Evaluating Impact and Perception of a Structured Online Peer Evaluation System Among Graduate Communication Capstone Students Through Action Research

Karen Larimore Wilkinson

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EVALUATING IMPACT AND PERCEPTION OF A STRUCTURED ONLINE PEER EVALUATION SYSTEM AMONG GRADUATE COMMUNICATION CAPSTONE STUDENTS THROUGH ACTION RESEARCH

by

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DEDICATION

I dedicate this dissertation to the strong women in my life and to the memory of my dear father. To my mother, Millie Thompson, you have encouraged, supported, and believed in me since I was a child. You taught me the power of hard work at a very early age, and you inspired me to pursue my dreams. Throughout my doctoral journey, you have sustained me. Ultimately, your strength has become my strength. To my daughter, Dr. Savannah Larimore, you continue to motivate me as I see your courage and commitment in creating much-needed change across society. I am in awe of your devotion to others and your desire to ensure equality for all. Thank you for your constant understanding, guidance, and motivation throughout my educational pursuit. Truly, you are my biggest cheerleader. You have empowered me by bringing joy, positivity, and inspiration into my life. As I arrive at this important milestone in my life, I think of my father, Eddie Thompson, and I reflect on his relentless support for his children. My memories of his can-do spirit, his humor, and his voracious love of learning have given me the strength and encouragement that I have needed to succeed.
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ABSTRACT

Although enrollment in online courses continues to accelerate, challenges exist in online learning. A failure to experience collaboration and interaction can impact student retention and success. While peer review activity provides student interaction and the development of a collaborative community of learners, higher education environments have failed to equip students with the knowledge and tools to ensure adept participation. As students offer limited participation and low-quality engagement in routine online peer review activities, the purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students at the University of North Coast Muscari (UNCM). An initial research question asked, “How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?” A second research question sought to discover, “What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?”

This study incorporated a structured peer evaluation system, including an interactive educational technology peer review tool kit innovation that delivered training, tools, prompts, examples, rubrics, and more. Data collection offered preterm and postterm questionnaires, observational field notes, one-on-one interviews, researcher’s handwritten interview notations, and student post artifacts. Data analysis included
quantitative and qualitative approaches as part of a triangulation mixed methods research design, with findings integrated via a convergent process (Mertler, 2017).

As an impact of this research study, the students used the structured peer evaluation system to transform excitement and anxiousness into social and cognitive freedom, producing a focused, responsible approach to peer learning. The study participants’ perceptions included their ability to use the peer review tool kit to experience confidence and empowerment as well as to experience a collaborative community of learners through peer review engagement. This research study offers implications for the continued integration of learning theory into educational technology, the placement of the structured approach earlier in the students’ learning pathway, and the incorporation of additional resources to assist students in overcoming anxiety associated with peer review participation.
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CHAPTER 1
INTRODUCTION

National Context

Enrollment in online courses continues to accelerate as the use of web-based technology continues to extend “the boundaries and pedagogies of teaching and learning” (Cheng & Chau, 2016, p. 257). In the tenth annual report of Changing Course: Ten Years of Tracking Online Education in the United States, the rate of online enrollments far exceeded those across higher education overall (Allen & Seaman, 2013). Based on the responses from over 2,800 universities and colleges at that time, the past decade had shown a drastic increase in enrollments for online education (Allen & Seaman, 2013). Across the U.S., over 17 million students were enrolled in undergraduate programs in the fall of 2015 with 29% enrolled in some level of distance education (McFarland et al., 2017). Of the 2.94 million enrolled in postbaccalaureate studies during that time, 34% were enrolled in some aspect of distance education with 26% of those enrolled exclusively in distance education (McFarland et al., 2017). In 2016, distance education enrollments were reported to offer an increase for the fourteenth straight year (Seaman, Allen, & Seaman, 2018) with an annual growth of 5.6% over 2015 (Seaman et al., 2018). Moreover, approximately one-third of all undergrad students reported taking at least one class online, with most colleges discovering a need to increase their number of online offerings (Bettiner, Liu, & Loeb, 2016). By 2016, 72% of public universities and 50% of private, non-profit educational institutions were offering completely online programs (Xu
& Xu, 2019). Although postsecondary enrollment declined overall from fall 2016 to fall 2017, online enrollment continued to grow with more than one-third of all higher education students reporting that they had taken at least one online course by 2018 (Ginder, Kelly-Reid, & Mann, 2018). In research conducted in January and February 2020, more than half of online college students noted that if their online programs became unavailable at their current institution of choice, they would look for a comparable online program; however, they confirmed that enrollment in an on-campus program was not an option (Magda, Capranos, & Aslanian, 2020). Of those surveyed, one-third of the online students expressed a desire to take additional online courses upon the completion of their current degree programs (Magda et al., 2020).

The use of technology for learning provides an opportunity for students to enjoy flexibility and convenience (Boston, 2010; Purarjomandlangrudi, Chen, & Nguyen, 2016; Shay & Rees, 2004; Sorensen & Donovan, 2017). In addition, accessibility becomes greater as students can complete their work from any place and at any time (Balaji & Chakrabarti, 2010; Boston, 2010; Isman, Dabaj, Altinay, & Altinay, 2004; Lee & Choi, 2011). Students may find that the online environment is less intimidating without face to face involvement, and quite often, online conversation forums are less likely to be dominated by one participant due to their unconventional and threaded structure (Redmon & Burger, 2004).

However, there are challenges to success in the online learning environment. Engaging students in online learning is not an easy endeavor. Oftentimes, a small number of the class will engage regularly while others wait and engage very little or not at all (Barría, Scheihing, & Parra, 2014). This difference in instructor-student interaction, from
that experienced in face-to-face courses, can lead to feelings of isolation for learners (Negash, 2008; Yuan & Kim, 2014). Students who sense a feeling of connectedness, as opposed to feelings of isolation, tend to engage at a more active level and utilize higher order thinking and active construction of knowledge (Baker, 2010). The failure to experience collaboration and a lack of interaction are among the reasons found to impact student retention and success in the online environment (Heyman, 2010; Lee & Choi, 2011, Willging & Johnson, 2009). Learner isolation and dropout are more likely to occur in online courses; therefore, instructor-student and student-student interaction becomes a key factor in the nurturing of learning (Conrad & Donaldson, 2004). Student engagement can be impacted by a student’s lack of familiarity with online learning or by the level of responsibility that students take for their role in learning via self-discipline (Bawa, 2016; Heyman, 2010; Richardson & Newby, 2006; Sorensen & Donovan, 2017).

Student engagement remains a key challenge in online courses as a lack of interaction has been determined as a barrier to online learning success (Heyman, 2010). Despite the various merits of online learning, the lack of physical presence and face-to-face interaction can offer the absence of spoken and visual cues (Alman, Frey, & Tomer, 2012) and cause students to suffer from a feeling of belonging, a lack of social interaction, and a sense of adequate support (Purajomandlangrudi et al., 2016). As participation is an inherent factor of learning (Wenger, 1998), its importance cannot be understated. In a study that examined the correlation between online participation and grades, those students who failed one or more of the learning modules interacted less often than their peers who attained passing grades (Davies & Graff, 2005). In turn, an elevated level of student participation and activity has the potential to offer a positive
impact on academic achievement and deliver a stronger e-learning performance for students (Cheng & Chau, 2016; Huang, Lin, & Huang, 2012; Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011).

**Local Context**

“Peers can be the best teachers because they’re the ones that remember what it’s like to not understand” (“Peter Norvig Quotes,” n.d.).

The peer review process is an integral tool in online higher education learning environments due to its many benefits. I have observed students gain insight into different perspectives regarding the assignment criteria and receive a deeper understanding of task requirements as they review the work of their peers. During peer review, I have noted students’ ability to reflect on their own work and find ways to improve their submissions, based on the work of their peers. To create and deliver a peer review assessment, students must employ critical thinking skills and formulate a response that is accurate and aligns with prior learning (Demirbilek, 2015; McMahon, 2010). As this requires students to engage writing skills and use organizational methods to ensure feedback comprehension, I have witnessed an elevated level of writing by peer review participants.

Even so, to reap the benefits of peer review, students must choose to actively engage by participating and interacting within the online learning environment. As the former Lead Faculty member, current Associate Dean for Communication, and a Capstone instructor within the Graduate (GRAD) Communication (COM) environment at the University of North Coast Muscari (UNCM) (a pseudonym), I have witnessed a lack of student participation in peer review opportunities within my classrooms, as well as in
other Capstone classrooms. Although numerous conversations surrounding the problem have taken place between deans and instructors over the past five years, the peer review structure remains unchanged. Currently, Capstone instructors encourage participation and employ their own unique peer review guides and prompts; however, student engagement remains sparse and irregular.

Former Associate Dean of Faculty Evan Kropp (personal communication, July 8, 2017) shared that many students would prefer to take a zero on a peer review task than engage in the peer review process. Kropp, who taught the Capstone class on a regular basis, noted that of the 14 students in the Capstone class each term, it was not unusual for only two or three to participate fully. Kropp credited this not only to the low-stakes-value assigned to the Capstone peer review tasks but to the students’ level of discomfort with the process. Students, identified by pseudonym, echoed the observations that were shared by Kropp.

Peer reflection comments, provided by UNCM students in a Fall 2017 Capstone classroom, offered good insight into students’ perceptions of peer review. A general appreciation for the value of the peer review process was noted:

Seeing what other students were doing, even if their topics were very different from mine, gave me ideas to make changes to my final report. (Student A, 2017, para. 1)

However, through their peer reflection commentary, students acknowledged feelings of discomfort surrounding peer review participation:
I have to admit peer review…can be a scary thing! For me, opening up your work for your peers and colleagues to review is opening up to critiques and praise alike. (Student B, 2017, para. 1)

I believe, the process of peer collaboration and peer review is a challenge for many students including myself. As a student you need to be critical without being rude. You need to be tactful. (Student C, 2017, para. 1)

The peer reflection activity provided an opportunity to acknowledge individual shortcomings regarding Capstone peer review participation:

I would like to apologize to the class for not always giving as much feedback as you shared with me. But thank you for the lessons learned. (Student D, 2017, para. 1)

For peer review to be a successful learning opportunity at UNCM, I believe that online students must become actively engaged and receive strong guidance on how to fully participate in the process. There is a vast opportunity to pique the interest of students through an interactive, engaging, and innovative peer review method. A system that is structured and organized can serve to create understanding, dispel discomfort and fear, and build student confidence. Until the current dilemma is fully addressed and rectified, peer review interaction and participation by students at UNCM will continue to remain scarce.

**Statement of the Problem**

Although peer review is lauded as an effective, collaborative online tool that allows students to experience analysis, synthesis, and evaluation processes (Demirbilek, 2015; Li, Liu, & Steckelberg, 2010; Lynch, McNamara, & Seery, 2012), and to
implement improvements to their own work through reflection (Man, Xu, & O’Toole, 2018; McMahon, 2010; Phillips, 2016), higher education environments fail to equip students with the knowledge and tools surrounding peer review assessment (Nicol, Thomson, & Breslin, 2014). Specifically, students do not receive sufficient preparation and training for formulating and delivering feedback to their peers, nor do they receive guidance on how to interpret the feedback that they receive (Nicol et al., 2014). As online peer review activities are often designed in an unstructured, at-will, asynchronous discussion board format, a further lag in participation is created for students who opt to wait, observe the posts of their peers, and echo the same thoughts shared in previous posts (Cheung & Hew, 2004). In turn, a lack of consistent thread growth and limited student participation can be observed as persistent problems across numerous online asynchronous environments (Hewitt, 2005), including the Graduate Communication (GRAD COM) Capstone classrooms at UNCM. The existing Capstone environment lacks a structured online peer evaluation system with effective peer evaluation tools to prepare GRAD COM students for peer assessment, promote peer review participation, and ensure that students receive the benefits associated with reviewing the work of their peers and giving and receiving feedback. So, UNCM GRAD COM Capstone students offer limited participation and low-quality engagement in routine online peer review activities.

**Purpose Statement**

The purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students at the University of North Coast Muscari (UNCM).
Research Questions

Two primary research questions guided this research:

1. How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?
2. What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?

Researcher Subjectivities and Positionality

As a lifelong learner and career communicator, my pathway to becoming a faculty member in online higher education has been both winding and non-traditional. My early education and experiences as a Graphic Designer allowed me to see the power to inform others through digital imagery and the written word. From there, I moved into the role of Technical Writer/Corporate Trainer and was later promoted to Corporate Fundraiser. Each of these roles allowed me to seek novel and imaginative ways to actively educate over 80,000 corporate employees. To ensure my success and elevate my knowledge of technology, I continued to develop my digital skill sets through education and the receipt of certifications in the Adobe Creative Suite, web design, and Adobe Flash animation.

Following a transition into the government sector, the role of Marketing Manager allowed me to further utilize technology with the use of digital messaging, video creation, and social media presence as viable modes to educate and inform. Soon after, I was elevated to the position of Director of Communications and assumed the role of a municipal Public Information Officer. With the daily use of technology and a constant awareness of the power of knowledge, I pursued formal education and equipped myself...
with a Master of Arts degree in English, Technical and Professional Communication. For over thirty years, my career focus surrounded the ability to communicate effectively and creatively, while integrating cutting-edge technology to excel.

Eight years ago, a transition into higher education provided a natural career progression as I received the opportunity to share the knowledge and career experiences that I had obtained over the past three decades. In serving as the former Lead Faculty member and current Associate Dean for Communication at UNCM’s online college, I can attest that my students have served and continue to serve as a constant and unwavering focus for me. Consistently, I seek new and creative ways to educate and engage, boost conversation, and encourage student participation. My pursuit of a Doctor of Education degree in Curriculum and Instruction-Educational Technology concentration has served to align my aspirations for my students with my desire, as the action researcher, to serve as the connection between theoretical research and the instruction that takes place within the classroom (Mertler, 2017).

In efforts to promote student participation and produce quality engagement in online asynchronous peer review activities, my action research involved the creation, implementation, and evaluation of a structured peer evaluation system. Guided by a pragmatic worldview, I had the liberty to select the mixed methods that would produce the greatest comprehension of the research problem (Baumfield, Hall, & Wall, 2012; Creswell, 2014; Townsend, 2013). As pragmatism allows the researcher to blend theory with practice, I infused research into action by utilizing a designated approach to produce knowledge and further advance current practices (Nzembayie, 2017). I sought the
methods that best fit the needs and the purposes of my research while utilizing real world examples to discover what worked best (Baumfield et al., 2012).

As I initiated the research process, I assumed the positionality of an insider in the local environment, a Capstone instructor observing one’s own classroom and students (Herr & Anderson, 2005; Hinchey, 2008). This insider perspective of action research was exclusive, and I was actively entrenched in the issues and undercurrents of the living environment (Coghlan, Shani, & Roth, 2016; Efron & Ravid, 2013). Therefore, a constant awareness and consideration for potential researcher bias, including my inclination to champion technology as a viable solution, remained ever-present throughout the study. The use of a reflexive journal allowed me to perform self-reflective bracketing as I remained committed to surfacing my preconceptions prior to and throughout the research process (Tufford & Newman, 2010). As the researcher who was performing bracketing, I identified and held biases, assumptions, and presuppositions at a distance (Gearing, 2004). As an insider, I built on the familiarity that I held for the local environment while remembering to generate space in efforts to produce a critical view that would allow change to occur (Coghlan et al., 2016).

Any view is shaped by the lens of the one who is observing; there is no singular account as each view includes the perspective of the unique viewer (Maxwell, 2013). My values and biases affected how I shaped the study, conducted the study, and interpreted the participants’ behaviors; however, I strove to override any researcher bias with objectivity and rigor (Mertler, 2017). As a risk to insider research, the researcher must distance his or her own personal experiences from those of the study participants and avoid allowing those experiences to shape the research analysis (Ismail, 2018; Kanuha,
In addition, the potential for distortion is greater with insider research as participants may know the insider’s views on the research topic and this can influence their responses; therefore, it was vital that I minimize this effect by showing restraint in sharing my opinion prior to and during the research (Mercer, 2007).

