevance of learner-learner interaction and its effects on engagement. Learner-learner interaction consist of students working collaboratively together, sharing knowledge and ideas, and motivating each other in an online environment (Chakraborty & Nafukho, 2014; Sher, 2009; Yılmaz & Karataş, 2018). Moreover, learner-learner interactions enhance mutually supportive relationships among peers, and according to Haythornthwaite, Kazmer, Robins, and Shoemaker (2006) and Kurucay and Inan (2017, the frequency of interactions between learners in online collaborative groups has been shown to have a positive effect on their perceived learning, achievement, and satisfaction with the course. These attributes enhance interaction and engagement.

Student responses in the participation category also corroborate research from the CoI in the areas of social and cognitive presence in online courses. Social presence is the ability to project one’s self as a real person and to establish personal and meaningful relationships; thus, it involves effective communication, open communication, and group cohesion (Breivik, 2016; Garrison, 2007). Social presence is an important aspect in the development of communities in online courses; therefore, it has a major impact on how students interact and engage in online courses. Social presence plays an important role in forming relationships with peers and is the basis for interaction in online environments. Shea, Li, and Pickett (2006) research confirmed that a high degree of social presence in
online courses is associated with students’ positive perceptions of their learning and their social interaction with their peers. Students in this study reported high levels of satisfaction with their online courses when they were socially active and participated in course activities and assignments. In the course, students reported they valued interacting with their peers. In interviews they stated, “I think the discussion board was a great way to promote student interaction throughout the course” and “the discussion board helped me relate to other students.”

Cognitive presence refers to the learner’s ability to construct meaning through critical inquiry and collaboration; thus, it involves moving from just simply understanding a problem or issue to integration, application, and resolution of the problem (Akyol et al., 2011; Garrison, Anderson, & Archer, 2001; Garrison, 2007; Garrison & Akyol, 2015). Cognitive presence affects student’s ability to use higher order thinking skills. Students enrolled in the course used higher order thinking skills when they responded to probing, content related questions on the discussion boards. For example, students were able to integrate and apply their own personal experiences to content, analyze the opinions of others, and use the information to resolve issues presented to them on the discussion board.

Finally, additional qualitative data from focus group interviews confirmed the impact that social and cognitive presence had in the course. The subcategory “Course Interactions and Engagement in Required Discussion Focus Groups” from Theme One: The Types of Assignments and How They are Structured Have an Impact on Student Engagement and Interaction describes the impact that interacting with others in the course had on students enrolled in the course. Students described experiences in
discussion forums that led to meaningful interactions with their peers, enhanced engagement, and situations that helped them to apply their skills to other experiences. Students explained that the discussion boards were a “good way for us to summarize the information we were learning and then share it with others.”

The participation category consisted of items related to students’ interaction with others in the course and the different methods they used to interact with others. The category consisted of behaviors such as the desire to help other students, participating in small group discussion forums, and posting in discussion group forums. Results demonstrated that students valued interacting in small group discussion boards (M = 3.6) and posting in discussion boards and forums regularly (M = 3.4). It was characteristic of students to enjoy helping fellow students in the course (M = 3.51); however, they also reported that getting to know other students in the course was not as important (M = 2.93).

Performance category. Research in online learning indicates a strong correlation between engagement and improvements in specific desirable outcomes, such as cognitive development, persistence, student satisfaction, and improved grades (Carini, Kuh, & Klein, 2006; Trowler, 2010). Interaction and engagement are influenced by the actions and behaviors of students. Students enrolled in the course reported it was important to engage in activities that have an impact on their grades in the course.

The performance category received the highest ratings from the OSE. The category measured students’ views of achievement in the course. Questions in the performance category focused on students’ desires to get good grades and perform well on assignments. Students reported that it was very important to them to get good grades
(M = 4.35) and to do well on tests and quizzes (M = 4.36). Their feedback corroborates the findings of Murray et al. (2012) whose research concluded that students tend to interact more with content they feel will help them obtain high grades in the course. Quantitative data collected from students’ activity on the course discussion board supports this idea. There was a positive correlation between final grades and required posts (r(160) = .59, p < .001).

Summary of research question 1. Student responses on the OSE along with additional qualitative and quantitative data collected from students enrolled in the course were essential in helping answer Research Question #1. Results from the OSE describe students’ course interactions and the effect that those interactions had on their engagement. Students reported that they were engaged in the course content and that they regularly studied and read course material. They also reported that they were highly engaged in course content when they worked collaboratively with their peers and when they were able to apply the course content to real-world situations. Getting good grades and doing well on assignments were also important to students. Their feedback aligns with research on learner-learner interaction, learner-content interaction in online courses and with the CoI’s emphasis on the importance of social and cognitive presence in online courses.

Research Question 2 - What recommendations and strategies do students have for faculty that they perceive will increase their engagement and performance in the course?

One of the main objectives of this action research project was to obtain direct feedback from students about their experiences in the computer applications course. Their
recommendations about how the course can be improved was vital in meeting this objective. Students provided feedback about how current methods in the course affected engagement and they also made recommendations about additional strategies that they thought could be incorporated in the course to improve engagement and interaction.

**Authentic, real-world content.** Students suggested that the course should include authentic content that is relevant to real-world experiences. Students consistently replied they were more involved and engaged in authentic assignments where they were required to perform and apply course content to their careers and real-world experiences. Students reported that content related to real-life circumstances encouraged them to think and apply course content and it enhanced their online learning experience. Quantitative data from student responses in the emotional category of the OSE align with qualitative data collected from focus group interviews with students enrolled in the computer applications course. **Theme One: The Types of Assignments and How They are Structured Have an Impact on Student Engagement and Interaction** emerged as students explained how assignments were more engaging when they could relate the material to real-life or to their careers. In focus group interviews, students stated how they felt assignments were most helpful when they could apply them in a “real-life” career. Students expressed that the assignments made them “think” because the assignments were perceived as the “most realistic.” Student reported behaviors support the CoI framework that emphasizes learners should be introduced to content that allows them to construct meaningful experiences in online courses (Garrison & Archer, 2010). Students in the course
specifically shared the required discussion forums on Blackboard allowed them to work together, share information, and analyze and evaluate opinions and ideas submitted by their peers.

**Required group discussion boards.** Students also cited the required group discussion board forums as being an effective means of incorporating authentic relevant content into the course. Student feedback about the discussion forums relate to Theme One: *The Types of Assignments and How They Are Structured Have an Impact on Student Engagement and Interaction*, because their feedback explains how participating in the forums impacted their engagement in the course. On the OSE emotional category students reported that they were more engaged in the course when they could find ways to make the course interesting, relevant, and applicable to their life or work. Student feedback and recommendations are similar to research on learner-instructor interaction that states instructors should invest efforts in designing assignments that are relevant to “students' real-life experiences, creating rich environments for interaction, and providing flexibility by fostering self-paced learning” (Jin, 2005, p.66). Maintaining student discussion boards in the course was recommended by students because they felt that the discussion boards did enhance engagement.