As a champion for UNCM students, my desire is to see technology empower them in a way that impacts their participation level and quality of engagement in the peer review activities. As the Capstone class provides the pinnacle of the Graduate Communication degree, I feel a strong sense of commitment to our students in this final class. As a current Capstone instructor, my experience and perspective shaped how I designed the intervention of a structured peer evaluation system to promote stronger student participation. Although UNCM is my site of employment, it was essential for me to ensure that data selection was not aligned with my preconceptions and desires. As the researcher, I asked full questions, took extensive notes, made reliable observations, and refrained from skewing any information. It was essential for me to ensure that the research questions were clear and that the study design was in alignment with the questions. Data collection occurred across a full range of times, settings, and respondents (Miles, Huberman, & Saldana, 2014). In addition, I sought to ensure that interview questions were designed with careful consideration for wording to ensure that they were not inclined to entice biased responses (Efron & Ravid, 2013; Given, 2008). As the researcher, I refrained from framing the research and instead, ensured that the analysis and interpretation of the data would effectively tell the story based on what the data had to say (Belk, 2006).
As the study concluded, it was helpful to review my findings with other Capstone instructors through a form of peer review. In support of my fellow instructors, I took the necessary steps to ensure that power imbalances did not occur due to my insider role (Creswell, 2014). Furthermore, as I shared my findings, I ensured that the results did not come across as arrogant or haughty. I provided the full array of research findings to ensure adherence to ethical practices and to avoid misrepresentation and bias (Creswell, 2014).

Although action research can be scrutinized for the researcher’s immersion and interpretations, the strength of action research is that research practitioners offer a true and reliable account of the issue topic (Lee, 2016). Serving as an organizational insider, I sought to contribute to my organization and utilized the research to deepen my reflection, develop my problem-solving abilities, and contribute to my personal development (Herr & Anderson, 2005). Above all, I utilized my positionality as an insider with a pragmatic worldview to integrate educational technology into action research in support of student achievement via the online environment at UNCM.

**Definition of Terms**

**Asynchronous**: Asynchronous is a term used to describe student participation in virtual learning environments. Communications are text-based and mediated by a computer. Asynchronous activity can take place 24 hours a day, and learners are able to self-reflect and share their thoughts outside of the constraints of time and location (Hewitt, 2005).

**Impact**: In alignment with Papadopoulos, Lagkas, and Demetriadis’ (2017) research, the term impact describes “how student performance is affected by providing and
receiving peer comments” (p. 69). Impact is further defined as the effect on the learner’s interaction and discourse within the peer review progression (Choi, 2014). For the purposes of this study, the terms impact and influence will be used interchangeably to describe an outcome.

**Participation levels:** Hewitt (2005) identifies student participation levels in online discussion forums as the discourse and exchange between students in support of thread development. For the purposes of this study, student participation levels are defined as the average student/response ratio that expresses the average number of posts per student and the depth of peer review posts, based on a 100-word measuring parameter.

**Peer assessment:** In alignment with Topping (1998), peer assessment is defined as “the amount, level, value, worth, quality or success of the products or outcomes of learning of peers of similar status” (p. 250). For the purposes of this study, peer assessment is further defined as a cooperative strategy for evaluation, during which one or more students provide assignment feedback to their peers (Paquet & Downs, 2018).

**Peer evaluation system:** A peer evaluation system (PES) is a structured arrangement that is utilized to encourage and enable standardized peer evaluations. Although similar to typical peer-evaluation progressions, the PES offers basic elements which are standard and remain consistent across a variety of contexts. Students can utilize the structured dimensions of a PES for evaluation, to allocate points or rewards, and to provide narrative feedback (Brutus, Donia, & Ronen, 2013).
**Peer feedback:** For the purposes of this study, peer feedback is defined as the interactive and collaborative dialogue shared between learners (Gielen, Dochy, & Onghena, 2011; Liu & Carless, 2006). During the peer feedback process, learners share knowledge with one another through formative comments as they give and receive advice and address strengths and weaknesses and offer areas of necessary improvement in each other’s work (Ertmer et al., 2007; Falchikov, 1996).

**Peer review:** Peer review describes the opportunity “to involve learners in the process of formative assessment, through giving and receiving feedback” (Mulder, Baik, Naylor, & Pearce, 2014, p. 657). Through peer review evaluations, reviewers focus on the work completed by their peers, assess learning outcomes, and express judgments in support of needed revisions (Phillips, 2016). For the purposes of this study, the peer review process is further defined as students’ production of online feedback reviews for the work of their peers and the receipt of online feedback reviews in support of their own work (Nicol et al., 2014).

**Perceptions:** At this stage in the research, perceptions are generally defined as the insight gained into students’ views through the use of qualitative research methods (Burgess & Mellis, 2015).

**Structured peer review:** In alignment with Brutus et al.’s (2013) definition of a standardized peer evaluation system (PES), the structured peer review process for this study includes an organized approach that will allow students to become more comfortable and more effective during peer assessment (Brutus et al., 2013). A structured PES is utilized to “promote, facilitate, and standardize” (Brutus et al., 2013, p. 18) peer review. As opposed to custom-designed peer review processes
that can vary from course to course, the use of a standard peer-evaluation system can promote student effectiveness (Brutus & Donia, 2010). Furthermore, the data obtained through the use of the structured system can deliver an understanding of university-wide learning goal achievement and provide helpful data in support of accreditation (Brutus & Donia, 2010).

**Thread:** For the purposes of this study, a thread will describe the hierarchical organization of written notes and electronic exchanges in a computer-mediated environment (Hewitt, 2005). An original written note or post begins the thread and replies align to the thread to display an evolution of the written conversation. Similar to Hewitt’s work in 2005, this study will use the terms *thread* and *discussion* synonymously.
CHAPTER 2
LITERATURE REVIEW

Introduction

The purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students at the University of North Coast Muscari (UNCM). This review of the related literature concentrates on two points of research focus. An initial research question asks, “How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?” In addition, a second research question seeks to discover, “What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?”

Based on the two research questions, the following variables were used to guide the literature search: (1) structured peer review, (2) student participation, and (3) student perceptions. The electronic databases of ERIC and Education Source were utilized to conduct searches for research articles published from 2013-2018. Unique search terms included action research, anonymous peer review, critical thinking, distance learning, effective peer review, formative review, higher education, online student engagement, online discussion board, online participation, peer assessment, peer review, peer review avatars, peer review badging, peer review benefits, peer review bias, peer review gaming, peer review participation, peer review role playing, peer review scoring, peer review
value, self-assessment, and student peer review. Additional parameters utilized to further define those searches included full-text, peer-reviewed, and academic journals.

Additional database searches included the following groupings of search terms: 1) educational technology [and] distance education [or] online learning [and] higher ed* [and] trends [and] issues, 2) student peer review [or] peer assessment [and] higher ed* [and] online [or] distance ed* [and] attitudes [or] concerns [or] perceptions, and 3) peer review [or] peer assessment [and] higher ed* [and] online [and] distance ed* [and] students [and] feedback [and] critical thinking. Supplementary scholarly journals, academic books, and chapters were obtained through the Google Scholar website. Lastly, by mining the resources listed in the references section of relevant scholarly journal articles, additional scholarly resources were secured.

The review of this literature is organized into four sections: (a) conceptualizing peer review, (b) advantages and disadvantages of peer review, (c) pedagogical strategies for peer review, and (d) peer review tools and methods. The first section provides an overview of peer review as terminology is defined and the peer review process is aligned to theory. The second section delivers a comprehensive summary of the advantages and disadvantages of peer review, including the benefits received from peer review as well as the concerns and apprehensiveness that students often display. The third section examines the pedagogical strategies that are utilized to teach students to participate in peer review and to motivate their engagement. Lastly, the final section provides a review of the tools and methods that are utilized to create structure during peer review.
Conceptualizing Peer Review

To gain insight into the concept of peer review, it is helpful to receive a basic introduction to the associated terminology, as well as understand the association between peer review and established learning theory. First, the following section will provide definitions associated with peer review. Next, theoretical alignment to peer review will be explained.

Defining Peer Review

By defining peer review, a foundational understanding of the interactive practice and its related processes can be established. The following section will provide definitions and includes the terms of (a) peer assessment, (b) peer feedback, (c) peer review, and (d) structured peer review.

Peer assessment. Topping (1998) defines peer assessment as “the amount, level, value, worth, quality or success of the products or outcomes of learning of peers of similar status” (p. 250). Similarly, Paquet and Downs (2018) describe peer assessment as a cooperative strategy for evaluation, during which one or more students provide assignment feedback to their peers. During peer assessment, students provide feedback, grades, or both as they determine the level of excellence that peers have completed through a delivered product or performance (Falchikov, 2007). The advantages of peer assessment participation include the involvement of learners and the delivery of genuine feedback (Paquet & Downs, 2018).

Peer feedback. Peer feedback offers an interactive and collaborative learning process where learners engage in dialogue (Gielen et al., 2011; Liu & Carless, 2006). Through the delivery of peer feedback, students are able to share their expertise with one
another as they provide formative comments regarding strengths, weaknesses, and areas for needed improvement (Falchikov, 1996). In a peer feedback task, students of similar status engage in both the giving and receiving of feedback in support of increased learning (Ertmer et al., 2007; Gielen, Peeters, Dochy, Onghena, & Struyven, 2010).

**Peer review.** Peer review offers a valuable, recognized approach for supporting students in the obtainment of knowledge and the development of skills (Baker, 2016; Papadopoulos et al., 2017). Through a reciprocal procedure, peer review provides the process through which students review and provide feedback on the work of their peers while receiving peer feedback in support of their own work (Nicol et al., 2014). Although peer review can be executed with or without the use of technology, the former allows for more efficient management of the process (Papadopoulos et al., 2017). In support of improved writing, online peer review provides an exchange and response to fellow students’ work by way of computer technology (Breuch, 2004).

**Structured peer review.** Through a structured approach to peer review and repeated exposure to a standardized peer evaluation system, students can gain comfort with the process and become more effective as peer assessors (Brutus et al., 2013). A structured peer evaluation system can be utilized to “promote, facilitate, and standardize” (Brutus et al., 2013, p. 18) peer review and is distinguishable by its standardization of basic elements which ensures consistency across numerous environments. As opposed to custom-designed peer review processes that can vary from course to course, the use of a standard peer-evaluation system can promote student effectiveness (Brutus & Donia, 2010). Furthermore, the data obtained through the use of the structured system can
deliver an understanding of university-wide learning goal achievement and provide helpful data in support of accreditation (Brutus & Donia, 2010).

**Theoretical Alignment to Peer Review**

Learning theories describe how and the ways in which people learn. The interactive, social practice of peer review is well associated with established learning theory. These theories will be covered in the next section and include (a) constructivism, (b) social constructivist theory of learning, and (c) cognitive apprenticeship.

**Constructivism.** Peer review offers an interactive experience through which knowledge is constructed collaboratively. In turn, peer review aligns to the learning theory of constructivism as per Dewey (1916, 1938): Constructivism is not the act of telling or being told, but a constructive process. As opposed to knowledge that is passed from instructor to learner through rote memory, constructivism provides for the creation of knowledge through experience (Dewey, 1938; Ertmer & Newby, 2013; Jaramillo, 1996) and through contexts that have the capacity to enhance student learning (Biggs, 2011). Constructivism provides students with an opportunity to connect new knowledge with existing knowledge (Clark, 2018). Via the provided framework of peer assessment, students construct new meaning as they evaluate the information they receive and interpret this input to create a reality that is uniquely specific to them based on experiences, beliefs, and cognitive structures (Jaramillo, 1996; Jonassen, 1991; Powell & Kalina, 2009).

Per Jaramillo (1996), the constructivist learner is not a docile vessel waiting to be filled with knowledge but a student who is vigorously involved in learning that which is just above his or her current knowledge level. During constructivism, a student is in
control of his or her learning (Clark, 2018). Similarly, through hands-on and engaged learning, students socially negotiate peer review within an authentic learning environment (Jaramillo, 1996).

**Social constructivist theory of learning.** In alignment with the social constructivist theory of learning, peer review provides a collaborative culture of learning. Vygotsky (1962) proclaims that students’ skills and knowledge are shaped through cultural interaction. Furthermore, the tool of language encourages cultural activity through the promotion of one’s thinking and reasoning (Vygotsky, 1978). Learning becomes a social activity in an environment where learners interact and where cognitive growth is stimulated (Schunk, 2008). During peer review activity, students have an opportunity to transition from the role of an inexperienced learner to that of the more knowledgeable other, as defined in social constructivist theory (McGarrigle, 2013).

Although peer review is utilized for assessment purposes, additionally, it fulfills an essential classroom component through the implementation of peer learning as students learn alongside each other as well as from one another (Boud, 2000, 2013). In alignment with the social constructivist theory of learning, students are able to work with one another in a collaborative manner to generate peer learning. Furthermore, the process of near-peer learning offers positive implications for both advanced students involved in the training aspect as well as the less advanced students who serve as the recipients of additional tips and knowledge (McKenna & Williams, 2017).

**Cognitive apprenticeship.** During a peer review activity, participants experience the attributes of the constructivist theory of cognitive apprenticeship. During an apprenticeship opportunity, students are able to learn through observation, imitation, and
modeling (Collins, 1988; Collins, Brown, & Newman, 1987). The methods of cognitive apprenticeship seek to adapt student behaviors into genuine practices through activities and social engagement opportunities (Brown, Collins, & Duguid, 1989). During cognitive apprenticeship teaching methods, implied processes are shared openly so that students can see, engage in, and practice them with their instructor and classmates (Collins et al., 1987). Similarly, through peer review activity, students gain access to the work of their peers. They can mirror and practice the skills that they observe (Llado, et al., 2014; Mulder et al., 2014). By enabling the peer review process for students, the instructor, serving as the expert and guide, facilitates cognitive apprenticeship. As with peer review participation, the obtainable knowledge and skills of cognitive apprenticeship are housed in the setting that is most appropriate and ideal for their continued use (Collins et al., 1987; Pinelli et al., 2018).

The methods dimension of cognitive apprenticeship includes acts of modeling, coaching, scaffolding, articulation, reflection, and exploration (Brown & Stefaniak, 2016). During cognitive apprenticeship, the expert models a task for students to observe and further explains what happens and why (Brown & Stefaniak, 2016; Collins, 1988). Coaching methods deliver assistance for task accomplishment and empower students to complete tasks that they may not be able to accomplish otherwise (Collins, 1988). Through scaffolding of learning, the delivery of the necessary support systems is provided to students at the early stages of their efforts but then removed as students gain familiarity and experience proficiency of task (Brown & Stefaniak, 2016). During the method of articulation, students make implicit knowledge clear as they are forced to consider and verbalize their actions (Brown & Stefaniak, 2016; Collins, 1988). Through
reflection activity, students look over their performance, analyze the work they created, and compare it to that of others; the student’s work becomes the focus of study (Collins, 1988). Lastly, through exploration, students are invited to position and resolve their problems independently (Brown & Stefaniak, 2016). Ultimately, students become more skilled through cognitive apprenticeship and as they are able to engage on their own, the need for expert instructor support diminishes (Brown & Stefaniak, 2016; Collins, 1988).

Advantages and Disadvantages of Peer Review

Although peer review is often heralded for the many benefits that it can provide for students, students’ perceptions and the findings of research indicate that there are both advantages and disadvantages to the implementation of the process. To begin, the following section will discuss the benefits of peer review. Next, persistent issues and concerns surrounding peer review will be examined.

Benefits

Researchers have reported that there are numerous benefits that can be obtained through students’ involvement in peer review. These advantages can be experienced through the review of peers’ work as well as through the giving and receipt of feedback. Positive takeaways for students will be covered in the following section and include (a) development of critical thinking skills and higher order thinking, (b) improved student learning and skill development, (c) a collaborative community of learners, (d) students take writing more seriously and improve early drafts, (e) increased level of understanding through diverse feedback, (f) improved quality of submissions, (g) positive perceptions of peer review, and (h) a viable alternative to instructor feedback.
**Development of critical thinking skills and higher order thinking.** Through participation in peer review, students in higher education relay experiences in critical reflection and deeper learning (Demirbilek, 2015; McMahon, 2010). The peer review process creates an obligation for students to respond to the work of their peers (Demirbilek, 2015; McMahon, 2010). By creating feedback and replying to classmates, students acknowledge that they are required to think critically and introduce critical judgment into their reviews and the responses that they formulate (Demirbilek, 2015; McMahon, 2010; Nicol et al., 2014). Due to the triggering of advanced cognitive functions during peer review, students experience critical thinking and begin to perceive peer review as a meaningful task that is both purposeful and beneficial.

Through the empowerment of advanced mental processes, peer review provides an opportunity for students to increase their attention to details. Students become more focused on the criteria and standards related to assessment as they experience critical reflection during peer review (Man et al., 2018; McMahon, 2010). It is during this period of higher order thinking that students become more intently probative and delve deeper into cognitive processes via an authentic, interactive context (Ching & Hsu, 2013, 2016).

During their involvement in a peer review task, students are empowered to utilize higher order thinking to further extend their knowledge into other contexts. Gikandi and Morrow (2016) asserted that during peer to peer feedback, online higher education students are prompted to connect their thoughts to broader environments such as the workplace and to consider the infusion of new tools and techniques that they observe. Through exposure to unique perspectives during peer review, students demonstrate deeper learning as they synthesize and create new knowledge. Ultimately, peer review
provides an opportunity for students to experience cognitive stimulation which promotes a translation of acquired knowledge into real-world contexts (Gikandi & Morrow, 2016).

**Improved student learning and skill development.** Peer review has the capacity to improve student learning and promote the development of unique and valued skill sets. Through their participation in peer review, students can increase their learning within the course and develop skills in self-assessment (Baker, 2016; Mulder et al., 2014). As students evaluate the work of peers, construct feedback, and justify their comments, they engage in critical judgment and develop reflective skill sets (Gikandi & Morrow, 2016; Nicol et al., 2014). In research by Man et al. (2018), postgraduate Chinese students’ involvement in peer review was reported to promote evaluative skills and the development of strong research writing. Through peer review participation, students become independent thinkers and develop autonomy and the ability to self-regulate (Chittum & Bryant, 2014; Man et al., 2018). Chittum and Bryant (2014) asserted that the involvement of graduate students in professional peer review of academic journal articles could function as a scaffolding approach during which students would begin to recognize scholarly work and commence writing in a scholarly manner. Skills developed during peer review, such as research, writing, teamwork, problem-solving, and organization, can be highly transferrable as they support students in professional practices, leadership roles, and in pursuit of lifelong learning (Chittum & Bryant, 2014; Gikandi & Morrow, 2016; Hogg, 2018, Llado et al., 2014; Man et al., 2018).

**A collaborative community of learners.** During participation in peer review, students can experience high levels of interaction and collaborative exchange with their peers. Through meaningful and active engagement, students offer inquiries, deliver
positive commentary, and identify areas of concern with suggestions for improvement (Ching & Hsu, 2016; Gikandi & Morrow, 2016). As students interact and share their experiences with one another, a community of learners emerges (Moneypenney, Evans, & Kraha, 2018). Students become linked to one another through a collaborative exchange in support of their mutual goals and experiences.

As part of the collaborative peer review process, students can experience a transition in the role that they play in support of their educational pursuits. Through shared perspectives and offers of feedback and guidance, students move from one who is a hesitant observer to one who serves as an actively engaged member of a robust learning community (Dar, Zaki, & Kazmi, 2014; Gikandi & Morrow, 2016; Kearney, 2013). For example, Kearney (2013) purported that authentic peer and self-assessment could propel undergraduate education students into learning communities and promote deeper learning, stronger comprehension, and skill development in support of future career aspirations. Undergrad engineering students confirmed that peer assessment activity improved the classroom environment, enhanced social engagement, and allowed students to overcome their reluctance to ask questions of peers (Dar et al., 2014). This transformation offers empowerment for the learner who becomes responsible for the regulation of his or her learning, as well as that of fellow classmates (Nicol et al., 2014).

**Students take writing more seriously and improve early drafts.** When learners are aware of an upcoming peer review task, they can offer increased interest, motivation, and care in the preparation of their own work (Dar et al., 2014; Llado et al., 2014). In interdisciplinary research by Llado et al. (2014), university students reported that peer assessment prompted them to prepare stronger work and pursue more specifics pertaining
to the module or assignment. Through increased cognizance and attention to detail, students take additional time to prepare and avoid careless errors in their work. For example, in a study conducted over a three-year span, Baker (2016) observed that in scheduling a peer review activity four weeks prior to the due date of a final assignment, procrastination could be deterred. Peer review serves as an effective strategy to prompt students to plan ahead, engage in formative feedback, and revise work prior to the final submission (Baker, 2016).

**Increased level of understanding through diverse feedback.** The exchange of information during peer-to-peer feedback allows students to increase comprehension and learn new approaches to material through exposure to a multitude of different perspectives (Demirbilek, 2015; Gikandi & Morrow, 2016; Hogg, 2018). For example, in research by Demirbilek (2015), university students reported that the feedback process encouraged the sharing of thoughts and knowledge while helping them to further clarify the assignment’s guidelines and elements. In a study conducted by Hogg (2018), undergraduate education students asserted that through the receipt of diverse feedback they were able to increase awareness and obtain task completeness through the multiple perspectives of their peers. As students compare their work to that of peers, they gain insight into views that differ from their own (Gikandi & Morrow 2016; Nicol et al., 2014). Students are able to create an affinity to the shared experiences and diverse vantage points of their classmates; they can further distinguish those unique views which can help them improve their work in localized environments, such as leadership roles, teaching, and positions where they evaluate the work of others (Gikandi & Morrow, 2016; Hogg, 2018; Nicol et al., 2014). During peer review, students begin to construct
new knowledge as they compare the diverse understandings of the course content as shared through the viewpoints of their peers (Gikandi & Morrow, 2016; McMahon, 2010).

The value of students’ exposure to diverse perspectives should not be understated. In research by Lundberg and Sheridan (2015), three variables were identified as contributors to the domains of learning. These included student efforts, a supportive campus environment, and the encouragement of student interaction across diverse backgrounds (Lundberg & Sheridan, 2015). Lundberg and Sheridan (2015) asserted that an institutional focus on facilitating engagement between students from different social, economic, and racial or ethical backgrounds served as a contributor to online university students’ achievement. Accordingly, student learning elevates when students are prompted to “interact with diverse peers” (Lundberg & Sheridan, 2015, p. 14).

**Improved quality of submissions.** Through their participation in peer review, students receive an incentive to review the work of peers and identify mistakes so that they can better comprehend assignment criteria and create improvements to their own work (Barnard, de Luca, & Li, 2015; Kearney, 2013; Llado et al., 2014; Nicol et al., 2014). As they engage in peer review, students create meaning from the feedback that they give and receive and identify areas for needed improvement (Barnard et al., 2015). In research by Barnard et al. (2015), undergraduate writing students reported that helpful feedback from peers offered constructive pointers on what to add or change, punctuation, writing, and composition; students affirmed that instead of a directive, peer feedback served as a guide to allow the recipients to better their work (Barnard et al., 2015). In research by Kearney (2013), university education students endorsed peer and self-
assessments as valuable learning opportunities to better gauge the quality of their work prior to submission. Through the receipt of peer feedback, learning is stimulated as students conduct a deeper analysis of ideas to further develop their work in support of the learning goals and outcomes (Ching & Hsu, 2013; Gikandi & Morrow, 2016).

Students confirm the value that they receive from peer review participation in support of final submission quality. Higher education students note the opportunity to benchmark their work against that of peers while learning from peers’ errors and adopting what is seen as effective (Llado, et al., 2014; Mulder et al., 2014; Nicol et al., 2014). In research by Nicol et al. (2014), first-year engineering students acknowledged the opportunity to use the evaluation criteria, reflection, and a comparative process to review peers’ work to determine good and bad points in support of improvements to their own submissions. Similarly, in a study by Mulder et al. (2014), at a research-intensive university, nearly half of the participants reported a major benefit of peer review as the ability to see peers’ work; the undergraduate students described the opportunity to observe and learn from peers’ successes and errors while benchmarking their individual work against others (Mulder et al., 2014). Ultimately, students perceive peer review as an opportunity to review work, contemplate changes, and rework their assignments in support of a stronger final product (Nicol et al., 2014; Moneypenny et al., 2018).

Researchers assert that peer review participation by university students can prove supportive of improved levels of submissions (Mulder et al., 2014). Following peer review, the average of students’ essay grades has been observed to increase from that of pre-peer-review grades (Mulder et al., 2014). In addition, a rise in the number of merit grades can be observed for students involved in formative peer review as opposed to
those who are not (Nagori & Cooper, 2014). In research by Phillips (2016), online peer review was reported to offer incremental learning benefits through the delivery of feedback, with feedback scores positively aligned to college students’ academic performance. Therefore, research findings suggest the opportunity for students to improve the quality of their work by participating in peer review opportunities (Mulder et al., 2014; Phillips, 2016).

Positive perceptions of peer review. Although students can experience intimidation and anxiousness when faced with peer review, study findings reveal that many students report a positive experience following their participation (De Grez, Valcke, & Roozen, 2012; Demirbilek, 2015; Elshami & Abdalla, 2017; Mulder et al., 2014; Nicol et al., 2014). Through two separately conducted studies, over 75% of higher education students who were involved indicated that they would choose to continue to participate in upcoming peer review activities (Nicol et al., 2014) or recommend peer assessment opportunities in the future (Llado, et al., 2014). Through their engagement with focus group participants, researchers learned that undergraduate students at a research-intensive university were amazed by the benefits that they received from peer review, with 97% vowing future participation (Mulder, et al., 2014). Furthermore, first-year undergraduate student journal entries claimed a transition from anxiety to understanding and enjoyment as students began to perceive the value and gains associated with peer review involvement (Barnard et al., 2015). When higher education students participate in peer review and experience its significance as an opportunity to foster knowledge and facilitate learning, their attitudes toward peer review can become much more positive and receptive (Brill, 2016; Hogg, 2018; Ng, 2018).
**A viable alternative to instructor feedback.** Peer feedback can offer a practical solution to the instructional burden of providing extensive feedback across a large number of students. As opposed to feedback delivered by one instructor, the receipt of peer feedback offers an increased amount of commentary (Hamer, Purchase, Luxton-Reilly, & Denny, 2015) that can be delivered to students in a timely manner (Alnasser, 2018). Research findings, from a three-month study at an engineering university, indicated that the mean scores taken from peer assessment by teachers and students were observed to be similar with no statistical difference (Dar et al., 2014). The outcome revealed that an opportunity exists to utilize peer feedback as a reliable substitute for the feedback provided by instructors.

**Persistent Issues and Concerns**

While research findings indicate that there are numerous advantages to peer review, issues and concerns remain. These persistent worries include students’ (a) exhibit of leniency, (b) lack of motivation and a tendency to procrastinate, (c) lack of confidence and questioning of their own abilities, (d) experiences of anxiety and nervousness, (e) harboring concerns over assessor bias and lack of fairness (f) lack of trust in peers’ capabilities, (g) receipt of vague and conflicting feedback, and (h) reviews not valued at the same level as instructor feedback.

**Exhibit of leniency.** Students can display leniency during their participation in peer review (Baker, 2008). Frequently, students admit that it can be difficult to critically assess the work of peers (Demirbilek, 2015; Llado et al., 2014; Mulder et al., 2014) due to friendships and the potential for damaged relationships (Hogg, 2018; McMahon, 2010). For example, undergraduate students at a New Zealand university reported
concerns over the fairness of peers’ assessment, stating that established friendships and relationships made it harder to critique than to deliver praise (Hogg, 2018). In research by Demirbilek (2015), undergraduate students at a university in Turkey acknowledged the receipt of indirect comments from peer reviewers who sought to be polite and avoid direct critique. Furthermore, students’ insecurities regarding peer review have the potential to impact the manner in which students use tools and leverage grade marks (Baker, 2008; Llado, et al., 2014; Nagori & Cooper, 2014). Often, peer feedback can be seen as surface-level commentary aligned to presentation, mechanics, and formatting with very little constructive advice on how students can improve (Hogg, 2018; Man et al., 2018). Undergraduate study participants at an Australian university endorsed feelings of concern that classmates would be too nice in their peer reviews (Mulder et al., 2014). As students experience worries over critiquing the work of their peers, they may avoid criticisms and their comments may become tempered with moderation (McMahon, 2010).

**Lack of motivation and a tendency to procrastinate.** When students associate limitations, distaste, or low value with peer review, their motivation to participate may diminish, and they may resist engagement with peers (Brill, 2016; Wang, 2016). Students can perceive formative peer review as lacking in value due to its inability to directly impact grading (Kearney, 2018; Wang, 2016) and its limitations in framing feedback around what has been produced while not pushing students beyond the confines of their immediate work (Nicol et al., 2014). Even when students receive proper training for peer review, some students may not take peer review seriously and consider it to be unrealistic and a waste of time (Dar et al., 2014). The level of student participation in peer review and the quality of feedback provided can offer an indication of learners’ motivation
(Ching & Hsu, 2013), their perceptions, and their previous experiences with the peer review process (Man et al., 2018).

**Lack of confidence and questioning of their own abilities.** Students can experience anxiety and intimidation as they consider the level of responsibility and the amount of time required to mark the work of their peers (Llado, et al., 2014; Moneypenny et al., 2018). Through a sense of nervousness, students begin to question their own knowledge, experience, and ability to support peer review properly (Barnard et al., 2015; Fotheringham & Mowat, 2012; Mulder et al., 2014; Nagori & Cooper, 2014; Wang, 2016). In research by Nagori and Cooper (2014), postgraduate students acknowledged questioning their abilities during peer review and reported that it had been an unsettling experience, resulting in their hesitation for future participation. As revealed through focus group data, study participants of an eastern culture may feel less confident in their peer review participation as their culture discourages judging others to be lower than one’s self (Ratminingsih, Artini, & Padmadewi, 2017). Research findings indicated that a lack of experience, prior negative experiences, or the receipt of negative feedback can negate student confidence levels and create a reluctance to assume peer review responsibility (Cheng, Hou, & Wu, 2014; Llado, et al., 2014). In research by Cheng et al. (2014), undergraduate students acknowledged an inability to separate the critique of their work from the critique of themselves, thus taking peer feedback personally and experiencing a lack of confidence. Conversely, an increased frequency of negative peer review comments was claimed to be reflective of first-year engineering students who felt more confident in their knowledge of course materials (Hamer et al., 2015).
Experiences of anxiety and nervousness. Students report feelings of nervousness and a sense of anxiety and dread based on their concerns and intimidation for delivering and receiving peer feedback (Demirbilek, 2015; Fotheringham & Mowat, 2012; Lee, 2016; Mulder et al., 2014). During the early stages of peer review and due to a lack of experience with the process, students can experience initial shyness and discomfort (Dar et al., 2014; Elshami & Abdalla, 2017). Students share that they feel trepidation as they worry over peers reviewing their work and observing their weaknesses (Dar et al., 2014; Llado et al., 2014). Of unique interest regarding gender effects in the U.S. Midwest, Moneypenny et al. (2018) reported that female university students are more intimidated by the provision of peer reviews than their male classmates. Yet, the female students acknowledged less intimidation in the online peer review environment as opposed to face-to-face (Moneypenny et al., 2018). Furthermore, university students worry over peers’ responses to the comments that they provide for them (Fotheringham & Mowat, 2012; Lee, 2016) due to the difficulties that they experience in striking a correct balance between positive and negative comments (Mulder et al., 2014). In research by Lee (2016), Korean college students asserted that peer review was an anxiety-laden experience during which they had concerns over the quality of the comments they provided and their peers’ reactions to receiving them. However, students’ comfort with peer review can increase as they become more familiar with the process, more relaxed with their peers, and more understanding of the instructions and activities surrounding peer review (Lee, 2016).

Harboring concerns over assessor bias and lack of fairness. Students report a lack of trust in peer grading. There are concerns that classmates may lack objectivity in
their grading due to competitiveness among peers (Llado et al., 2014). For example, university students in social sciences and humanities reported that despite the anonymous nature of reviews, greater subjectivity in peer assessment was noticed due to competition and a lack of classmate impartiality (Llado et al., 2014). In addition, students feel that friendships, disdain for fellow classmates, and personal contradictions can impact assessor scores (Hogg, 2018; Sridharan, Muttakin, & Mihret, 2018). Research by De Grez et al. (2012) sustained university freshmen’s concerns regarding bias due to the gender effect as male assessors were reported to offer higher marks for female presenters than did female assessors. Conversely, undergraduate participants in research conducted by Mulder et al. (2014) believed that peer feedback was well-balanced and helpful. When peer assessment scores contribute to grading, instructors may consider disregarding the highest and lowest scores received in efforts to address student concerns surrounding bias and to reduce the effects of unfair assessment (Baker, 2008).

**Lack of trust in peers’ capabilities.** Students harbor concerns over the ability of their classmates to conduct peer review accurately and effectively (Man et al., 2018; McMahon, 2010; Mulder et al., 2014; Nagori & Cooper, 2014). Mixed opinions regarding peers’ abilities can exist with some students offering the belief that peers with more experience can deliver stronger and more useful feedback (Elshami & Abdalla, 2017). For example, in research by Elshami and Abdalla (2017), undergraduate diagnostic radiography students expressed further concerns over the ability of low-performing students to deliver suitable feedback (Elshami & Abdalla, 2017). The reliability of peer feedback can come into question and feedback has the potential to be ignored when students consider peers to have poor grammar and insufficient writing.
skills (Alnasser, 2018; Mulder et al., 2014). Further compounding this problem, some students can offer very high expectations for peer assessment and desire a more individualized, detailed, and in-depth review of their work than they receive (Llado, et al., 2014; Man et al., 2018).

Additionally, students in an undergraduate study asserted that incorrect feedback from non-experienced assessors caused them to back-track and make unnecessary changes to their work (Mulder et al., 2014). Through commentary obtained in a group meeting and through students’ written comments, undergraduate study participants, involved in a four-year action research project, expressed concerns over peer assessment validity (McMahon, 2010). Students shared reservations that peers were positioned to critique assessment criteria accurately and felt that reviews by academic faculty were the only way to safeguard and guarantee consistency (McMahon, 2010).