**Different methods of communication with the course instructor.** Another recommendation that students suggested would improve interaction and engagement in the computer applications course was that the course should employ different communication methods in order to facilitate interaction and engagement. According to students, engagement and interaction were positively influenced in the course when they effectively communicated with me, as their instructor, and their peers through different
communication methods. Qualitative data that emerged from Theme Two: The Management and Implementation of Different Methods of Communication Play an Important Role in Interaction and Engagement explained the importance of communication in the course. Students said communicating with me, as the instructor, through the weekly newsletter and the optional question-and-answer discussion board was important to them. They stated:

I read the newsletter every single week. I thought it was extremely helpful because it laid out the guidelines of what was going on for the week. It explained how you could prepare yourself properly to do well for what was upcoming for the week.

They also said my communication with them on the discussion board was effective because:

any questions that any other students had that I had the same question. I could see your response and that really helped a lot because if any other student had the same problem as me, I can just see how you responded to them.

Student feedback about the methods they used to communicate and interact with me supports research by Garrison and Akyol (2015) who explained teaching presence significantly enhances students’ perceptions about learning and is a significant factor in constructive and active engagement behaviors. Furthermore, Zhang, Lin, Zhan and Ren’s (2016) research revealed that teaching presence has a definite impact on students’ engagement behaviors. Teaching presence not only significantly enhances students’ perceptions about learning, but it also is a significant factor in influencing activities that are considered to be constructive in actively engaging students in online courses (Zhang
et al., 2016). According to students in the course, effective communication between them and I, as their instructor, improved engagement in the computer applications course.

**Communication with peers on the discussion board.** Establishing methods for students to effectively communicate and interact with each other in the course was a recommendation that students thought would improve engagement in the computer applications course. As described previously, the discussion boards served to support student interaction. Students expressed, “the discussion board is a good tool to ask other students questions and interact with the students in discussing concepts and ideas.” Their feedback aligns with previous research by Dixon (2010) and Shea (2015) who emphasized that student-student and instructor-student communication is strongly related to higher student engagement in online courses. According to students, the use of various communication channels, such as the discussion boards, should be maintained in the course because it positively affected engagement.

**Real-time, synchronous communication.** Although students reported that incorporating different modes of communication in the course positively influenced engagement, they also articulated that communication was negatively impacted due to the time delay in receiving responses from me and their peers. Due to the delay in receiving responses from me and their peers in the course, students suggested incorporating different types of real-time communication into the computer applications course. Students suggested using applications such as GroupMe, an instant messaging application, webcams, and live video conferences. Students in the course expressed that an instant messaging tool would make it “easier to quick fire questions” without having to “wait for a reply.” Students also said this type of tool would eliminate “having to go
into Blackboard” because that was more difficult and time consuming. They also expressed how instant messaging could provide them almost real-time support as they were working on an assignment and became “stumped” and just wanted someone right there to help with their questions. Furthermore, in focus group interviews, students expressed as desire to have a “video chat within our discussion board.”

The integration of several types of real-time communication tools have been accessed in prior studies. Researchers, such as Baker (2004), suggested instructors should integrate technological tools, such as instant messaging and virtual meeting software, to help foster immediate communication in online courses. Nitza and Roman’s (2016) research encouraged the use of instant messaging apps such as GroupMe. Their research found this tool could enhance relationships between instructors and students by reducing the transactional distance by providing quick message communications between the two. Furthermore, Bailey and Card (2009) suggested instant messaging tools can support engagement, timeliness, and communication by providing immediate connections to course discussions that enhances a student’s ability to ask questions and share information and ideas. In order to access real-time communication, the students’ indicated the need to include real-time synchronous communication tools into the course.

*Effective integration of technology* While students did communicate the importance of technology in the course, especially when it came to communication, they also emphasized that the technology in the course should not negatively impact their learning experiences. A few students in the focus group interviews did express frustrations with MYITLAB, the course software that was used in the course to access and complete assignments. A response from a student on the course survey stated that
MyITlab was “difficult to use” while another student expressed concerns with MyITlab not being compatible with Macintosh computers. Conclusions from research by Cuthrell and Lyon (2007) is of the same opinion as students. They state that although technology is important to engagement, learning how to use technology to complete assignments should not take the focus or energy off learning the content of the course. Student recommendations about technology in the course lead to the conclusion that technology should enhance not take-away from engagement.

**Summary of research question 2.** Students in the computer applications course made several suggestions as to how they thought the course could be improved. They expressed they were more engaged in the course when course assignments related to their real-world experiences. Collaborating and discussing course content with their peers on the discussion board was also very important to them. Students in the course focused on the different communication channels utilized in the course and stressed their desire to have the ability to communicate using different methods. They specifically expressed the use of technology that allows for synchronous communication would be an added benefit to the course.

**Research Question 3 - How does the way Blackboard content is managed and facilitated affect interaction and the engagement of students enrolled in the course?**

Blackboard was the course management system used in the computer applications course. Blackboard housed all course materials, including the course syllabus and schedule, students’ grades, access to MyITlab, and the course optional question-and-answer and required group discussion boards. One method used to analyze engagement and interaction in the course was to review and summarize posts students made on the
discussion boards in Blackboard. Students engaged in the course by posting on an optional question-and-answer discussion board and by interacting with peers on required discussion boards.

**Required discussion board posts.** The required discussion board mandated that students post a response to a content related question and then also examine and analyze the response of two of their peers and post a response to them. Quantitative data collected from the discussion board posts revealed that there were more required posts \( M = 15.4 \) than there were optional posts \( M = 1 \). This finding is not surprising. When students know that their grades can be affected by their participation they are more likely to post on discussion boards (Martyn, 2005; Ringler et al., 2015). As discussed earlier, students reported in the performance category of the OSE that getting a good grade was important to them, so it would be expected that they would contribute to the required discussion boards because the decision to participate or not to participate would have an impact on their grades. Research by Murray et al (2013) confirms students tend to interact more with course content they feel will help them obtain higher grades in the course.

The frequency data collected from the optional and required discussion boards are important factors to consider when analyzing how the way Blackboard content is managed and facilitated affects engagement and interaction. Requiring students to participate in course discussion was a critical factor in engaging students in the course. According to Dixson (2010):

Instructors should consider assignments in which students interact with each other and the content of the course. Instructors need to create not just opportunities for students to interact, but the requirement that they do so. Students who are working
on group projects together, doing peer review of one another’s papers, interacting within a discussion forum on a particular topic, are likely to feel more engaged in the course. Simply offering the opportunity i.e., having an open discussion forum where they can (but are not required) to participate, is probably not enough. (p.8) Hew et al., and Ng’s (2010) research corroborate these findings. Their research found that when posting on discussion boards was voluntary, there was a low amount of participation by students. In the course Blackboard discussion boards were designed and managed in a manner that required students to actively participate in the course. Student participation in the required discussion forums were mandatory and their participation was a part of the grade for the class. Students’ active participation enhanced their engagement in the course. Students expressed “group discussion made me think and reflect.” Providing a way for students to actively work together in small groups was also cited as a mean to enhance engagement and interaction.

**Peer feedback.** The requirement that students not only respond to discussion board forums but that they respond to posts of their peers is another factor to consider when analyzing the impact that the management and facilitation of the discussion boards had on engagement. In order to get full credit for their required posts, students had to reply to two of their peers. Students were instructed to reply with reflective, engaging, and meaningful posts. Peer review on discussion boards in online courses has shown to promote a strong learning community (Molseed, 2011), encourage students to analyze and improve their own work (Pope, 2001), and encourage the use of higher order thinking skills and critical thinking skills (Ertmer, 2007; Liu, Lin, Chiu, and Yuan, 2001). These factors lead to a more engaged and active student.
Students in the computer applications course described their peer interactions on the required discussion forums as being engaging when they were able to “share” information with other students. They also described how the peer feedback affected their own learning. They expressed they were “able to understand form other “students’ perspectives” and sometimes seeing responses from someone else was “helpful in coming to understand the material more.” Student feedback in the course was consistent with research by Ertmer, Richardson, Belland and Camin (2007) who asserted, “asking students to provide constructive feedback to each other, instructors are inviting them to participate in each other’s learning and thus achieve greater understanding and appreciation for their peers’ experiences and perspective” (p.415). Allowing students to interact with their peers in the course through peer feedback on the discussion boards encouraged learner-learner interaction and also provided a means for students to engage with the course content.

Instructor interaction on the discussion board. Instructor interaction on the required discussion board forums was another influential aspect of the facilitation and management of the discussion boards. While learners reported that interaction on the discussion board with their instructor was an important form of communication (Blignaut & Trollip, (2003) and, An, Shin, and Lin’s (2009) research found that students more freely expressed their thought and opinions on discussion boards when instructor participation was limited. I applied a constructivist approach to learning. In a constructivist approach to learning, the role of the instructor is to provide guidance and facilitate learning (Brown, 2014); thus, total dependence on the instructor in a constructivist environment is discouraged. Rather students are encouraged to be
independent learners and are urged to collaborate with their peers (Rovai, 2004). I, as the instructor, had limited participation in the group discussion boards. I posted relevant, thought provoking, content related questions and provided directions and procedures to students about how to post on the discussion board and procedures and guidelines on what was expected in their replies to their peers. I also read student posts and feedback to ensure that they were relevant and in line with the directions I posted. By giving students control of their posts and discussions on the discussion board, I allowed students to direct their own learning. They were provided the opportunity to reflect, analyze, and comment on the work of their peers. Moreover, students were encouraged to actively collaborate and interact with their peers in order to make their learning relevant and engaging.

Research by Gazi (2009) emphasized that a constructivist approach to learning encourages students to take responsibility of their learning, enhances group collaboration and interaction, and fosters an atmosphere of active learning. As the instructor of the course, I was available to answer questions and provide feedback to students on the discussion boards; however, I did allow students to have some control of their own learning processes. These factors served to improve and enhance engagement in the computer applications course.

**Summary of research question 3.** In the course the discussion board was a common method used to allow students to interact with me, as their instructor, and with their peers. Effectively managing and facilitating the discussion board had an effect on engagement in the course. Based on prior research, several strategies and methods were used to encourage participation on the discussion board. Procedures in the course encouraged interaction by requiring that students post on the discussion board forums and
that they provide feedback to their peers. In addition, as the instructor of the course, I allowed students to direct their own learning by only having limited involvement in their interactions on the discussion board.

**Research Question 4 - Is the frequency of discussion board postings related to engagement or performance in the course?**

When students are required to participate on discussion boards, the frequency of posts on the discussion board increases (Hew et al., & Ng, 2010) and engagement in the course increases (Birch & Volkov, 2007). Moreover, students who posted on the required discussion forums in the course had higher final grades in the course. Student behavior in this area was not surprising because responses from students in the performance category of the OSE indicated that students were more engaged in assignments that affected their grades in the course. Furthermore, when students actively engaged on the required discussion boards, they were required to respond to the question posted, analyze the posts of their peers, and respond with constructive feedback. These actions were effective in motivating and engaging students. Online peer feedback and review helps students perform better in courses, display higher order thinking skills, and assists in planning, and regulation (Liu, Lin, Chiu, & Yuan, 2001). A study by Lin et al. (2001) concluded students perceived peer feedback as being effective in motivating them to learn. In the computer applications course, quantitative data confirmed that when students interacted and engaged in the required discussion board forums, their final grade, which included required discussion board posts, quizzes, and grader assessments was positively affected ($r(160) = .61, p < .001$). So, as the number of required posts increased, the final grade did as well. This confirms research by Zimmerman (2012) and Xiao
(2017) who concluded that learners who have a high degree of interaction with the course content achieve higher test success in online courses. A significant positive correlation was also found between the final grade and total posts, \( r = .59, p < .001 \), but this was expected given the very small number of optional posts.

**Chapter Summary**

Four questions were used to examine and evaluate the strategies and methods that were used to improve interactions and engagement of students enrolled in a computer applications course. Findings from quantitative and qualitative data, student responses from the OSE, interviews with students, open-ended surveys, and the analysis of discussion board posts and final grades of students in the course were collected to help answer the research questions. Collectively these data, along with research literature on engagement and interaction in online courses, served to provide answers and explanations to the research questions. The findings revealed that multiple factors including student behaviors, student preferences, technology, learner-content interaction, learner-learner interaction, learner-instructor interaction, and social and cognitive presence all played impactful roles in student engagement and interaction in the course.

**Implications**

The findings of this research study has several implications that can be useful to me and other instructors who teach the computer applications course at the university where I work. The interpretations of the study focus on the following implications: a) personal implications; b) recommendations for course design, c) recommendations for implementing technology that fosters improved communications, and d) recommendations for managing and facilitating discussion boards. The implications are
important because they describe how the findings from the study can potentially affect engagement and interaction in online courses.

**Personal Implications**

Throughout this research project, I have been exposed to several different aspects of the educational research process. The exposure and experience that I have gained have had a positive impact on my professional development and teaching methods. As a result of conducting this research project, I have acquired a better understanding of a) the impact of qualitative data, b) the impact of research literature in online engagement, and c) the importance of sharing and communicating my findings.