**Receipt of vague and conflicting feedback.** The value of peer review feedback is diminished when it is indistinguishable, contradictory, or difficult for students to understand. Students report the receipt of low-quality feedback that is often laced with tender affirmative tones, justifying disclaimers, and that reflects low levels of reviewer effort (Ching & Hsu, 2013, Kelly, 2015; Nicol et al., 2014). For example, online master’s students reported disappointment in the time invested in the delivery of substantial feedback for peers when the feedback they received was not useful (Ching & Hsu, 2013). In study focus groups, first-year engineering design students emphasized a main limitation of the peer feedback they received as the inadequate effort and poor quality of reviews provided by some peers (Nicol et al., 2014). Study participants confirmed that peer feedback can often be unclear, difficult to comprehend, and inconsistent.
(Demirbilek, 2015) with the receipt of weak reviews serving as a discouragement to the recipient (Brill, 2016). A lack of dedicated reviewer effort produces a limitation of the peer review process as this deficiency results in participants’ receipt of weak and inadequate reviews (Kelly, 2015; Nicol et al., 2014).

Reviews not valued at the same level as instructor feedback. Students indicate that they perceive expert feedback from a professor or tutor to be more valuable than feedback received from peers (Brill, 2016; Llado et al., 2014; Mulder et al., 2014; Wang, 2016). Although students can reflect a positive attitude and offer acceptance toward the receipt of peer and computer feedback, they express a strong desire to maintain instructor feedback as well (Alnasser, 2018). In turn, students may perceive peer feedback as supplemental to that of the instructor but not as a replacement (Dar et al., 2014; Wang, 2016). Ultimately, some students express that they do not want their work to be reviewed by anyone but their instructor (Wang, 2016).

Pedagogical Strategies for Peer Review

Pedagogical strategies can be implemented to address and promote student engagement in peer review and to enhance the quality of their participation and feedback. The following section will discuss these tactics. First, a discussion will cover strategies for teaching students to conduct peer review. Next, strategies for motivating students to engage in peer review will be explored.

Teaching Students to Conduct Peer Review

To ensure that students reap the benefits of peer review, it is important that they are educated on how to conduct peer review and prepared for participation in the process.
The following section will examine these opportunities. Proper training and instruction will be examined first, followed by the use of preparatory exercises.

**Proper training and instruction.** Through a proactive approach and prior to the onset of peer review, students can receive training that helps explain how to give and receive feedback (Alnassar, 2018; Baker, 2016; Dar et al., 2014; McMahon, 2010). Students can be taught to understand the purpose of the peer review activity and the academic benefit that it provides (Llado, et al., 2014). Furthermore, the application of unique strategies and approaches to training, such as those that clarify the activity and provide helpful tools, can be implemented in response to the type of task and the academic year in which the study falls for its participants (Llado, et al., 2014). If students are taught how and what to assess, the peer assessment process can be simplified for both instructors and students (Dar et al., 2014).

Research findings emphasize the opportunity to utilize peer review training to address specific student needs (Baker, 2016; Barnard et al., 2015; McMahon, 2010; Sridharan et al., 2018; Tricio, Woolford, & Escudier, 2018). Training can be implemented to teach students how to provide constructive feedback by getting into the mindset of the peer (Barnard et al., 2015) or how to receive and accept constructive criticism (McMahon, 2010). Sridharan et al. (2018) suggested the incorporation of training sessions as a way to teach students to work collaboratively, peer assess, and provide effective feedback. Furthermore, McMahon (2010) asserted that there was a need to create training to guide students who may be overly critical and prove disruptive to peer group dynamics. In a face-to-face classroom, students can be trained for observation in support of upcoming peer assessment and the delivery of written peer feedback (Tricio
et al., 2018). Lastly, in research conducted over three years at a private college in the Northeastern U.S., the majority of junior-level students were able to use a structured form and a brief supportive training session to identify a problem, offer comments, and deliver suggestions for improvement (Baker, 2016).

**Preparatory exercises.** As students prepare to engage in peer review, rehearsals and practice exercises can help ensure that students are ready for participation (Hamer et al., 2015; Nagori & Cooper, 2014). These activities provide hands-on preparation as students step through the peer review processes that will follow. For example, Nagori and Cooper (2014) reported that the use of a marking workshop, prior to the onset of peer review, could improve students’ comprehension of the criteria to be used for peer review assessment. Similarly, by practicing on a rubric that is identical to the one used by tutors, students were able to complete a preparatory exercise and become familiar with the marking process (Hamer et al., 2015).

**Motivating Students to Engage in Peer Review**

There is an opportunity to integrate strategies for motivating students to participate in peer review. These approaches can be utilized by instructors to inspire students, remind them of the merit of peer review, and to provide encouragement. These methods are organized into two sections in the content that follows. First, the use of instructor or facilitator intervention and encouragement will be discussed. Next, instructor-based tools and approaches will be examined.

**Instructor or facilitator intervention and encouragement.** Research indicates that students are not intrinsically motivated and may be motivated both intrinsically and extrinsically in different ways (Hartnett, St. George, & Dron, 2011). Furthermore, student
collaboration and interaction do not take place automatically in an asynchronous environment (Zhao, Sullivan, & Mellenius, 2014). A lack of student engagement in higher education is a problem that can be overcome by taking steps to address student needs (Kearney, 2013).

Students can be motivated to participate in peer review through instructor, facilitator, or moderator intervention and encouragement (Barnard et al., 2015; Hew & Cheung, 2008; Michinov et al., 2011; Wang, 2016). There is an opportunity for tutors to stimulate adult learner participation in an e-learning platform by first identifying procrastinators and then providing feedback that allows them to see their level of work in comparison to that of others (Michinov et al., 2011). Facilitators can build up undergraduate writing students’ confidence by validating the peer feedback that students provide in a blended setting, featuring both online and face-to-face engagement (Barnard et al., 2015), Additionally, facilitators can promote undergraduate writing students’ abilities to conduct peer review in a face-to-face classroom, based on students’ unique qualities and opinions (Wang, 2016). Lastly, there are practical implications for the use of student facilitators in efforts to enable, attract, and promote post-graduate student participation in online asynchronous discussion as part of a blended learning environment (Hew & Cheung, 2008).

**Instructor-based tools and approaches.** Instructors can implement unique methods and tools to motivate and encourage student participation in peer review activities (Baker, 2008; Ghadirian, Ayub, Bakar, & Hassanzadeh, 2016; Hamer et al., 2015; Jin, 2017; Wang, 2016). The use of an honor pledge can encourage student reviewers to comprehend the serious nature of and responsibility aligned to their peer
review participation (Baker, 2008). In addition, Korean undergraduate students reported that the implementation of visualization tools, such as those that compare and display group and individual participation, were motivational and offered an impact on their online participation (Jin, 2017). Furthermore, incentives that provide additional grade points for student participation (Hamer et al., 2015), as well as the random distribution of work for peer review (Wang, 2016), can serve to pique student interest and promote participation. Lastly, instructors can introduce peer moderators into online asynchronous conversations in efforts to construct knowledge and to sustain dialogue (Ghadirian et al., 2016).

**Peer Review Tools and Methods**

To create structure, clarify expectations, and support the creation of written feedback, tools and methods can be integrated into the peer review framework. These elements help to establish the peer review format and guide student participation. While an array of diverse peer review approaches exists, a selection of these will be shared in the following section and include (a) tools, devices, instruments, and forms, (b) scripts, guides, and roleplay, (c) groupings and participation levels, (d) settings and environments, (e) programs, systems, and strategic approaches (f) assessment options, and (g) timing and facilitation.

**Tools, Devices, Instruments, and Forms**

To encourage engagement, deter procrastination, influence level of performance, and gauge participation, tools can be integrated into the peer review environment. The addition of these structural components can enhance the peer experience for students.
These components will be discussed in the following section and include (a) instruments, (b) peer review tools, (c) forms, and (d) rubrics.

**Instruments.** Opportunities exist to introduce established and reliable instruments into peer review participation and research environments (Baker, 2008; Livsey & Lavender-Stott, 2015). Instruments can be utilized to gauge and assess the performance and behavior of those who participate in peer review activities. In a study by Livsey and Lavender-Stott (2015), the Creighton Simulation Evaluation Instrument (CSEI) was utilized for assessing the performance of nursing students during home simulation exercises. Peer assessors and faculty members were able to utilize the CSEI to assess students’ technical skills, critical thinking, and communication and assessment behaviors (Livsey & Lavender-Stott, 2015). In research by Baker (2008), three peer evaluation instruments were tested for their effectiveness in evaluating behavior in small group peer review. The instruments, two possessing rating scales and one with a single score approach, were observed to offer reliability and to be in alignment with student performance measures (Baker, 2008). Three different peer evaluation instruments, including long form, short form, and points allocation, were utilized alone and in combination with one another (Baker, 2008). However, the results across all three instruments were reported to be similar and in correlation with the students’ comprehension of the course material as indicated by their individual quiz scores (Baker, 2008).

**Peer review tools.** Research indicates that there are opportunities to utilize peer review tools in support of the processing and management of peer review activities (Caddy, 2014; Mulder et al., 2014; O’Connor & McGuigge, 2013; Sridharan et al., 2018).
PRAZE, an electronic peer review management tool, was reported to be useful in distributing articles among students to ensure that each student’s article received three reviews (Mulder et al., 2014). Sridharan et al. (2018) suggested that an online survey-based tool, integrated into the learning management system (LMS), was beneficial for reducing non-participants’ reliance on others and helpful in improving communication. Similarly, in undergraduate research by Caddy (2014), the online tool SPARKPLUS was reported to record a high level of group peer review engagement and a reduction in social loafing, although participation lessened over the semester. In an online graduate course, researchers O’Connor and McQuigge (2013) claimed the piloting of badging to be an effective tool for recognition of peer achievement with an outcome of increased student participation. In turn, there are numerous opportunities to integrate, evaluate, and refine the use of peer review tools in support of the peer-to-peer learning environment (Mulder et al., 2014; O’Connor & McQuigge, 2013).

**Forms.** The use of forms serves to clarify expectations and standardize feedback within a structured peer review environment (Baker, 2008, 2016; Dijks, Brummer, & Kostons, 2018; Gielen & De Wever, 2015; McMahon, 2010; Mulder et al., 2014; Tricio et al., 2018). A highly-structured feedback form can provide students with the competencies and main criteria that need to be assessed and marked by assessors (Baker, 2008, 2016; Dijks et al., 2018). By structuring the feedback process, Baker (2016) confirmed that junior-level sociology students were better able to deliver formative feedback to peers with the potential for students to use the structured form during self-assessment of their own writing. Third-year teaching students’ use of a structured, 35-item peer review form provided feedback results that did not differ considerably from
that of the instructor (Dijks et al., 2018). Through the use of a structured feedback form, dental students provided written peer feedback that proved complementary to feedback delivered by tutors (Tricio et al., 2018). The provision of structure to the feedback process can serve as a valuable approach to encourage student participation and to heighten the quality of their peer review engagement (Gielen & De Wever, 2015).

To promote student buy-in and participation, there is an opportunity to involve students in the creation, design, and ownership of feedback forms. The roles of assessor and assessee can be defined in a stronger way through the use of forms in which assessees request specific feedback from those who are assessing their work (Gielen & De Wever, 2015). By transferring ownership of the feedback form to the assessee, the peer assessment process has the capacity to become more uniquely formative (McMahon, 2010). Additionally, the distribution of a standard feedback form, with the opportunity for students to review and discuss potential improvements, serves to build student ownership into the peer review process while clarifying expectations and assessment criteria through dialogue and feedback (Baker, 2008).

**Rubrics.** During peer review assessment, rubrics can be utilized to guide proper evaluation and assist students in creating constructive feedback that aligns with the assignment criteria (Baker, 2016; De Grez et al., 2012; Elshami & Abdalla, 2017; Gikandi & Morrow, 2016; Kelly, 2015; Llado et al., 2014; Ng, 2018; Ratminingsih et al., 2017; Sridharan et al., 2018). In research conducted across master’s degree accounting classes, students emphasized the need for more complete and qualitative feedback in support of peer marks received (Sridharan et al., 2018). In response, Sridharan et al. (2018) asserted that by infusing criterion-based rubrics into the peer assessment process,
a common understanding of anticipated standards could be achieved, and the validity and value of peer review could be improved. Additionally, the researchers suggested that by providing the rubrics to students prior to the onset of peer review, assessment effectiveness could be further enhanced (Sridharan et al., 2018).

Although rubrics can provide specific criteria to be utilized for peer assessment (Ng, 2018), differences can exist in the way that teachers and students interpret the rubric criteria as not all students apply the criteria in a consistent or comparable manner during peer assessment (De Grez et al., 2012). Therefore, training in the use of a detailed rubric is essential to ensure that proper evaluation takes place (Elshami & Abdalla, 2017). Training is particularly important when the students involved are facing a first-time peer review experience (Llado et al., 2016).

The use of rubrics can assist students in providing constructive feedback as they assess and provide comments for their peers. Guided rubrics, with accompanying questions to assist the reviewer, support an increase in the level of feedforward observations and help students produce feedback that is laden with questions and suggestions for writer improvement (Kelly, 2015). Additionally, guided rubrics have proven helpful in reducing less useful, problematic feedback and the level of meanness in the feedback produced (Kelly, 2015). Feedback from English education student teachers confirmed the value of guiding criteria within a peer review rubric as a means to deter subjectivity and avoid sharing comments that are not relevant (Ratminingsih et al., 2017). Furthermore, by threading qualitative statements into each of the guided rubric sections, assessors are provided with a choice of qualitative statements to share, and the perception of grading during peer review becomes minimized (Baker, 2016).
Scripts, Guides, and Roleplay

To support students’ active participation in peer review, guiding components can sustain efforts to construct quality feedback. In addition, these components can make students feel more comfortable about their engagement and interaction with peers during the peer review process. This section discusses these components and includes (a) scripts and prompts, (b) exemplars and guides, and (c) roleplay.

Scripts and prompts. The integration of scripts and prompts can assist students in creating feedback and serve as a framework for analysis (Ching & Hsu, 2013, 2016; Nicol et al., 2014). Ching and Hsu (2013) emphasized that even though all students do not choose to utilize the tools offered, the provision of specific questions to prompt students and guide their peer review efforts can prove helpful to some students during their construction of feedback. First-year engineering design students confirmed that the delivery of guiding questions to prompt and guide assessment proved helpful when used as a framework for analyzing the work of peers (Nicol et al., 2014). Furthermore, the students reported that guiding questions allowed them to review peer work in the context of questions provided, assisted with the creation of peer feedback, and prompted them to consider their own work in relation to the prompting questions provided (Nicol et al., 2014).

Exemplars and guides. The use of exemplars and guides, such as instructional procedures for peer assessment, can prove beneficial for leading and directing students in their review of peer work and in the creation of peer review feedback (Brill, 2016; Dar et al., 2014; Nagori & Cooper, 2014; Reinholz, 2018; Wang, 2016). In research by Reinholz (2018), the use of reflective questions, checkboxes, and hints was reported to offer
guidance for students during peer-assisted reflection (PAR). Student feedback and staff interviews, from a two-phase study including international MBA participants, asserted the need to supply students with exemplars of marked assignments and an assortment of feedback statements to support students’ provision of peer review feedback (Nagori & Cooper, 2014). Furthermore, research including graduate instructional design students suggested the need to support peer review through scaffolding and the provision of ample resources, such as checklists and models, to assist students in conveying effective feedback dialogue (Brill, 2016). Lastly, instructors have an opportunity to infuse guidelines into the peer review process to create clarity surrounding the peer assessment criteria (Wang, 2016) and to assist students in learning how to peer assess (Dar et al., 2014).

**Roleplay.** The use of roleplay during peer review can allow participants to feel more comfortable and responsible during their critique of work by peers (Ching, 2014; Ching & Hsu, 2016; Lelis, 2017). When students take on a role to provide peer review feedback, they are able to deliver comments pertaining to problems and areas of weakness without fear of hurting peers or damaging relationships (Ching, 2014). Furthermore, through roleplay, participants report the ability to experience levels of psychological safety and trust (Ching & Hsu, 2016), allowing them to feel safe in taking personal risks during interaction with peers (Ching, 2014). Research findings from an online peer review roleplay activity at a New Zealand university indicated that 60% of undergraduate writing students felt more comfortable conducting peer review in a roleplay scenario, as validated by their level of peer review feedback (Ching & Hsu, 2016). Studies indicated that there are opportunities for students to critique the work of
peers through self-selected stakeholder identities (Ching & Hsu, 2016) and through the switching back and forth from peer tutor to peer tutee through reciprocal learning (Lelis, 2017). Of significant importance, students reported feeling highly responsible for the correctness of their feedback when they assumed the role of a tutor (Lelis, 2017).

**Grouping and Participation Levels**

To better leverage student participation and promote success, peer review participants may be assembled into sets. Research studies indicate that students can be placed into designated groups (Demirbilek, 2015) or allowed to choose their own team members (Cheng et al., 2014; Sridharan et al., 2018) in support of peer review opportunities. Through one example of the self-selection process, students can post links to a discussion forum and indicate that they are looking for partners (Sridharan et al., 2018). During that process, students create conversation, find partners, and self-enroll in a designated area that offers an independent thread for discussion and peer review activity (Sridharan et al., 2018). In support of small group activity, a University of Washington study reported that more than 50% of undergraduate students agreed that working in small groups can enhance learning, although approximately one-third reported negative or mixed small group experiences (Hillyard, Gillespie, & Littig, 2010). Furthermore, Liu, Li, and Zhang (2018) asserted that the addition of small group synchronous conversations can prove beneficial and enhance the effectiveness of online peer assessment.

Students may be placed into dyads by faculty members (Livsey & Lavender-Stott, 2015) or allowed to select peer review partners of their own choosing (Barnard et al., 2015). In an example of peer review activity across dyads, Livsey and Lavender-Stott
(2015) randomly divided undergraduate nursing students into pairs with one dyad engaged in a simulation activity and the other dyad engaged in peer observation and evaluation. Following a debriefing session, the dyads switched roles and continued the peer review assessment (Livsey & Lavender-Stott, 2015). In a separate approach involving first-year undergraduate students, members of individual dyads used prompts to engage in peer review dialogue and worked with their partners to co-construct written responses on structured peer review sheets (Barnard et al., 2015). Pozzi, Ceregini, Ferlino, and Persico (2016) indicated that students placed in dyad arrangements were observed to be more actively engaged than students who were placed in group settings. This indication may be due to the increased responsibility that students feel when working one on one with a peer, as well as how much more evident it becomes when one party does not participate in a dyad peer review arrangement (Pozzi et al., 2016).

**Settings and Environments**

The peer review activity can be housed within the online university setting or provided through environments that are peripheral. Individual environments may be selected for their ease of use. In addition, locations may be chosen for their ability to entice users or to enhance the peer review experience.

There are numerous opportunities to place peer review activities within the online course design, software, and LMS of higher education institutions (Gikandi & Morrow, 2016; Hampel & Pleines, 2013; Nicol et al., 2014). By creatively utilizing the asynchronous discussion forums within an organization’s LMS, students can post and share their work for active conversation and collaboration (Gikandi & Morrow, 2016). In studies conducted over two years within the Moodle LMS, university students preferred
discussion forums to other available tools with higher participation across assessment-related tasks (Hampel & Pleines, 2013). In addition, PeerMark TurnItIn (Nicol et al., 2014) and the Authentic Assessment for Sustainable Learning (AASL) model (Kearney, 2013) have been utilized by universities as viable settings to manage peer assessment and to teach students how to evaluate their work and that of their peers. In turn, there are numerous opportunities to design courses and to use the available online structure to implement peer review in higher education.

Institutions of higher education may choose to select external peer review environments that reside outside of the LMS and course infrastructure in efforts to increase participation by enticing users with well-known, popular settings. Demirbilek (2015) asserted that both wiki sites and Facebook were conducive to university students sharing their materials and receiving peer feedback. The study results indicated that students benefitted from peer feedback activities that took place in both environments (Demirbilek, 2015). Other research reports the opportunity to use Twitter and Twitter-based events as compelling forces for social and collaborative learning, even without the presence of an online facilitator or moderator (Evan, 2015). Lastly, off-site, physical peer review experiences can provide opportunities for indirect learning as assessors watch their classmates engaged in simulations, learn from observing, and deliver evaluative peer feedback (Livsey & Lavender-Stott, 2015). Therefore, settings that reside outside of the course and the LMS can provide a viable and engaging option for peer review activity.
Programs, Systems, and Strategic Approaches

Established peer review processes can deliver a strategic approach to peer review application. These methods, offering efficiency and providing structure to the peer review process, will be discussed in the next section. First, program and system implementation will be examined. Next, strategic approaches through peer review design and student involvement will be covered.

Program and system implementation. To provide and promote peer engagement, research reveals there are opportunities to utilize methods that have proven reliable and that offer the capacity to promote student engagement (Hodgson, Benson, & Brack, 2013; Hsia, Huang, & Hwang, 2016; Madland & Richards, 2016; Phillips, 2016). Hodgson et al. (2013) asserted that over three cycles of a peer-assisted learning program, which included peer assessment, student support, and interactive tutorials, student engagement grew and produced increased attendance and participation. Calibrated Peer Review, the online system for peer assessment management, was observed to be successful in allowing university sophomores to construct reliable feedback for their peers (Phillips, 2016). Furthermore, students reported value in the experience and the findings indicate that the act of giving feedback provided the most significant impact on students’ work (Phillips, 2016). In research by Madland and Richards (2016), the majority of students who participated in the Study Buddy System found it valuable and recommended it for other graduate classrooms. The system, which allows for informal review prior to submission, can be integrated to promote student-to-student interaction and to break the isolation that can be experienced by distance learners (Madland & Richards, 2016).
Strategic approaches through peer review design and student involvement. In efforts to create structure and to increase student interest and participation in peer review, instructors and researchers can implement planned, creative approaches into the peer review design (Barnard et al., 2015; Cheng et al., 2014; Fotheringham & Mowat, 2012; Hsia et al., 2016). Through a collective approach via scaffolding, students can work together to assist one another in their understanding of and skill development in academic writing (Barnard et al., 2015). With course design alterations, instructors can consider embedding a tutor in a co-learner’s role (Fotheringham & Mowat, 2012). Cheng et al. (2014) asserted that the integration of Really Simple Syndication (RSS) feeds could notify students when comments and responses to posts had been received. The RSS feeds could elevate response levels by prompting students to reengage in the peer review dialogue (Cheng et al., 2014). Hsia et al. (2016) suggested online video peer feedback with comments and rating options to improve feedback quality and correctness. These innovative approaches to peer review provide an opportunity to pique the interest of students and promote engagement.

Strategic approaches to peer assessment can move beyond the course design and deliver opportunities for active student and peer reviewer involvement as well. By involving graduate students as initial reviewers in the professional peer review of scholarly journal articles, they can gain exposure to varying degrees of writing quality and strengthen their own skills (Chittum & Bryant, 2014). Additionally, in research by Nobarany and Booth (2015), politeness strategies were analyzed as a way for peer reviewers, such as students, faculty, postdoctoral fellows, and researchers, to moderate their criticisms. The researchers observed that the open peer review process offered
challenges for reviewers but yielded opportunities to integrate politeness strategies in support of smooth interactions and relationship maintenance (Nobarany & Booth, 2015).

**Assessment Options**

During peer review, the assessment process allows students to gauge the work of their peers. It is during this systematic and intentional review that criteria are applied, and work is evaluated. Assessment options will be covered in the following section. First, self-assessment will be discussed, followed by an examination of the use of multiple reviews.

**Self-assessment.** The process of self-assessment can be utilized as an opportunity for students to intentionally and systematically evaluate their own work (De Grez et al., 2012; Fotheringham & Mowat, 2012; Gikandi & Morrow, 2016; Llado et al., 2014; McMahon, 2010; Papadopoulos et al., 2017; Phillips, 2016; Ratminingsih et al., 2017). Peer-to-peer feedback can foster and further initiate self-assessment as students begin to reflect on their own learning (Gikandi & Morrow, 2016). For example, in research by McMahon (2010), undergraduate students acknowledged that self-assessment could help them improve their work and this knowledge motivated them to engage in reflection. Llado et al. (2014) reported that self-assessment provides students with autonomy as they set goals and take on independent learning. Furthermore, a self-assessment cycle can be integrated into the established peer review process as an additional opportunity for students to reflect and review (Phillips, 2016).

Although student feedback confirms a positive perception of self-assessment value (Ratminingsih et al., 2017), students assert the need to be honest during self-assessment and discuss the difficulties that can arise when one self-assesses
(Fotheringham & Mowat, 2012). For example, in research by Fotheringham and Mowat (2012), students emphasized a struggle against the inclination to be exceedingly critical of one’s own work. Even so, McMahon (2010) asserted that when peer assessment was part of self-assessment, students displayed greater comfort with the assessment process. In addition, De Grez et al. (2012) reported that university freshmen’s perception of peer assessment was positively influenced by completing self-assessment and or peer assessment. Ultimately, researchers report that on occasions when the self-selection process creates an assessee without a peer assessor to review work, the self-assessment process can provide a viable replacement for peer review (Papadopoulos et al., 2017).

**Multiple reviews.** As part of the peer review process, the implementation of multiple reviews can support greater accuracy of reviews and increased student confidence and ability (Barnard et al., 2015; Brill, 2016; Dar et al., 2014; Elshami & Abdalla, 2017; Jeffery, Yankulov, Crerar, & Ritchie, 2016; Lee, 2016; Papadopoulos et al., 2017; Reinholz, 2018). The use of multiple reviews can assist students who are new to peer review as they receive recurrent opportunities to practice and debrief (Brill, 2106). For example, Barnard et al. (2015) reported that students’ confidence and competence in peer review grew as they developed their abilities through scaffolding in the course. Furthermore, multiple reviews can deliver a strong influence on peer assessment accuracy (Elshami & Abdalla, 2017; Jeffery et al., 2016). In research by Elshami and Abdalla (2017), undergraduate radiography students suggested that multiple evaluators could improve the quality of feedback due to the diversity in perspectives. Furthermore, Jeffery et al. (2016) asserted that students would need to conduct six assessments each with at least three assessors per assignment to ensure accuracy.
Therefore, as students complete multiple reviews, they become less anxious (Lee, 2016) and their assessments become more strongly aligned with those completed by instructors (Dar et al., 2014; Jeffery et al., 2016).

**Timing and Facilitation**

The timing and facilitation of peer review can provide students with the necessary time to review work and deliver a process that encourages student participation. Additionally, through facilitation techniques, students with lower levels of participation can be stimulated to engage, and students can feel a stronger level of comfort when anonymity is applied. Opportunities to impact peer review through timing and facilitation will be discussed in the following section and include (a) scheduling assessment, (b) teacher facilitation, and (c) anonymous reviews.

**Scheduling assessment.** The scheduling of a peer review activity is an effective means of structuring peer assessment, providing students with time to consider their contributions, and encouraging students to begin their work earlier (Baker, 2016; Gikandi & Morrow, 2016). In research by Baker (2016), the scheduling of peer review prompted junior-level sociology students to initiate work on their drafts and submit their work by the deadline. By setting the peer review of drafted work several weeks before the final submission deadline, the majority of students at the small private college began planning their work at least a month in advance (Baker, 2016). In addition, the scheduled approach to peer review provided the instructor with the necessary time to blind match students’ submissions with writers based on the level of work completed (Baker, 2016). When students have time to review and contemplate their contributions to peers, the result offers feedback that is more thought-out and constructive (Gikandi & Morrow, 2016). For
example, Gikandi and Morrow (2016) reported that in giving online students a reasonable amount of time to respond to others, diverse learning styles could be considered, and the student experience of deeper inquiry could be realized. The scheduling of peer review can provide this period of contemplation and preparation for students.

**Teacher facilitation.** The use of teacher facilitation, within the peer review environment, allows the instructor to stimulate and expand the conversation and intervene when students display low levels of participation (Cheng et al., 2014; Gikandi & Morrow, 2016). By weaving instructor dialogue into the student peer-to-peer discussion, the instructor can ensure that relevant topics are covered and validate the peer feedback that is present (Gikandi & Morrow, 2016). For example, Gikandi and Morrow (2016) asserted that by sharing the responsibility of formative feedback and guiding students into constructive engagement, the teacher role became critical in fostering peer-to-peer feedback. There is an opportunity for instructors to encourage in-depth review of peers’ work and promote the use of neutral comments that pertain to content as opposed to comments regarding the assessee (Cheng et al., 2014).

**Anonymous reviews.** Student identification can be removed from student submissions to allow for the implementation of anonymous reviews in support of a structured peer review assessment (Dar et al., 2014; Dijks et al., 2018; Fotheringham & Mowat, 2012, Lin, 2018; Nicol et al., 2014; Sridharan et al., 2018). When anonymity is introduced into the peer review environment, it can prompt participation by students who normally offer minimal engagement (Sridharan et al., 2018) and serve to deter potential bias by assessors (Dar et al., 2014). For example, Sridharan et al. (2018) reported that master’s level students perceived anonymity as a way to encourage participation by
members on their team who were previously slow to engage. In support of their research involving undergraduate engineering students, Dar et al. (2014) asserted the need to remove writer identification from submissions in order to deter peer bias. Although students perceive anonymous peer feedback to be satisfactory, some students report anxiousness as they contemplate who made comments on their work (Fotheringham & Mowat, 2012) and consider the reviewer’s level of expertise (Dijks et al., 2018). Even still, in research conducted across peer review groups with identified and anonymous participants, students with anonymity were reported to offer more cognitive feedback and suggestions to their peers for improvements (Lin, 2018).

**Summary**

In summary, peer review offers a process of give-and-take where students conduct reviews and deliver feedback on the work of their peers. It is through this reciprocal form of social learning that the collaborative peer review process becomes aligned with constructivism. Students actively construct and create knowledge during the shared experience of peer review.

Through their participation in peer review, students receive benefits as they engage in critical thinking, collaborate with peers, receive an increased level of diverse feedback, and more. Although students often gain a positive appreciation for peer review following their participation, some students host negative perceptions of peer review. They may experience feelings of trepidation and anxiety, harbor concerns, or procrastinate and display a lack of motivation.

To motivate students and prompt their engagement in peer review, pedagogical strategies can be implemented. Training opportunities can prepare students to conduct
peer review, and preparatory exercises can allow students to step-through and rehearse their involvement in the upcoming peer review activity. Students can receive motivation to engage in peer review through instructor intervention or through diverse approaches that pique the interest of students.

The implementation of tools and unique methods can provide structure to peer review, direct students’ efforts during the interactive process, clarify expectations, and support the delivery of constructive feedback. Unique settings and established peer review systems provide opportunities to house peer review activity in engaging environments. Furthermore, students can be placed into groups and supplied with prompts and guides to enhance peer involvement.

Ultimately, a myriad of opportunities exists for developing a standardized framework for peer review. This approach can guide interaction and promote student engagement in peer review activity. The use of a structured peer evaluation system provides an opportunity to create a positive perception of peer review, engage students in the learning experience, and allow them to reap the many benefits that peer review participation delivers.
CHAPTER 3

METHOD

The purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students at the University of North Coast Muscari (UNCM). The mixed methods study examined the following two research questions:

RQ1. How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?

RQ2. What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?

Research Design

Action research serves as an appropriate method for systematic inquiry as it empowers practitioners to address research questions and seek progressive local change through focused and purposeful action (Johnson, 2008; Riel, 2007). The purpose of action research is not to verify or refute a theory or add to the growing body of research literature. Its goals are to involve and improve. Action research aims to improve practice, increase the comprehension of the practice, and advance the state through which the practice occurs (Carr & Kemmis, 1986). Through the combination of action, research, and participation, action research seeks to create knowledge for the purpose of promoting analysis and delivering change (Greenwood & Levin, 2007).
Through my study, I sought to align my work with action research, the vigorous engagement by researchers in assisting organizations to introduce novel approaches and implement new ideas and solutions (Kaplan, 1998). This form of research was appropriate for my study as I strove to follow the path of college-level practitioners who, serving as action researchers, identified a problem and sought to rectify the concern through the infusion of innovative technology (Wetzel, Buss, Foulger, & Lindsey, 2014). Similarly, I addressed the dilemma of limited participation and low-quality engagement in routine online peer review activities in GRAD COM Capstone classrooms at UNCM. By implementing an innovative online structured peer evaluation system and assessing its effectiveness and the perceptions of students, I aligned my study to one of the main topic areas of action research, the methodical analysis of a new teaching process (Johnson, 2008).