**Impact of qualitative data.** The goal of action research is to assist in improving the professional judgement of the researcher and to provide insight on how the researcher can achieve educational outcomes (Mertler, 2017). The goal of this action research project was to improve curriculum and to uncover meaningful practices and strategies that would be beneficial to me and my students. Throughout this endeavor, I was able to gain a better understanding and appreciation of the qualitative method of collecting and analyzing data. While the quantitative data did provide critical information about student behavior in the course, I believe that the qualitative data provided a more in-depth insight of students’ perceptions, attitudes, and beliefs about engagement and interaction in the course.

I chose to use focus group interviews to collect some of the qualitative data. I chose this method because focus group interviews allowed for the stimulation of new ideas, facilitation of in-depth discussions, and the promotion of interaction among the students in the course (Freeman, 2006; Krueger & Casey, 2015). In the focus group
interviews, I could follow-up with student responses and ask that they explain their responses in more detail. I could also probe students to think deeper about their responses which helped provide more meaningful information. Students were also able to respond to the opinions of others in their groups, which allowed for in-depth conversations and reflections about the course. Using a constant comparison method to analyze the responses from students, I was able to uncover themes that were not readily apparent through just the reading of transcribed student interviews. This analysis helped me to better understand student’s experiences in the course and it assisted me in developing ways to improve their experience in relation to engagement and interaction.

**Impact of research literature in online engagement.** Participating in research on engagement in online courses was also very personal to me because it provided an opportunity for me to increase my knowledge about the research literature that is available on the subject. I teach several online courses and the knowledge that I acquired through this research journey will have an impact on how I manage and facilitate all my online courses. Specifically, I learned about the impact of having a well-balanced course that allows for learner-learner, learner-content, and learner-instructor interactions. Having a well-balanced course that contain these features is important in online learning environments because prior research demonstrates when these interactions are present, learners experience higher satisfaction levels with the course, have higher learning outcomes, and are more active and engaged in their coursework (Lear, Ansorge, & Steckelberg, 2010; and Sher, 2009). Furthermore, I was exposed to the CoI framework that focuses on collaboration and the promotion of deep and meaningful learning in the online environment through the integration of social presence, cognitive presence, and
teaching presence (Garrison & Archer, 2010). These factors will have an influence on how I design and implement teaching strategies in the computer applications course and on my future teaching experiences in online courses.

Sharing and communicating my findings. Researching, analyzing, and reporting on engagement in the computer applications course was an experience that I shared with my colleagues. I along with another instructor teach two sections of the course. The ability to share my findings with my colleagues and the other instructor for the course was one of the many advantages of conducting action research. My findings directly impacted the course we teach and they empowered us to make changes that would benefit our students. We discussed ways to make the discussion boards more impactful and meaningful, such as providing content that requires students to apply what they are learning in class to real-life situations, since students shared positive experiences about this aspect of the course. We also were able to brainstorm about the types of technology that could be introduced to enhance communications in the course, such as technology that allows for real-time synchronous communication. This action research will have long-term positive effects on how we move forward as we strive to include assignments, experiences, and methods that impact engagement and interaction in the course.

Recommendations for Course Design

Prior research on engagement and interaction in online courses advocates that courses should be designed so that learners feel the presence of their peers and their instructors in the course (Liu, Gomez & Yen, 2009; Richardson & Swan, 2003; Shea, Li, & Pickett, 2006; Zhang et al., 2016) and whereby course content is based on real-world
applications that can be applied to classroom practice (Britt, 2015; Jin, 2005; Siragusa, Dixon, & Dixon, 2007). Also, prior research emphasizes the importance of social presence, teacher presence, and cognitive presence and the need to create learning environments where learners are provided opportunities to interact with their peers, instructor, and the content of the course. This action research study’s focus on engagement in online learning revealed that students were more engaged in the course when there were strategies and methods in place that enabled and reinforced these types of interactions; therefore, it is recommended that the course be designed so that learners have opportunities to interact with other learners, the instructor, and the content of the course.

**Designing for learner-learner interaction and social presence.** Cho and Cho (2016) and Shackelford and Maxwell’s (2012) research on effective strategies that enhance learner-learner interactions implies that instructors play vital roles in fostering these relationships. The authors’ findings conclude that instructors should design online courses in a manner that requires student collaboration and interaction. In addition, the CoI emphasizes a high degree of social presence in online courses is associated with students’ positive perceptions of their learning and their social interaction with their peers (Shea, Li, & Pickett, 2006). The design of the computer applications course modeled the CoI’s recommendations by incorporating strategies where students felt the presence of their peers. Students felt the presence of their peers on the discussion boards and reported that they enjoyed “interacting with other students discussing concepts and ideas.” They also emphasized that interacting on the discussion board was “a good way for us to understand the information from other student’s perspectives.” Also, student responses on
the OSE’s performance and participation categories confirmed that students in the course valued engaging with their peers on the discussion boards. Recommendations will be made later in this section on how discussion boards can be designed to increase engagement in the course.

This action research project confirmed that providing opportunities for students to interact with others in the course is a design strategy that should continue to be implemented in the course because it does positively affect student engagement. Interaction between peers was accomplished through the use of discussion boards. Discussion boards should continue to be used in the course in order to facilitate and encourage interaction and establish social presence. This interaction enabled students to share information with one another, analyze and critique other student’s work, and improve their own work.

**Designing for learner-instructor interaction and social presence.** My presence in the course and student’s reaction to my presence aligns with research by Zhang et al. (2016) who asserted that teaching presence has a definite impact on student engagement behaviors. Findings from their studies emphasized that teaching presence not only significantly enhances students’ perceptions about learning, but it also is a significant factor in influencing activities that are considered to be constructive and active engagement behaviors. These interactions are essential because when they are present in the course, they significantly improve students’ learning, course satisfaction, and confidence (Kang & Im, 2013), and they enhance the overall learning experience by positively influencing satisfaction, retention, and learning outcomes (Liu, Gomez & Yen, 2009; Richardson & Swan, 2003; Shea, Li, & Pickett, 2006).
Instructor presence in the computer applications course was influential in engaging students in the course. In group interviews, students reported that they communicated and interacted with me, their instructor, through emails, discussion boards, and weekly newsletter communications. In the focus group interviews, one student mentioned, “I think for me personally, the interaction with the professor is probably the most important part of the course.” Students cited activities such as optional question-and-answer discussion boards that I facilitated were helpful.