Action research differs from more analytical and experimental forms of research as it is action aligned, it allows the insider to conduct research on his or her individual practice, and it employs reflection to transition leaders into agents of change (Buss, 2018; Zambo & Isai, 2013). Distinct from traditional research methods, action research utilizes research literature to inform a problem of practice innovation instead of solely identifying a gap in the literature to initiate a study. Due to the localized proximity of action research, the literature serves as a rationale for creating research-based resolutions as the researcher contextualizes the problem in relation to larger ideas (Beltzer & Ryan, 2013). In turn, action research can be implemented as a signature form of instruction to develop educational leaders into research practitioners with the training and skills to recognize obstacles, create resolutions, and initiate local change (Zambo, 2011).
The action research approach recognizes the capacity for practitioners to actively engage in all facets of the research process; it rejects the use of an external expert to enter the research environment and record findings (Kemmis, McTaggart, & Nixon, 2014). This characteristic allows educators to conduct research that is focused on improvements in practice methods and local environments, with necessary changes implemented by the practitioners themselves (Kemmis et al., 2014). As action research occurs through a cyclical process, acts of observance, reflection, and action are ongoing (Johnson, 2008; Stringer, 2007). Although action research occurs out of the desire to address a problematic situation, it is never done to someone; it is conducted by or in partnership with those who are insiders within the local setting (Rudestam & Newton, 2007).

Benefits of action research include its specificity to a local site and an immediacy of improvement (McMillan, 2004). Unlike traditional research, action research is not generalizable across populations (Metz & Page, 2002). Its goals are to improve the researcher’s judgment, resolve a local problem, and advance practices within one or more classrooms (McMillan, 2004). The advantage of this process is that the educator, as both participant and observer, becomes actively immersed in critical thinking, reflection, and professional improvement (Mertler, 2017). This unique positioning adds to the strength of action research as it facilities authenticity in the researcher’s accounts and descriptions (Lee, 2016). Above all, educators are empowered and intellectually engaged through action research as they bring forth their knowledge, skills, and imagination (Johnson, 2008).

Via a pragmatic worldview, I possessed the freedom to conduct my research through mixed methods, drawing from the qualitative and quantitative procedures,
actions, and techniques that offered the strongest comprehension of my research problem. Through this converged parallel approach, I collected both quantitative and qualitative data simultaneously with the intent of merging the concurrent data to address the objectives of the study (Creswell & Plano Clark, 2017). Although the components were analyzed separately, the methods were weighed equally (Creswell & Plano Clark, 2017). My data methods informed one another as I drew on the rigor and accuracy of quantitative data and the comprehension of qualitative results (Rudestam & Newton, 2007). Through a pragmatic vantage point, I employed a research design that sought knowledge through action (Morgan, 2013). Although I confronted a situation that fell outside of my current scope of knowledge, I had the ability to produce new knowledge as I experienced the results of my actions (Morgan, 2013). Not committed to one philosophy or reality, the pragmatist looks to “the what and the how” (Creswell, 2014, p. 11) to conduct research based on an intentional outcome. Instead of relying on past experiences, my approach was founded on the clarity of meaning and anticipated results (Cherryholmes, 1992).

Through a triangulation mixed methods design, my research offered the collection of both quantitative and qualitative data during the same time frame (Creswell, 2014; Mertler, 2017). The design offered a fixed approach with previously determined quantitative and qualitative methods and the systematic follow-through of planned actions for research implementation (Creswell & Plano Clark, 2017). A cross-authentication process (Jick, 1979) offered equal emphasis to both data forms and helped to minimize the limitations of each method (Creswell, 2014) while allowing them to complement one another. Qualitative discoveries were used to further flesh out and
extend the data that was yielded through quantitative conclusions (Bryman, 2006).

Ultimately, mixed methods research design served to answer my research questions and reinforced the study findings through increased knowledge, legitimacy, and credibility (Bryman, 2006; Schoonenboom & Johnson, 2017). Research design will be further discussed in the following section and include the (a) quantitative approach, (b) qualitative research efforts, and (c) institutional review board approvals.

**Quantitative Approach**

A quantitative approach to research is most appropriate when the researcher is seeking to gauge the effectiveness of an intervention (Creswell, 2014). By using a quantitative survey design and a smaller group, I gained insight into the characteristics and behaviors of a larger population in a quick, cost-effective, and convenient manner (Creswell, 2014; Fowler, 2009). Through quantitative research, I standardized my research procedures in efforts to ensure objectivity and to help distance myself from the research participants (Rudestam & Newton, 2007). Consistent with the quantitative approach, I could determine the information that was provided to the study participants as well as designate, manipulate, and control the research conditions (Rudestam & Newton, 2007).

**Qualitative Research Efforts**

Through qualitative research efforts, researchers can gain deeper insight into the meaning that study participants hold about the research topic or issue. By incorporating participant perspectives through multiple sources of data such as postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, researcher’s handwritten interview notations, and the review of student post artifacts, my qualitative
efforts ensured a holistic interpretation (Creswell, 2014; Patton, 1987). Qualitative research invites research subjects to contribute knowledge of undetectable characteristics or experiences that the researcher may not otherwise be able to obtain (Rudstam & Newton, 2007). As the researcher, I served as a key instrument in the qualitative process and collected the data myself within the natural setting (Creswell, 2014).

My goal for this mixed methods approach was to obtain comparable results from two research methods that offered different strengths through their diverse approaches (Morgan, 2013). Through an examination of the same research question with both a quantitative survey and qualitative interviews, I was able to cross-validate my research results through triangulation (Morgan, 2013). In addition, the use of multiple methods had the potential to uncover variances that may not have been apparent through a single research approach. Triangulation served not only to provide diverse perspectives regarding the peer review process at UNCM but to further enhance my comprehension of the topic “by allowing for new or deeper dimensions to emerge” (Jick, 1979, p. 604). The convergent design allowed me to collect, analyze, compare, and merge two distinct databases in support of my research questions (Creswell & Plano Clark, 2017).

**Institutional Review Board Approvals**

Permission to institute this research study was obtained from both USC and UNCM Institutional Review Boards (IRB) (see Appendix A). IRBs review research proposals in order to safeguard the rights of humans (Mertler, 2017), and they exist due to federal regulations that protect against the abuse of human rights (Creswell, 2014). A consent form was utilized for this study to protect the interests of the human subjects while ensuring that potential participants had a good comprehension of the research
study, its purpose, and the data collection methods (see Appendix B). My receipt of both USC and UNCM IRB approval, prior to conducting research, and my utilization of an IRB consent form for study participants helped ensure that I had assessed the risks to study participants (Creswell, 2014) and that I adhered to ethical research standards (Mertler, 2017).

Setting

This study was conducted at the College of Online and Continuing Education (COCE) at UNCM. The private nonprofit university, which currently enrolls over 135,000 students, is comprised of three accredited entities. These include the physical UNCM campus, a competency-based education format, and COCE. The latter, the online site of this study, hosts over 200 programs and has elevated UNCM to the national title of “largest non-profit provider of online higher education” (University of North Coast Muscari, 2019a, para. 1). Students enrolled in the Master of Arts (MA) in Communication online program are admitted through open enrollment, contingent on the grade point average that they earned during their undergraduate studies.

The research took place in the COCE GRAD COM Capstone classroom via an online learning environment. The Capstone course, which offers the final learning experience for those enrolled in the MA in Communication, offered limited enrollment with a cap of 14 students per class. The study’s participants were enrolled in the online Capstone classroom that was housed in the LMS Brightspace Desire to Learn (D2L).

Similar to other courses in the GRAD COM program, the Capstone classroom for this study offered access to weekly learning modules with overviews, linked resources, and videos. The course was designed to host an announcement board for instructor
postings, email correspondence for communication, and required discussion board posts and assignment submissions, including milestones and final projects. A grade center displayed student grades and provided access to evaluated work and instructor feedback.

At UNCM, peer review was offered as a low-stakes, formative task within the Capstone experience. Although all GRAD COM classrooms offered discussion board opportunities, the peer review activities that existed across the MA program prior to the Capstone experience were limited. Therefore prior to this study, the Capstone peer review process was similar to other online discussion board activities where all conversations between students took place in an asynchronous manner. The discussion forums were available 24 hours a day and seven days a week to allow for ample posting opportunities. Other than netiquette and brief guidelines, there were no restrictions or defined parameters for peer review comments within the Capstone learning environment. Prior to my research, students reviewed an assignment prompt and reflected on an end-of-term final project grading rubric to evaluate submissions and guide feedback. As a Capstone instructor who had taught this course for over five years, I had observed that student peer review comments could come across as opinionated and lack substance and validation. Frequently, students struggled with peer review and the ability to formulate a strong response. Quite often, they withheld participation completely.

To initiate the standard peer review process in a discussion board forum, students created an individual post and provided their work for review by peers. In turn, classmates reviewed the posted work and posted their comments and reviews beneath the original work. The accumulated peer review posts created a dialogue and all comments pertaining to an individual student’s work were aligned beneath it by date and time.
posted as displayed in Figure 3.1. Subsequently, a thread of peer responses was formed beneath the original posted work. The reviewee could respond to comments shared by the peer reviewers as a follow-up to feedback received. All posts, initial and review, were identified by the date and time, name of the author, and a photo or icon of choice was displayed if the student had chosen to provide one.

![Figure 3.1](image-url)

Figure 3.1. Accumulated peer review response posts (identified by pseudonym) in alignment under students’ original posts (identified by pseudonym).

**Participants**

The study participants included GRAD COM students who were participating in their final course, the Capstone experience, in support of an MA in Communication degree. Located within the Liberal Arts department, GRAD COM students received the option to declare a concentration when they entered the program. Students who chose a concentration selected from either New Media Marketing (NMM) or Public Relations
To graduate with the MA in Communication degree, students successfully completed 12 courses consisting of 3-credit-hours each. The culminating experience of the 36-credit program was fulfilled through a Capstone final project during the last course of study (University of North Coast Muscari, 2019b).

Of the 729 students enrolled throughout the online MA in Communication program, 82% were self-reported as female with the remaining population identifying as male (University of North Coast Muscari, 2018). Although student ages ranged from 22 to over 55 years of age, the average age of students within the program was 33. Across the three online MA in Communication programs (non-declared, NMM, and PR), race was identified by students as 52.5% White, 24.75% Black or African American, and 1.25% Asian, with the remaining students’ race declared as Unknown (University of North Coast Muscari, 2018). The average GPA for all students in the GRAD COM program was 3.57 (University of North Coast Muscari, 2018).

As Capstone class size varied from 12-14 students each ten-week term, the anticipated number of potential study participants was 14 students. While 14 Capstone students received the UNCM IRB Consent Form (see Appendix B) as an invitation to participate in the study, as well as a follow-up email to those who had not initially responded, seven students signed the IRB Consent Form and consented to participate in the study. Students completed the research activities as part of their everyday academic activities; however, students received the option to later refrain from having their information included in the research without the decision negatively affecting their grades. In addition to study participants who were entering the Capstone experience as part of their natural course progression, there was one consenting student who was
repeating the Capstone course for a second time due to failure to complete the course successfully in a prior term. All seven study participants participated in the preterm and postterm questionnaires and were asked to participate in the interview and be audio recorded with student permission. Six of the seven students consented to and participated in the one-on-one interviews, with Campbell abstaining from interview participation as displayed in Table 3.1. Additional demographic information about the study participants was not able to be gathered and reported due to UNCM IRB restrictions.

Table 3.1. *Study Participation by Student Participant Pseudonym*

<table>
<thead>
<tr>
<th>Study Participant Pseudonym</th>
<th>Preterm Questionnaire</th>
<th>Postterm Questionnaire</th>
<th>Student Post Artifacts</th>
<th>One-on-One Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skyler</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Justice</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Eastyn</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Campbell</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Oakley</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Salem</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Marlo</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*Note: Study participant participation is denoted by an X.*

**Innovation**

The course structure at UNCM allowed Capstone students to utilize their previous completion of thirty-three credit hours and the knowledge obtained during their graduate studies to demonstrate competency during their final culminating classroom experience.
Peer review activities, positioned within the Capstone course, were provided to allow students to apply critical thinking skills and to reap the benefits of peer review interaction. With the opportunity to analyze, synthesize, and evaluate the work of others, students held the potential to exhibit key proficiencies during the peer review and feedback delivery processes (Li et al., 2010; Lynch et al., 2012). As student participation and quality of participation in peer review had been low, a research innovation was created and positioned within the Capstone classroom, as part of the structured peer evaluation system. The innovation was designed to promote participation and to empower students to engage and provide feedback at a higher-quality level. The innovation will be outlined in the following section and includes (a) theoretical framework of the innovation (b) location of the innovation, (c) access to the innovation, (d) design of the innovation, (e) components of the innovation, and (f) Online Accessibility Center (OAC) compliance of the innovation.

**Theoretical Framework of the Innovation**

The following section will provide an overview of the innovation that was utilized in this research and offer its foundational alignment to learning theory. Areas of discussion will include (a) Vygotsky’s zone of proximal development, (b) cognitive and mind tools, and (d) Constructivist theory of cognitive apprenticeship.

**Vygotsky’s zone of proximal development.** In alignment with Vygotsky’s (1978) work with students of similar mental development and their ability to handle problems independently up to a certain level of difficulty, all GRAD COM students were positioned to enter the Capstone course with similar course and credit hour obtainment. While their mental development may have differed, all GRAD COM students were
similarly equipped with 30-33 credit hours of graduate course work and had been provided with the knowledge to handle the tasks that were presented to them at the Capstone level. In turn, the Capstone innovation was positioned to elevate students of similar standing from independent problem-solving levels at the lower end of the zone of proximal development to a higher level of knowledge (Vygotsky, 1978). This was accomplished through the provision of scaffolding, guidance, and support provided through the expertise of a more knowledgeable other, such as the instructor, and through peer collaboration (Vygotsky, 1978). The innovation for this research provided a delivery of demonstrations, partial solutions that required student completion, leading questions, and more, to scaffold support and move students forward in pursuit of a higher level of achievement within the zone of proximal development.

**Cognitive and mind tools.** When a tool or application is utilized to enhance the way in which a learner thinks or works and it offers an impact in the learning environment in which it is used, then individuals acknowledge learning from that tool (Kirschner & Erkens, 2006). The use of cognitive and mind tools in education is represented through computer programs, applications, and technology that allow users to participate in higher-order learning and enable critical thinking skills (Kirschner & Erkens, 2006). Through external environments and computer-based devices that have been developed or adapted for use, these tools enable the learning process, engage learners in the processing of information, and further extend learning for students (Jonassen, 1992). In direct alignment, the innovation for this research study provided access to a collection of computer-based cognitive tools which could be used to create
and facilitate the use of technology-enhanced dialogue, extend learning, and further enhance collaboration (Kirschner & Erkens, 2006).

**Constructivist theory of cognitive apprenticeship.** In alignment with the Constructivist theory of cognitive apprenticeship, the design for this innovation was further influenced by the concepts of modeling, coaching, scaffolding, articulation, reflection, and exploration (Collins et al., 1987). The elements of the innovation were grounded in research and aligned with the cognitive apprenticeship components, as outlined in Table 3.2.

<table>
<thead>
<tr>
<th>Cognitive Apprenticeship Components</th>
<th>Elements of Peer Review (in general)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling</td>
<td>Feedback Examples (Alnasser, 2018; Brill, 2016; Nagori &amp; Cooper, 2014)</td>
</tr>
<tr>
<td>Coaching</td>
<td>Student Peer Review Training (Alnasser, 2018; Baker, 2016; Barnard, de Luca, &amp; Li, 2015; Dar et al., 2014; Llado et al., 2014; McMahon, 2010; Tricio et al., 2018)</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>Prompts (Ching &amp; Hsu, 2013, 2016; Nicol et al., 2014) Guiding Statements and Questions (Baker, 2016; Ching &amp; Hsu, 2013; Dar et al., 2014; McMahon, 2010; Nicol et al., 2014; Reinholz, 2018; Wang, 2016) Feedback Templates and Forms (Baker, 2008, 2016; Dijks et al., 2018; Geilen &amp; De Wever, 2015; Hogg, 2018, McMahon, 2010; Mulder et al., 2014; Tricio et al., 2018)</td>
</tr>
<tr>
<td>Articulation</td>
<td>Prompts (Ching &amp; Hsu, 2013, 2016; Nicol et al., 2014).</td>
</tr>
</tbody>
</table>
Serving as apprentices, Capstone students received the opportunity to utilize the innovation and experience the cognitive apprenticeship methods that provided an “opportunity to observe, engage in, and invent or discover expert strategies in context” (Collins et al., 1987, p. 16). Influenced by the research of Collins et al. (1987), this innovation delivered a variety of resources which allowed students to see how the strategies fit together and built off of one another. The cognitive apprenticeship components were integrated into the innovation via elements of peer review in support of Week Four and Week Seven Capstone activities (see Table 3.3).