In order to enhance engagement in the computer applications course, I recommend the design of the course should continue to include opportunities for effective, meaningful interactions between instructors and peers. Recommended interactions include discussion boards where instructors provide answers to student’s questions and concerns. These discussion boards should be public so that students can view the questions of their peers and also view my reply. I also recommend that course interactions be prompt and frequent. Student persistence is positively impacted when they receive frequent and prompt feedback from their instructor (Lee & Choi, 2011). The instructor’s ability to provide prompt and frequent feedback helps students feel more assured because they know someone is available to provide prompt support and answers. When instructors are more readily available to students, their availability increases instructor presence in the course and a strong instructor presence enhances student engagement in online courses (Lin, Zhan,& Ren, 2016). In the course, the weekly newsletter, in addition to the question-and-answer discussion boards, were methods implemented in the course that provided frequent and prompt communication between me and learners in the course.
Designing for learner-content interaction and cognitive presence. Students who report a high degree of interaction in online courses have higher satisfaction levels with the course, have higher learning outcomes, and are more active and engaged in their coursework (Cho & Cho, 2016; Kang & Im, 2013; Lear, Ansorge, & Steckelberg, 2010; and Sher, 2009). Moreover, research literature on learner-content interaction concludes that course content should be based on real-world applications that can be applied to classroom practice and should include activities that require subject mastery and higher order critical thinking skills (Britt, 2015; Jin, 2005; Siragusa, Dixon, & Dixon, 2007; Murray et al., 2013). Developing a cognitive presence is vital if online courses are to provide students with the opportunities to apply high order thinking skills such as analysis, evaluation and synthesis. Darabi, Arrastia, Nelson, Cornille, and Liang (2011) asserted that a scaffolding strategy where teachers ask probing questions on discussion boards and require student response is an effective method to establish cognitive presence.

Throughout this action research project, student feedback on how the content of the course affected their engagement was consistent. Student feedback on the OSE and their responses in focus group interviews all focused on their desire for course content, assignments, and activities to be authentic and focused on real-world application. Student questions on the OSE related to a) finding ways to make the content relevant to their lives and work and b) applying course material to their lives and work, received high scores which indicated these tasks were important to students. In group interviews, students said, “The group discussion forums have made me think about what we are learning and how it applies to real-life situations.” They also stated, “I feel like the grader projects are
things I could use in my real-life career.” Student’s interactions with the course content are consistent with prior research on the importance of learner-content interaction and establishing cognitive presence in online courses.

Based on research on learner-content interaction and cognitive presence, feedback from students in the course, and student behaviors in the course, I recommend that the design of the course should continue to focus on providing assignments and activities that create valuable learning experiences through the effective application of learner-content interaction. MyITLab grader projects or similar projects that require students to use higher order thinking skills, such as application, evaluation, and synthesis to solve real-world authentic problems, should be maintained in the course because they influence the establishment of cognitive presence. In addition, students should continue to be required to participate in group discussions that are relevant to “students' real-life experiences and that create rich environments for interaction” (Jin, 2005, p.66). When students can make real connections with the assignments, they are more likely to be engaged in the course; thus, assignments that focus on real-world, authentic situations have proven to be effective in improving learner-content interaction in the course.

**Recommendations for Implementing Technology That Foster Improved Communications**

Research by Chen, Boenink, & Guidry (2010) revealed that there was a strong, positive correlation between the use of technology and engagement in online courses. As the use of applicable technology increased, so did student engagement. The use of
technology was an important aspect of student success in the course. Students were required to be able to use Blackboard and its components and they were required to be able to use MyITLab.

A surprising outcome of this action research project was that students placed more concern and emphasis on communicating using technology rather than the technology tools themselves. Students in the course had strong opinions and recommendations about how to improve engagement in the course through the use of technology. Specifically, they wanted to have access to technology that allowed synchronous real-time communication. One student explained that they were part of a generation that was used to “instant gratification.” Students in the course desired to have access to instant messaging tools, such as GroupMe, and real-time video interactions that would aid them in effectively communicating with me and their peers.

In order to facilitate and enhance the communication process in the computer applications course, I recommend that instructors find a balance between technological tools that can aid in asynchronous and synchronous communications. Synchronous communication can provide the quick feedback that students desire. In fact, quick feedback and frequent contact with students can help them manage their time and help them stay engaged in the course (Ko & Rossen, 2010). Adding communication tools such as GroupMe and video conferencing through Blackboard Collaborate to the course could serve to meet this need. Prior research has shown that these types of synchronous tools can foster immediate communication in online courses (Baker, 2004), enhance relationships between instructors and students by reducing the transactional distance (Nitza & Roman, 2016), and can support engagement, timeliness, and communication by
providing immediate connections to course discussions (Bailey & Card, 2009). While the benefits of the use of technology that aids in synchronous communication have been established, the benefits of technological tools that support asynchronous communication must also be taken into account.

The computer applications course is a very large class with more than 160 students per section. It is very challenging to manage the communication process strictly through the use of one type of communication channel. Instructors who teach the course must balance the use of technology that aids in both synchronous and asynchronous communication and must be able to appreciate the benefits of both types of communication. Conclusions by several researchers imply that there are benefits to implementing both synchronous and asynchronous communication methods in online courses. Johnson (2006) found that asynchronous communication methods in online courses, such as physically writing on discussion boards, provides a “retraceable backlog of constructed knowledge” and supports the development of high-order thinking skills through the use of writing and enhanced reflection time, while synchronous communication supported social processes in online courses. Research by Giesbers, Rienties, Tempelaar, and Gijselaers (2014) found that when students did engage in synchronous communication methods such as video conferences, the quantity and the quality of their asynchronous postings improved in quantity and quality. Furthermore, findings by Grant and Cheon (2007) asserted that students valued the convenience and flexibility of video conferences. Their research concluded that video conferences captured student’s attention, provided a mean for immediate feedback, and enhanced critical thinking.
In order to effectively use technology to meet the needs and preferences of students who desire real-time communication and to effectively utilize the benefits of technology that support both asynchronous and synchronous communication, instructors in the course should use multiple technology tools and applications. These multiple forms should include asynchronous communication, such as email and postings on Blackboard, and synchronous communications, such as GroupMe and video conferencing, that provides real-time communication.

**Recommendations for Managing and Facilitating Discussion Boards**

Mandatory and optional discussion board posts in the computer applications course provided ways for students to interact with me as their instructor, and their peers and they provided students exposure to the course content. These interactions encouraged learner-learner interaction, instructor-learner interaction, and learner-content interaction. They also enhanced social presence in the course. By their design, discussion board posts require learners to put their ideas and thoughts into word and build upon these ideas when they share information, reply to responses from others, and evaluate the work of their peers (Rovai, 2004). Discussion boards support the constructivist view of learning because they allow students to construct knowledge by interacting with others and sharing their personal experiences and ideas (Jonassen, 2007; Miller-First & Ballard, 2017). Based on prior research on online discussion boards and student responses during this study, I recommend three strategies regarding managing and facilitating discussion boards in the course. The strategies are a) posting and responding on discussion boards should be mandatory and grades should be assigned to the posts, 2) discussion board
assignments should be related to course content and real-world outcomes, and 3) instructor participation on the discussion boards should be limited.

**Mandatory participation and grading on discussion boards.** In order to ensure participation in discussion boards, students should be required to participate in them (Martyn, 2005). Hew et al., and Ng (2010) research revealed that when posting on discussion boards was voluntary, there was a low amount of participation by students. This is corroborated by the overwhelming differences in frequency of required and optional posts in the course. Moreover, Birch and Volkov’s (2007) research demonstrated that students reported they were more engaged when they were required to post on discussion boards. Their motivation to actively engage in the course discussion boards can be related to students knowing that their grades will be affected by their participation; thus, assigning grades to discussion board posts motivates students to participate (Martyn, 2005; Ringler et al., 2015; Ravia, 2006). Moreover, students tend to participate in the discussion boards when they feel participation will help them obtain high grades in the course (Murray et al., 2013). This behavior was evident in the course. Students reported on the performance category of OSE that it was important for them to engage in activities that have an impact on their grades in the course. Quantitative data also confirmed this behavior in the course because the frequency of required discussion board postings was positively correlated with students’ final grades in the course.

Not only should students in the course be required to post on discussion boards, but they should also be required to critically analyze and respond to the post of their peers. Peer review on discussion boards in online courses has shown that it promotes a strong learning community (Molseed, 2011), encourages students to analyze and improve
their own work (Pope, 2001), and encourages the use of higher order thinking skills and critical thinking skills (Ertmer, 2007). Furthermore, Hew and Cheung’s (2011) research revealed that higher level knowledge construction occurred when peer evaluation was present on discussion boards. Students responses in the focus group interviews corroborate the researcher’s findings. Students reported the discussion board allowed them to “understand (information) from other student’s perspective,” “share information,” and provided a “better understanding of the material.”

Content related to course objectives and real-world outcomes. Effective facilitation of discussion boards entails designing experiences for students that allow them the opportunity to apply course content rather than just provide general reflection of the content (Ringler et al., 2015) When instructors in the computer applications course design discussion boards, content for discussions should be based on course objective and unit outcomes. Students should be provided opportunities to demonstrate they can apply what they are learning in the course. In all the group interviews and on the emotional category of the OSE, students consistently desired to engage with course content that was meaningful and real-world. Problem-based, project-based, and debate prompts emerge as strategies that can be implemented on discussion boards in the course to help facilitate real-world, authentic scenarios that improve interaction and engagement (DeNoyelles, Zydney, & Chen, 2014). These assignments would require that students are presented with a problem and that they would have to collaborate with their peers, use high order thinking skills, and apply knowledge of the course content in order to solve the problem, complete the project, or effectively debate with their peers. After all, the objective of the course is for students to be able to comprehend the course content and also be able to
apply the information they have learned to different scenarios and future problems they encounter.

**Limited instructor participation on discussion boards.** Teaching presence is a critical aspect of engagement in online courses. In fact, teaching presence significantly enhances students’ perceptions about learning and is a significant factor in constructive and active engagement behaviors (Garrison & Akyol, 2015). Although the overall effect of teaching presence in online courses has been established, prior research on teaching presence and instructor participation on discussion boards is not consistent and varies across different research studies. Hew’s (2015) findings asserted that students preferred discussion boards to be facilitated by instructors instead of their peers, and Blignaut and Trollip (2003) findings recommended that online instructors should increase their participation in online discussion boards. In contrast, Fauske and Wade (2003) reported that students favored not having instructors highly involved in discussion boards, and An, Shin, and Lim (2009) encouraged limited instructor participation on discussion boards because they found when the instructor’s intervention was minimal, students tended to more freely express their thoughts and opinions.

In the computer applications course, my role on the required discussion boards was to provide prompts that encouraged students to critically analyze and evaluate scenarios related to course content and to reply to the responses of their peers. I did read the posts of students in the course and only participated in the discussion forums to encourage students to expand on their ideas, check for understanding, and to highlight the responses of those students whose ideas added insightful and extraordinary information to the discussions. My goal was not to dominate the conversations on the discussion
board but rather to encourage students to direct their own learning through the exchange of ideas and intellectual stimulation. My role on the discussion board was guided by prior research mentioned above (i.e. An, Shin, & Lim, 2009 Fauske & Wade, 2003), research from the CoI framework, and the constructivist view of learning. The CoI framework and the constructivist views suggest that an instructor’s role is to assist students in the learning process rather than to direct all aspects of their learning (Garrison, 2007; Kerr, 2009; Swan et al., 2009). My presence in the course was more prevalent in communications with students via email, the weekly newsletters, and on the optional question-and-answer discussion boards.

Instructors should interact with students in the computer applications course, and they should establish social presence in the course; however, I recommend that their presence on required discussion boards be limited and should allow students to engage in methods that direct and facilitate their own learning. Instructors should participate in the discussion boards to prompt students to expand on their ideas, encourage student participation, establish goals of the discussion, set rules for interactions, and specify deadlines for posting (DeNoyelles, Zydney, Chen, 2014; Rovai, 2007). When instructors in the course allow students to be active participants in their own learning, students rely less on the instructor, but are provided opportunities to learn and engage with their peers.

**Implications for Future Research**

The data and findings in this study were focused on ways the computer applications course could be improved from student’s perspectives and experiences. While student-reported behaviors, experiences, and recommendations were critical in assessing strategies and methods that could be used to improve the course, the addition of
instructor experiences and recommendations could also have contributed to research in online engagement (Chakraborty & Nafukho, 2014). Experienced online instructors could have shared with me the challenges they face in engaging students and they could have provided strategies and methods that they have found were successful in overcoming these challenges.

A review of qualitative studies of instructors who teach online courses summarized that their feedback and recommendations can be crucial in providing direction and best practices for improving online education (De Gagne & Walters, 2009). Researchers claimed that the effective use of discussion boards (De Gagne & Walters, 2009) and the use of case studies (Gudea, 2005; Turner, 2005) were effective because they offered the opportunities for students to be exposed to real-life examples that promote active learning by drawing student interest and motivation. Methods, such as providing relevant and authentic course material, the use of multimedia resources, the use of student created digital content, the inclusion of student-reflection assignments, and providing clarity and transparency in course design are ways the discussion board can be used effectively (Kumar, Martin, Budhrani, & Ritzhaupt, 2019). Ultimately, it is suggested that instructors should design learner centered courses that engage students (Serwatka, 2005) as early as possible and keep them engaged throughout the course (Angelino, Williams, & Natvig, 2007). If experienced online instructors would have been interviewed for this study, they could have provided valuable feedback, just as students did, on how engagement and interaction could be enhanced in the course. The addition of this data could have helped provide a more balanced view on how to improve engagement in the course.
Further research is also needed in the area of facilitation strategies in asynchronous discussion forums that will motivate students to participate in the discussions (Dringus, Snyder, & Terrell, 2010). Facilitation strategies focused on allowing students to anonymously post on discussion boards is warranted. Roberts and Rajah-Kanagasabai (2013) asserted that instructors should allow anonymous postings on discussion boards as a mean to increase student engagement because anonymous postings reduce the effect of self-consciousness and the fear of negative evaluation.