Table 3.3. *Cognitive Apprenticeship Integrated into Innovation via Peer Review Elements*

<table>
<thead>
<tr>
<th>Cognitive Apprenticeship Components</th>
<th>Module Week/Peer Review Task</th>
<th>Elements of Peer Review (specific)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling &amp; Coaching</td>
<td>Week 4 - Task 4.1: Draft Situation Analysis Review</td>
<td>Sample feedback examples provided in the innovation repository under Navigating the</td>
</tr>
<tr>
<td>Cognitive Apprenticeship Components</td>
<td>Module Week/Peer Review Task</td>
<td>Elements of Peer Review (specific)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>Scaffolding</strong></td>
<td>Week 4 - Task 4.1: Draft Situation Analysis Review</td>
<td>Getting started questions and prompts provided in the innovation repository under Getting Started: Questions &amp; Prompts</td>
</tr>
<tr>
<td></td>
<td>Week 7 - Task 7.2: Draft Campaign Report Review</td>
<td>Guiding statements and guiding questions provided in the innovation repository under Navigating the Peer Review Process: Support Tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback templates and forms provided in the innovation repository under Interactive Learning Activities</td>
</tr>
<tr>
<td><strong>Articulation</strong></td>
<td>Week 4 - Task 4.1: Draft Situation Analysis Review</td>
<td>Getting started questions and prompts provided in the innovation repository under Getting Started: Questions &amp; Prompts</td>
</tr>
<tr>
<td></td>
<td>Week 7 - Task 7.2: Draft Campaign Report Review</td>
<td>Guiding statements and guiding questions provided in the innovation repository under Navigating the Peer Review Process: Support Tools</td>
</tr>
<tr>
<td>Cognitive Apprenticeship Components</td>
<td>Module Week/Peer Review Task</td>
<td>Elements of Peer Review (specific)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Reflection</td>
<td>Week 4 - Task 4.1: Draft Situation Analysis Review</td>
<td>Final Project rubric provided in the innovation repository under Final Project Rubric Reminder</td>
</tr>
<tr>
<td>Reflection</td>
<td>Week 7 - Task 7.2: Draft Campaign Report Review</td>
<td>Student practice and reflection activity for gauging peer review comprehension provided in the innovation repository under Reflection: Practice &amp; Self-Check</td>
</tr>
<tr>
<td>Exploration</td>
<td>Week 4 - Task 4.1: Draft Situation Analysis Review</td>
<td>Additional linked peer review resources provided in the innovation repository under Exploration: Independent Learning</td>
</tr>
<tr>
<td>Exploration</td>
<td>Week 7 - Task 7.2: Draft Campaign Report Review</td>
<td></td>
</tr>
</tbody>
</table>

Based on the cognitive apprenticeship core, the initial framework of the innovation was built around modeling, coaching, and scaffolding (Collins et al., 1987). In support of modeling, the structured innovation included sample feedback examples that exhibited a skillful approach for how students could create proficient feedback in support of the peer review task. Modeling within the innovation involved the portrayal of a specific task as carried out by an expert so that students could observe the correct manner of completion (Collins et al., 1987). The innovation infused coaching through brief instructor-recorded video clips that offered tips and encouraged and directed students. In addition, the innovation delivered reminders of unique aspects and benefits of the peer review task through interactive learning activities. Coaching focused intently on the presentation of skills in support of the intended goals of the peer review tasks (Collins et al., 1987). The coaching videos were utilized to promote necessary skill sets and to direct
students to task areas that may have been overlooked in the past, while the interactive segments were positioned to allow students to engage and integrate skills via the receipt of interactive feedback and suggestions (Collins et al., 1987). Scaffolding, designed to offer intermediate steps to peer review participation, was added to the innovation in the form of getting started prompts, guiding statements and questions, and feedback templates and forms. The instructor, serving as the expert, carried out parts of the peer review tasks in the innovation to make task completion more manageable for students when they approached peer review, later on their own. In turn, scaffolding provided a collaborative approach to problem-solving between the instructor and the students (Collins et al., 1987).

In addition to the cognitive apprenticeship core of modeling, coaching, and scaffolding, the innovation for this research infused the additional cognitive apprenticeship teaching methods of articulation, reflection, and exploration (Collins et al., 1987). In support of articulation, the use of the getting started prompts and guiding statements allowed students to articulate their thoughts as they began to formulate written feedback. Articulation continued to take place as the students reviewed the final project rubric that was provided within the innovation. The rubric served to remind students of the final project’s critical elements in support of task completion. The rubric supported students as they took on the role of critic and sought to provide feedback through problem-solving activity (Collins et al., 1987). The innovation infused reflection teaching methods as students gauged their comprehension. The reflection activity offered the display of an excerpt from a fictitious sample student submission, the opportunity for students to contemplate the sample and practice feedback on their own, and the final
reveal of sample feedback that would be provided by an expert, such as the instructor. This activity allowed students to replay their feedback performance as a novice in comparison to that of the expert instructor (Collins et al., 1987). Lastly, the method of exploration was infused into the innovation as an opportunity to move students into further problem solving on their own. A small grouping of linked resources was provided to support students’ efforts to further explore peer review activity in an independent manner. The exploration activity offered a culminating experience that was positioned to elevate students beyond the supporting scaffolds provided throughout the innovation (Collins et al., 1987).

**Location of the Innovation**

The innovation, housed in Articulate Rise, was linked within the course announcements in the existing GRAD COM Capstone online learning environment. The link provided access to the external peer review tool kit innovation as part of the structured peer evaluation system. In support of scheduled peer review activities, the innovation was linked within the learning module announcements for Task 4.1 in Module Four and in the learning module announcements for Task 7.2 in Module Seven as well. Along with supporting text and information, a small graphic representation of the peer review tool kit was positioned as a linked thumbnail image in the module announcements. The thumbnail image served to launch the peer evaluation system once it was clicked on by a student.

**Access to the Innovation**

Students gained access to the external innovation via the Internet. Once launched from the announcements within the Capstone learning environment, the peer review tool
kit offered a responsive design. In addition to accessing the tool kit from their computers and laptops, the students were able to access the tool kit on their mobile devices and tablets as shown in Figure 3.2. Students gained access to the various cognitive tools and resources within the tool kit by clicking the links provided within the innovation.

![Figure 3.2. Responsive design of the innovation in the structured peer evaluation system.](image)

**Design of the Innovation**

The innovation was designed in Rise, part of the Articulate 360 e-learning environment for content design. Following a brief introduction at the beginning of the unit, the student user clicked the Start button as shown in Figure 3.3.
Figure 3.3. GRAD COM Capstone innovation in the structured peer evaluation system.

The first module offered learning objectives and options for approaching and viewing the innovation’s various components. Upon completion of the first module, the student had the freedom to proceed through the seven remaining learning modules in order of choice, as outlined in the menu excerpt displayed in Figure 3.4. High-quality photographic images were threaded throughout the innovation, and interactive activities within the unit included drag and drop, click to reveal, and sorting activities. During students’ interaction with the innovation, a menu of module options displayed in a column on the left. A completion bar displayed the student’s level of module completion at the top left of the screen.
Figure 3.4. Menu excerpt from the innovation in the structured peer evaluation system.

**Components of the Innovation**

The innovation served as a repository for eight learning modules and their supporting cognitive tools. The modules included (1) Learning Module Options, (2) Sixty Seconds of Knowledge: Video Clips, (3) Navigating the Peer Review Process: Support Tools, (4) Interactive Learning Activities, (5) Getting Started: Questions & Prompts, (6) Final Project Rubric Reminder, (7) Reflection: Practice & Self-Check, and (8)
Exploration: Independent Learning. The cognitive tools provided within the modules included video clips, interactive learning activities, questions and prompts to help the students get started, and the associated Capstone Final Project rubric for reference. In addition, guiding statements, feedback templates, and feedback examples supported the formulation of students’ written peer review feedback. A reflection activity allowed students to practice peer evaluation and gauge their feedback against that of an expert, being myself as the instructor. Lastly, the innovation’s inclusion of additional, linked peer review resources allowed students to explore other resources, move beyond the scaffolds provided in the innovation, and take on a more autonomous peer review role.

**Online Accessibility Center Compliance of the Innovation**

Upon completion of its design, the innovation was shared with the OAC at UNCM. The OAC team members reviewed the unit for accessibility by testing it with various computer screen reader programs. Readers, such as the Job Access with Speech (JAWS) and Non-Visual Desktop Access (NVDA) screen readers, allow users who are blind or visually impaired to read the screen through a speech output or a through a demonstration of Braille. OAC members made additional recommendations to ensure online accessibility via the inclusion of alt text, color contrast, innovation functionality, and descriptive hyperlinks. Microsoft Word documents, serving as an alternate approach to interactive components, were threaded throughout the tool kit to support screen reader usage.

**Data Collection Methods**

To fully examine the proposed research questions, seven data collection methods were utilized for this study. Following UNCM Internal Review Board (IRB) approval
(see Appendix A) of the study, a mixed methods approach to data collection was employed. This combination of qualitative and quantitative approaches provided a more complete and holistic comprehension of the research problem (Creswell, 2014).

The robust integration of qualitative data collection and analysis focused on the views of participants (Creswell, 2014) and fully expanded upon the study’s quantitative findings produced through two unique questionnaires. Observational data provided detailed descriptions of participant activity, behavior, and actions while delivering an in-depth view of the human experience (Patton, 2014). The data collection methods for this study are described in the following section and include (a) a preterm questionnaire, (b) a postterm questionnaire, (c) postterm questionnaire open-ended questions, (d) observational field notes, (e) one-on-one interviews, (f) researcher’s handwritten interview notations, and (g) student post artifacts. The alignment of data sources to the study research questions is provided in Table 3.4.

Table 3.4. Research Questions and Data Sources

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1: How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?</td>
<td>o Student Post Artifacts</td>
</tr>
<tr>
<td></td>
<td>o Observational Field Notes</td>
</tr>
<tr>
<td>RQ2: What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?</td>
<td>o Preterm and Postterm Questionnaires (Parts One, Two, and Three)</td>
</tr>
<tr>
<td></td>
<td>o One-on-One Interviews</td>
</tr>
<tr>
<td></td>
<td>o Researcher’s Handwritten Interview Notations</td>
</tr>
<tr>
<td></td>
<td>o Postterm Questionnaire (Part Four)</td>
</tr>
</tbody>
</table>
Preterm Questionnaire

A quantitative questionnaire, constructed from two published survey instruments, provided a numeric portrayal of the attitudes and opinions of the larger Capstone population by studying a smaller sample of that populace (Creswell, 2014). The purpose of the preterm questionnaire was to gauge students’ perceptions of the existing peer review process at UNCM or their former participation in peer review activity. Through the early use of a quantitative method, an initial state of knowing could be achieved through numbers (Johnson, 2008). I utilized the preterm questionnaire to gather a large amount of information from study participants in a relatively quick manner (Creswell, 2014, Johnson, 2008). The use of 5-point Likert scale response questions allowed me to ask many questions and receive quantifiable data on an array of preliminary issues and topics (Johnson, 2008). In addition to the rapid turnaround, the economy of the questionnaire made it a rational and industrious choice to discover the perceptions of students regarding peer review activity (Creswell, 2014). During the two week period prior to the term kick-off and following UNCM IRB approval, the Capstone students received a UNCM email with the Capstone Peer Review Institutional Review Board (IRB) Consent Form (see Appendix B) as an invitation from the researcher to participate in the study. The consent form was utilized to ensure that the study participants had sufficient information to determine whether or not they wanted to participate in the research study. Other than the original email with the consent form, only one email reminder was sent as a follow-up to students who had not yet replied. Students, who signed and submitted the consent form prior to the beginning of the Capstone term, were eligible for study participation and received a follow-up email with a separate link to the
quantitative preterm questionnaire, housed in SurveyMonkey. The quantitative questionnaire, which was due for completion before the start of the term, was used to gauge students’ perceptions of peer review in online GRAD COM classrooms at UNCM or in prior peer review settings. The preterm questionnaire offered 30 Likert scale questions with the ability for students to select from the following responses: Strongly Agree (SA), Agree (A), Neither Agree or Disagree (N), Disagree (D), or Strongly Disagree (SD). A key was provided at the beginning of the questionnaire to assist students with Likert scale comprehension.

Based on Kaufman and Schunn’s (2011) research survey and positioned to evaluate students’ perceptions regarding online peer assessment, the first ten statements in Part One of the preterm questionnaire offered statements pertaining to peer review feedback. The statements examined the usefulness of one’s own feedback, as well as that of peers (Kaufman & Schunn, 2011). Furthermore, the survey assessed students’ responses regarding the reliability and validity of feedback, the positive nature of feedback, as well as the fairness of feedback assessment leveraged by peers (Kaufman & Schunn, 2011).

The 17 statements included in Part Two and three additional statements included in Part Three of the preterm questionnaire were crafted based on research by Moneypenny et al. (2018). These two follow-up sections included statements that aligned specifically with Wen and Tsai’s (2006) four subscales of peer review. The subscale constructs included positive attitudes, negative attitudes, online attitudes, and understanding and action in support of students’ online peer review activity.
The instrument’s original alpha coefficient scores for each subscale ranged from .63 to .86 (Moneypenny et al., 2018).

The survey scale utilized by Kaufman and Schunn (2011) investigated and researched the perceptions of undergraduate and graduate students who utilized SWoRD (Scaffolded Writing and Reviewing in the Discipline), an online peer assessment system. The survey scale utilized by Moneypenny et al. (2018) examined and analyzed undergraduate students’ perceptions of online peer assessment. The published content from both research scales was combined to create the preterm questionnaire instrument in support of peer review research within the online higher education environment at UNCM. The quantitative preterm questionnaire used in this study was created to assess students’ perceptions of peer review prior to the integration of a structured peer evaluation system innovation in support of the online asynchronous peer review activity in the GRAD COM Capstone classroom (see Appendix C).

Postterm Questionnaire

A final quantitative questionnaire mirrored the three sections outlined in the study’s preterm questionnaire. The postterm questionnaire was positioned to measure the usefulness of the research intervention (Creswell, 2014). The first three parts of the postterm questionnaire limited the replies of study participants to the previously predetermined categories and questions of the preterm questionnaire, thus quantifying the participants’ reactions to a limited number of questions. The only difference in the first ten statements of the postterm questionnaire, as opposed to the original preterm questionnaire, was the tense of the verbs. The preterm questionnaire offered statements in
future tense and the postterm questionnaire offered statements in past tense, mirroring the survey design utilized by Kaufman and Schunn (2011).

Immediately following the conclusion of the term, I sent a UNCM email to the study participants, including a link to the postterm questionnaire in SurveyMonkey. The study participants received three weeks to complete the postterm questionnaire. I sent follow-up emails to students as necessary to encourage the completion of the postterm questionnaire and to ensure responses. Student responses to the postterm questionnaire enabled a comparison through the aggregation of statistical data (Patton, 2014).

**Postterm Questionnaire Open-ended Questions**

The same preterm questionnaire was again distributed at the end of this study. However, an additional, fourth section was added to the questionnaire and focused specifically on the structured peer review innovation. Thus, Part Four offered a qualitative component of the postterm questionnaire and consisted of six open-ended questions. Part Four allowed for an inquiry into the students’ thoughts regarding 1) the newly implemented peer evaluation system, 2) access and use of the system’s resources and tools, 3) the system in support of serious and objective peer review feedback, 4) the system in support of confidence in peers’ feedback, 5) the system in support of community among peers, and 6) additional comments regarding the peer evaluation system. Students completed the open-ended questions as part of their response to the full postterm questionnaire.

**Observational Field Notes**

Following the conclusion of the term, I recorded observational field notes to describe the interactivity of the student participants during their peer review activity in
Week Four and Week Seven of the online course. I used the researcher’s observational field notes document to record my observations for both weeks (see Appendix D). My researcher-created field notes included posting patterns, response times, delays in responses, and other posting and collaborative activity that I observed and found to be significant as outlined in Table 3.5.

Table 3.5. *Observational Field Note Protocol for Research Question 1*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Field Note Creation in Alignment with Research Question 1</th>
</tr>
</thead>
</table>
| RQ1: How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM? | • Observation of individual student participation  
• Conversation patterns (Do students gravitate toward original posts where response posts are recorded, and conversational activity is already underway or do students gravitate toward original posts where there is no conversation yet recorded?)  
• Student interaction (Do students respond to original posts as they are shared [within 24 hours] or is there a lag in the recorded peer review response time?)  
• Average number of posts per student  
• Depth of reviewer posts (length), based on a 100-word cut-off measuring parameter  
• Number of peer works reviewed and commented on by each reviewer  
• Unique observances |

Once I began field note observation and recording, interesting and important topics emerged and became visible to me (Johnson, 2008). Due to the study taking place in the online environment, the use of structured observations allowed me to go back into the course after the conclusion of the term, carefully observe, and systematically record the activity of the study participants. As the Capstone class size was small, the
observation allowed me to achieve a better understanding of the ways in which the students interacted and communicated with one another (Mertler, 2017).