Future research on anonymous postings on the discussion boards could help determine if more students would actively engage on the discussion boards if their posts were anonymous. Research findings presented in this action research study revealed that participating in discussion boards did have a positive effect on engagement and on student’s grades. The study found that students posted more on required discussion boards than they did on optional question-and-answer discussion boards. If self-consciousness and fear of negative feedback are indeed reasons students do not post on discussion boards, then future research to determine if the ability to post anonymously on discussion boards would increase the frequency of postings is needed. The findings from the research could help instructors make decisions about facilitating discussion boards in a manner that would allow for anonymous postings.

Furthermore, research has shown that getting good grades motivates students to participate in discussion boards (Murray et al., 2013). Students will participate in activities that they feel will have an effect on their grades (Martyn, 2005; Ringler et al., 2015). Further research on the effect of assigning extra credit or bonus points for participating in optional discussion boards is warranted.
Limitations

This action research project was designed to utilize the most appropriate research methods in order to reveal ways that could improve engagement in the computer applications course; however, some limitations of this study should be noted. The limitations of this study are related to the nature of action research, the data collection process, and the method of design. Findings from action research are not intended to be generalized to settings or situations that were not studied by the researcher, but instead action research is the review and examination of one’s own teaching practice that is intended to help educators improve their own educational practices (Mills, 2014). Findings from this action research study were intended to enhance and improve instructional strategies in the computer applications course. Any further use of these findings beyond the context described here is situated with the reader.

Data were collected from only one section of the course. Since there was a small sample size for interviews, student responses cannot be generalized to the entire populations of students in the course; however, steps were taken to minimize the effects of the small interview sample. Both quantitative data and qualitative data collection methods were used to obtain data about student behavior and engagement in the course. Quantitative methods used to collect data from students through the use of the OSE survey provided 124 responses from students. Surveys do allow for the generalizability of results to large populations (Mertler, 2017).

The data collection process, as mentioned above, involved the use of focus group interviews with students. While the focus group interviews were instrumental in providing feedback from students about ways the course could be improved, the method
of collecting the data contributed to limitations of the study. I, as the instructor, conducted the interviews. In this situation, the identities of the students are not anonymous; therefore, they may have been hesitant to provide negative feedback to me (Krueger & Casey, 2015). Also in the interviews, responses from other group members could influence student responses.

The study design was also a limitation of the study. The design of the study was descriptive in nature and consisted of the collection of data from one group of students near the end of the course. The correlational design of this study reports an important relationship (i.e., participation in discussion boards relationship to final grades); however, correlation does not denote causation. Therefore, another section of the course taught during the same semester as the course I studied could be used for comparison. In order to gather more in-depth data regarding engagement and interaction in the course, the other section of the course could have been studied too. This would have allowed for a comparison of the study group with a treatment-control group design.

Closing Thoughts

Online programs are here to stay, in fact the growth in online education is outpacing overall growth in higher education (Allen & Seaman, 2015). Students enroll in online courses due to ease, access, convenience, and flexibility (Harris, & Martin, 2012), while academic institutions cite cost effectiveness, resource maximization, increased enrollment, revenue, and competition as reasons for offering courses online (Schiffman, Vignare, & Geith, 2007). If our goals as educators are to provide this growing population of online students with the best educational learning environment possible and to meet the demands of the educational institutions that employ us, then we must be able to
effectively design, manage, and facilitate online courses that meet the needs of our students. This includes focusing on strategies that will engage students in online courses. My goal in examining the methods and strategies used in the computer applications course was to determine how I could positively impact and improve the learning environment and outcomes of my students. By focusing on student experiences and feedback, prior research, and the evaluation and examination of strategies and methods currently implemented in the course, I was able to gain a better understanding of the needs of my students. According to the findings from my research, students prefer an online learning environment where they are able to effectively interact with their instructor and their peers; additionally, they prefer to be exposed to course content that is real-world and applicable to their lives and future careers. Their desires are directly related to research on learner-instructor, learner-learner, and learner-content interaction and on the COI’s focus on social, cognitive, and teaching presence discussed in this study. Moving forward, I will continue to implement the strategies that emerged from this action research project with the goals of improving the learning outcomes of my students and adding to the current body of research on online learning and engagement.
REFERENCES


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APPENDIX A
ONLINE ENGAGEMENT SCALE (OSE)

Age:

Sex:

Race:

College Classification:

Number of Online Course Taken

Within the course, how well do the following behaviors, thoughts, and feelings describe you? Please answer using the following scale:

1. Not at all characteristic of me
2. Not really characteristic of me
3. Moderately characteristic of me
4. Characteristic of me
5. Very characteristic of me

Survey Questions

1. Making sure to study on a regular basis
2. Putting forth effort
3. Staying up on the readings
4. Looking over class notes between getting online to make sure I understand the material
5. Being organized
6. Taking good notes over readings, PowerPoints, or video lectures
7. Listening/reading carefully

8. Finding ways to make the course material relevant to my life

9. Applying course material to my life

10. Finding ways to make the course interesting to me

11. Really desiring to learn the material

12. Having fun in online chats, discussions or via email with the instructor or other students

13. Participating actively in small-group discussion forums

14. Helping fellow students

15. Getting a good grade

16. Doing well on the tests/quizzes

17. Engaging in conversations online (chat, discussions, email)

18. Posting in the discussion forum regularly

19. Getting to know other students in the class
APPENDIX B

CONSENT FORM

CONSENT TO BE A RESEARCH SUBJECT
IMPROVING ENGAGEMENT THROUGH COURSE INTERACTIONS

KEY INFORMATION ABOUT THIS RESEARCH STUDY:

You are invited to volunteer for a research study conducted by Yvette Sands. I am a doctoral candidate in the Department of Curriculum and Instruction. The purpose of this research is to evaluate and examine the strategies and methods that were used to improve interactions and engagement of students enrolled in Computer Business Applications I. You are being asked to participate in this study because you are a student enrolled in a computer applications course. This study is being done at the college where you are enrolled and will involve approximately 150 volunteers.

The purpose of this research is to gather information from students that will help evaluate strategies and methods that are used in the course that improve interactions and engagement. Research on engagement in online courses indicate a strong correlation between engagement and improvements in specific desirable outcomes, such as cognitive development, persistence, student satisfaction, and improved grades. By participating in this study, you will assist in providing valuable information that can be used to help further evaluate and improve the interactions and engagement in the course.

PROCEDURES:

If you agree to participate in this study, you will do the following:

1. Complete a survey about how you interact in the course.
2. Participate in a focus group where you will be asked questions about your course interactions.
3. Have your interview recorded in order to ensure the details that you provide are accurately captured.
DURATION:
Participation in the study requires that you complete a survey that will be emailed to you. You will be given a week to complete the survey. If you are chosen to participate in a focus group interview, the focus group interview will last approximately one hour and will be held via a live video conference.

RISKS/DISCOMFORTS:
Focus Groups:
Others in the group will hear what you say, and it is possible that they could tell someone. The researchers cannot guarantee what you say will remain completely private, but the researchers will ask that you, and all other group members, respect the privacy of everyone in the group.

Loss of Confidentiality: There is the risk of a breach of confidentiality, despite the steps that will be taken to protect your identity. Specific safeguards to protect confidentiality are described in a separate section of this document.

BENEFITS:
Taking part in this study will benefit students enrolled in the computer applications Course. By improving engagement and interactions in the course students will have an overall improved learning experience.

COSTS:
There will be no costs to you for participating in this study.

PAYMENT TO PARTICIPANTS:
You will not be paid for participating in this study.

USC STUDENT PARTICIPATION:
Participation in this study is voluntary. You are free not to participate, or to stop participating at any time, for any reason without negative consequences. Your participation, non-participation, and/or withdrawal will not affect your grades or your relationship with your professors, college(s), or the University.

CONFIDENTIALITY OF RECORDS:
Unless required by law, information that is obtained in connection with this research study will remain confidential. Any information disclosed would be with your express written permission. Study information will be securely stored in locked files and on password-protected computers. Results of this research study may be published or
presented at seminars; however, the report(s) or presentation(s) will not include your name or other identifying information about you.

Questions about your rights as a research subject are to be directed to, Lisa Johnson, Assistant Director, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-6670 or email: LisaJ@mailbox.sc.edu.

I agree to participate in this study. I have been given a copy of this form for my own records.

If you wish to participate, you should sign below.

______________________________  ____________________________
Signature of Subject / Participant                  Date

______________________________  ____________________________
Signature of Qualified Person Obtaining Consent                  Date
APPENDIX C

INVITATION TO PARTICIPATE IN THE FOCUS GROUP

Dear ________,

Thank you for agreeing to participate in the focus groups. My name is Professor Yvette Sands and I will be conducting the focus groups. I am gathering data for my action research dissertation. The purpose of action research is to enhance the education environment or improve an educational process. My goal is to uncover ways that I can improve course interactions and engagement in the course. Your feedback during the focus group is very valuable in helping me assess how the course can be improved.

Your participation in the focus group is strictly voluntary. Your responses to the questions presented are confidential and will not have an effect on your grade or standing in the course. The data collected in the focus group interviews will only be used to further my research on student interactions and engagement in the course.

The focus groups will take place on _________________ at _____ and are scheduled to last approximately one hour. The focus groups will be held using Blackboard Collaborate. At least 48 hours before the focus group interviews, I will send you a link and information on how to access Blackboard Collaborate.

If you have any questions or concerns, please feel free to contact me. Thank you for agreeing to participate in the focus group.

Sincerely,
Yvette Newton Sands
ysands@mailbox.sc.edu
APPENDIX D
FOCUS GROUP PROTOCOL

Before the focus group

1. **Determine the goal and objectives for the focus group.**

   The purpose of the focus group is to provide information that will assist me in answering questions related to the purpose of my action research. The purpose of the action research is to evaluate the strategies and methods that can be used to improve interactions and engagement of students enrolled in a computer applications course at a large university in the southeast part of the United States. Specifically, the results of the focus group will help provide answers to my second research question, which states, “what recommendations and strategies do students have for faculty that they perceive will increase their engagement in the computer applications course.

2. **Determine the number of focus groups**

   a. Focus groups will last approximately one hour each

   b. Focus group meetings will be held via Blackboard Collaborate

   c. Students will be sent the link to Blackboard Collaborate at least 48 hours before the interviews begin

3. **Participants:**

   a. There will be a total of 5 different focus groups

   b. Students will be enrolled in the computer applications course
c. Students selected to participate in the focus groups will receive an introductory letter from me.

4. Interview Questions

1. Describe the interaction you had with your instructor? Describe the interaction you had with your classmates? Can you provide an example of the interactions you have had with your instructor and you classmates? Do you feel these interactions helped you become more interested in the course? Did you feel they increased your performance in the course? Why or why not?

2. Give an example of an assignments in the course required you to think about and become more interested in the course content (Dixson, 2015)?

3. Can you think of a time when you had to complete an assignments or activity that was effective in facilitating interaction between you and your classmates and you and your instructor?

4. What assignments do you feel were ineffective in encouraging engagement in the course content?

5. What activities or assignments would you suggest can be included in the course that would help increase interaction and engagement?

6. Is there anything else you would like to add that you think would improve interaction and engagement in the course?

5. Focus Group Script

a. Welcome
Good evening and welcome to our focus group discussion. Thank you for taking the time to join me to talk about your experience in the course. My name is Yvette Sands and I am one of the professor for the course. You should have taken the online course through the HRSTM department and should have had me as your online instructor.

The purpose of the focus group is to gather information from you about your experiences in the course. Specifically, the purpose of the focus group is for you to share your thoughts, opinions, and recommendations about improving engagement and interactions in the course. Engagement is usually referred to as a student’s willingness to actively participate in the course by thinking, talking, and interacting with the course content, other students in the course, and the instructor. Engagement can also include reading and responding to emails, participating in discussions, viewing course lectures, and completing assignments.

You were asked to participate in the focus group because you are enrolled in the course and are familiar with the lessons, assignments, and the layout of the course. Please feel free to share your point of view even if it differs from what others have said. I am very interested in your honest feedback. The sessions will be recorded because you often will say very helpful things in these discussions and I cannot write fast enough to get them all down. We will be on a first name basis during the discussion, and we won't use any names in our reports.
Before we begin, please indicate with a response of “yes” if you agree to the following question: “You are voluntarily participating in this focus group and I have your permission to record our discussions”.

b. **Focus Group Discussion**

c. The questions listed above in the “Interview Questions” section of the protocol will be asked **Conclusion**

Thank you for taking the time out to participate in the focus group. The feedback you provided is very valuable and will help in improving course interactions and engagement in the course. I will use the data you provided to further my research on online student engagement and interactions. Do you have any further questions or concerns? This concludes the focus group. Again, thank you for participating.

6. **Focus Group Protocol Guidelines**

a. Set a positive tone.

b. Make sure everyone is heard; draw out quieter group members.

c. Probe for more complete answers.

d. Monitor questions and the time

e. Don’t argue a point with a participant, even if they are wrong. Address it later if necessary

**Interpreting and Analyzing the Results**

1. **Summarize each meeting**

a. Immediately after the meeting, I will write up a summary of my impressions.
b. Within three days after the focus group meeting, I will transcribe the notes or audio recording of the focus group.

2. **Analyze the summaries**

   a. I will read the notes and look for themes/trends. I will also, write down any themes which occur more than once.

   b. Context and tone are just as important as words. If comments are phrased negatively or triggered an emotional response, this should be noted in the analysis.

   c. Interpret the results

      i. What are the major findings?

      II. What recommendations do I have?