As students participated in their first peer review activity in Week Four, they were tasked with creating a discussion board post by Thursday at 11:59 pm and attaching a rough draft of their Capstone Situation Analysis for peer review. Once draft Situation Analysis work was posted by students, fellow peers began providing peer review feedback to the original posted work and a discussion board thread developed. Although the following Sunday at 11:59 pm was the deadline for posting feedback, I included posts that were provided after the Sunday deadline as part of my observations. I identified these posts as late responses. Observational field notes were created for Week Four peer review activity as outlined in the study timeline (see Table 3.10). Overall student participation was observed and documented within the observational field notes with the following observations specifically noted: 1) the average number of posts per student, 2) the depth of reviewer posts (length), based on a 100-word cut-off measuring parameter, and 3) the number of peer works reviewed and commented on by each reviewer during the Week Four peer review activity.

As students participated in their second peer review activity in Week Seven, they created a discussion thread and attached a rough draft of their Capstone Campaign Report. Once again, students were tasked with creating an original post by Thursday at 11:59 pm. As in the Week Four peer review activity, peers began providing feedback to posted work with Sunday at 11:59 as the deadline for responses.

As a repetitive approach, I created observational field notes for Week Seven peer review activity to further explore and understand the meaning that the study participants
had assigned to the research topic (Creswell, 2014). Although Sunday was the deadline for posting feedback, once again, I included posts that were provided after the Sunday deadline as part of my observation and identified these as late responses. Observational field notes were created for Week Seven peer review activity as outlined in the study timeline (see Table 3.10). Overall student participation was observed and documented within the observational field notes with the following observations specifically noted: 1) the average number of posts per student, 2) the depth of reviewer posts (length), based on a 100-word cut-off measuring parameter, and 3) the number of peer works reviewed and commented on by each reviewer during the Week Seven peer review activity.

Although the observational field notes were not lengthy, they were regular and performed on a schedule that was consistent and preplanned (Johnson, 2008). Moreover, the use of observation was both purposeful and advantageous to my research as it allowed me to gather data on actual student behaviors instead of relying solely on students’ self-reported feelings and perceptions (Schmuck, 1997). By being present in the setting, I employed a discovery-oriented approach; I observed and noted occurrences that may have otherwise seemed routine and ordinary to the participants and potentially become overlooked during my research (Patton, 1987). The use of observational field notes allowed for the emergence of patterns from the rich data (Johnson, 2008). As part of this fieldwork, the raw data, compiled through observational field notes, was later organized into narrative descriptions to represent major themes (Patton, 2014).

**One-on-One Interviews**

In alignment with UNCM IRB requirements, I conducted qualitative one-on-one interviews following the conclusion of the term. Qualitative interviews offered a semi-
structured conversational process between me, as the researcher, and the study participants. During this approach, I used base questions with the option of exploring other optional directions based on the circumstances and the conversation that unfolded (Mertler, 2017). The purpose of the one-on-one interviews was to question participants about their experiences with the structured peer evaluation system and the peer review tool kit. During the interviews, I utilized open inquiry to discern what was occurring, both intentionally and unintentionally. The interviews yielded direct quotes from participants and delivered insight into their opinions, feelings, knowledge, and experiences (Patton, 2014).

All seven consenting study participants were asked to participate in a one-on-one interview that would be audio recorded upon their consent. Six of the seven study participants provided informed consent to a one-on-one interview, granted their permission to be audio recorded, and participated in the interview after the end of the term, as outlined in the study timeline (see Table 3.10).

During my email outreach to the potential interview candidates, I reminded the study participants of the recorded nature of the one-on-one interview, as previously outlined in the informed consent form that each student signed in order to participate in the study. Prior to beginning the individual interview process, each student was reminded of the interview being recorded. Each participant was asked to state his or her name at the beginning of the interview recording, as well as state a verbal approval of the recorded interview. The six students who agreed to the one-on-one interview complied with the requests.
The interviews lasted approximately 20-25 minutes, and each student was asked several questions from three overarching constructs regarding initial perceptions, the impact on peer review participation, and the effect on student confidence levels (see Table 3.6). A fourth set of questions was offered to allow students to share any additional perceptions regarding the structured peer evaluation system and the peer review tool kit in support of their online asynchronous peer review activity during the active term.

Table 3.6. Semi-Structured Interview Protocol for Research Question 2

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Interview Questions Aligned with RQ2</th>
</tr>
</thead>
</table>
| **RQ2:** What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM? | 1) **Initial Perceptions and Design**  
What are your initial perceptions regarding the structured peer evaluation system that was provided to assist with peer review activities this term?  
   a. Was the design of the structured peer evaluation system conducive to your participation in peer review activities this term? If so, how? If not, why not?  
   b. Was there anything missing from the structured peer evaluation system design that you would like to see added? If so, what would you like added and why?  
   c. How did you decide whether or not to use the resources and tools that were provided in the structured peer evaluation system?  
   d. Were there any resources or tools provided in the structured peer evaluation system that you found to be particularly helpful? If so, which ones were they and why were they helpful?  
   e. Were there any resources or tools in the structured peer evaluation system that you found to be confusing or not helpful? If so, which ones were they and why?  

2) **Impact on Participation**
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Interview Questions Aligned with RQ2</th>
</tr>
</thead>
</table>
| What was the overall impact on your peer review participation if you chose to use the structured peer evaluation system? | a. Did the use of the structured peer evaluation system impact your ability to give feedback in any way? Please explain how it did or did not impact your ability to provide feedback for your peers.  
b. Did the use of the structured peer evaluation system offer an impact on your ability to receive and accept feedback posted to your work by peers? Please explain how it did or did not impact your ability to receive and accept feedback. |
| 3) **Confidence Building** | What was the impact of the structured peer evaluation system in building your confidence level in support of peer review activities?  
a. If you utilized the resources and tools in the structured peer evaluation system, did you feel more confident in your role as the reviewer when reviewing the work of your peers?  
b. As the reviewee who received peer feedback, did you feel more confident in your peers’ assessment based on their potential use of the resources and tools found within the structured peer evaluation system? Why or why not? |
| 4) **Additional Perceptions** | Do you have any additional feedback or perceptions that you would like to share regarding the structured peer evaluation system that was provided in support of the online asynchronous peer review activity in the Capstone experience this term? If so, please feel free to share your thoughts and views. |
Researchers Handwritten Interview Notations

During each of the one-on-one interviews, I utilized a printed copy of the researcher’s interview script and handwritten notation document to record notes of impressions and interesting aspects as they surfaced (see Appendix E). While taking notes during the interviews, I maintained an intentional focus on the responses received and considered the option to follow-up with an additional inquiry to clarify participant responses (Mertler, 2017). I approached the interviews through in-depth inquiry, as I wanted to make sure that the research topic was fully discussed and that responses were understood in support of possible changes to the structure of current systems (Patton, 2014). The researcher’s handwritten interview notations for each student, which produced an additional data source, was included as an attachment to each student’s respective transcript.

Student Post Artifacts

Student post artifacts were created within the Discussion Board forum of D2L Brightspace by way of student interaction during the active Capstone term. As study participants provided original posts and responses to peers during the peer review activities in Week Four and Week Seven of the active term, conversational student threads developed within the discussion board environment. These student post artifacts remained within the Capstone course environment during and after the study term. As outlined in Table 3.7, student post artifacts were collected for COI assessment of components, categories, and indicators, as defined by Garrison and Arbaugh (2007).
Table 3.7. *Artifact Observation Protocol for Research Question 1: Community of Inquiry*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Community of Inquiry Components and Categories</th>
<th>Presence Indicators</th>
</tr>
</thead>
</table>
| RQ1: How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM? | o Social Presence  
  o Open communication  
  o Group cohesion  
  o Affective expressions | o Risk-free expression  
  o Encourage collaboration  
  o Emoticons |
|                   | o Cognitive Presence  
  o Triggering event  
  o Exploration  
  o Integration  
  o Resolution | o Sense of puzzlement  
  o Information exchange  
  o Connecting ideas  
  o Applying new ideas |


**Data Analysis**

The data analysis process provided this researcher with the opportunity to reduce large volumes of data into smaller collections of information that were more manageable. I utilized methodological techniques to analyze the data and to ensure that the information provided alignment to the study’s research questions (Mertler, 2017). This process allowed me to analyze and organize data so that others could comprehend the reality that was being represented through the study and to ensure that effective changes or choices could be implemented moving forward (Johnson, 2008).

In alignment with the research questions and the data sources outlined in Table 3.8, the data analysis processes for this study included both quantitative and qualitative data. The methods of data analysis included (a) descriptive statistics of preterm and postterm questionnaires, (b) the Wilcoxon signed rank test of pre-term and postterm
Table 3.8. *Research Questions Aligned to Data Sources and Data Analysis Methods*

<table>
<thead>
<tr>
<th>Research Questions</th>
<th>Data Sources</th>
<th>Data Analysis Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1: How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?</td>
<td>Week Four Student Peer Review Activity</td>
<td></td>
</tr>
</tbody>
</table>
  - Student Post Artifacts  
  - Observational Field Notes |  
  - COI Deductive Analysis  
  - Inductive Analysis |
|                    | Week Seven Student Peer Review Activity |  
  - Student Post Artifacts  
  - Observational Field Notes |  
  - COI Deductive Analysis  
  - Inductive Analysis |
| RQ2: What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM? | Preterm and Postterm Questionnaires (Parts One, Two, and Three) |  
  - One-on-One Interviews  
  - Researcher’s Handwritten Interview Notations  
  - Postterm Questionnaire (Part Four) |  
  - Descriptive Statistics Analysis  
  - Wilcoxon Signed Rank Test  
  - Inductive Analysis |

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questionnaires (Part One, Part Two, and Part Three), (c) inductive analysis of observational field notes, one-on-one interviews, researcher’s handwritten interview notations, and postterm questionnaire (Part Four), and (d) COI deductive analysis of student post artifacts. Data analysis will be discussed in the following section and include (a) quantitative data analysis, (b) qualitative data analysis, and (c) integration.

Quantitative Data Analysis

The use of preterm and postterm questionnaires, created by the researcher, provided the opportunity to measure and produce numeric data. The results of the questionnaires were aligned directly with the study’s second research question as it sought to gain insight into students’ perceptions regarding the implementation of a structured peer evaluation system. As outlined in the paragraphs that follow, quantitative results for this study included (a) Cronbach’s alpha, (b) descriptive statistics analysis, (c) the Shapiro-Wilk test and the Wilcoxon signed rank test, and (d) the Bonferroni adjustment test.

Cronbach’s alpha. To begin my analysis, I downloaded the results from the preterm and the postterm questionnaires in SurveyMonkey. Next, I entered the survey results from Part One, Part Two, and Part Three into a Microsoft Excel spreadsheet with student pseudonyms listed down the left side of the spreadsheet by row and the individual preterm and postterm questionnaire numbers listed across the top columns. I converted the data from the 5-point Likert scale selections of Strongly Agree (SA), Agree (A), Neither Agree or Disagree (N), Disagree (D), or Strongly Disagree (SD) into their numeric equivalents. For data analysis purposes, a response of Strongly Agree was converted to a value of 5; a response of Agree was converted to a value of 4; a response
of Neither Agree or Disagree was converted to a value of 3; a response of Disagree was converted to a value of 2; and a response of Strongly Disagree was converted to a value of 1.

Prior to calculating the descriptive statistics for the preterm and postterm questionnaires, I assessed the reliability, or internal consistency, of the two instruments by calculating Cronbach’s alpha for each part of each questionnaire (Cronbach, 1951; Tavakol & Dennick, 2011). Cronbach’s alpha, the most widely utilized method of measuring reliability, (Tavakol & Dennick, 2011; Roever & Phakiti, 2018) provided the internal consistency of each questionnaire part (O’Dwyer & Bernauer, 2013) and was expressed as a value between 0 and 1; Cronbach’s alpha provides the degree to which all items “measure the same concept or construct” (Tavakol & Dennick, 2011, p. 53). Through this interpretation of reliability, Cronbach’s alpha offered insight into the inter-item relationship of the questionnaire parts and how well the items correlated and measured the same characteristics (Tavakol & Dennick, 2011; Roever & Phakiti, 2018).

First, I calculated Cronbach’s alpha in Microsoft Excel. Next, I converted the Excel spreadsheet data to a .csv format and uploaded the data into JASP (Version 0.11.0; 2020), an open-source statistical software program. In JASP, I verified the correctness of my Cronbach alpha results. As acceptable values of alpha range from 0.70 to 0.95, I sought a Cronbach alpha score within this range (Tavakol & Dennick, 2011), while recalling that a score of over .90 offered the potential to denote redundancy instead of a desirable internal consistency (Streiner, 2003).

**Descriptive statistics analysis.** To evaluate the quantitative results from the two questionnaires, I used descriptive statistics analysis to “summarize, organize, and
simplify” (Mertler, 2017, p. 178) the data and to produce a standard of measurement for which there exists a strong level of familiarity. Through the use of descriptive statistics, I took a large amount of data and gained insight into the quantitative data sets while representing the numeric data in an effective manner (Creswell & Plano Clark; 2017; Efron, 2013; Putman & Rock, 2017).

I utilized Microsoft Excel to calculate the descriptive statistics for each part (Part One, Part Two, and Part Three) of both the preterm and postterm questionnaires, including the mean, median, standard deviation, and the range, based on the minimum and the maximum of each questionnaire part. I verified the accuracy of my descriptive statistics for each part of each questionnaire in JASP. Through the use of descriptive statistics, I defined what was standard for the participants who were involved in my research study (Balnaves & Caputi, 2001; Johnson, 2008).

**Shapiro-Wilk test and the Wilcoxon signed rank test.** To test the normality of the data and to determine if the data was normally distributed for the population, I conducted a Shapiro-Wilk test in JASP. Although a deviation from normal was not indicated by the Shapiro-Wilk test (Shapiro & Wilk, 1965), the Wilcoxon signed rank test, a non-parametric test, (Wilcoxon, 1945) was run, under the guidance of dissertation co-chair Dr. Tammi Kolski, due to only having data for seven study participants. The Wilcoxon signed rank test was conducted for each part (Part One, Part Two, and Part Three) of the questionnaires to assess whether the mean scores from preterm questionnaire to postterm questionnaire were significantly different from one another (Wilcoxon, 1945). To measure for statistical significance, I used the generated numeric index known as the $p$ value and determined through comparison if it was less than the
standard alpha level of .05 (Mertler, 2017). The utilization of an alpha value of .05 allowed me to ensure with reasonable certainty that only 5% of the time would the differences attained actually be because of chance or sampling error (Johnson, 2008; Mertler, 2017). I considered those results with a $p$ value of less than .05 to be statistically significant.

**Bonferroni adjustment test.** Lastly, as more than one questionnaire part was aligned to one research question, the Bonferroni adjustment (Streiner & Norman, 2011) test was run to verify if each questionnaire part was independent of each other. To produce a significant result, it was necessary for the Bonferroni adjustment test to produce a $p$ value of less than .017 (Streiner & Norman, 2011).

**Qualitative Data Analysis**

Unlike the quantitative data, the qualitative data for this study yielded vast amounts of unstructured data; however, through qualitative analysis, the masses of text were brought into a more meaningful form and framework (Yee, Wong, & Turner, 2017). To reduce the amount of qualitative data collected, I used inductive analysis (Mertler, 2017), as well as *a priori* categories with COI analysis for social and cognitive presence indicators (Garrison & Arbaugh, 2007; Van der Merwe, 2012). Qualitative data for this study included Part Four of the postterm questionnaire, observational field notes created by this researcher, student responses to one-on-one interview transcripts from data collected after the end of the term, researcher’s handwritten interview notations, and student post artifacts. Qualitative data analysis will be explained in the following paragraphs and include inductive analysis first, followed by COI analysis.
**Inductive analysis.** The use of a data analysis spiral allowed me to review the qualitative data by moving forward in an evolution from the data collection stage to the accounting of findings (Creswell & Poth, 2017). Initially, the spiraling process offered the management and organization of the data as due to its dense, rich nature, the data required focus on some areas while ignoring others (Creswell, 2014). To make sense of the qualitative data compiled from the observational field notes, the one-on-one interviews, the researcher’s handwritten interview notations, and the postterm questionnaire open-ended questions, the data was segmented, taken apart, and put back together (Creswell, 2014; Flick, 2009). My ultimate goal through inductive analysis was to reduce the vast amount of qualitative information into patterns and themes for the representation of the important discoveries that the research had provided (Johnson, 2008). The inductive analysis process is outlined in the following section and includes (a) initial preparation of data, (b) memoing, (c) computer-aided coding, and (d) identification of themes and presentation.

**Initial preparation of data.** Student responses to open-ended questions in the postterm questionnaire produced a wealth of data to analyze. Once qualitative student responses were downloaded from the postterm questionnaires, the data was copied into individual Microsoft Word documents. The documents were labeled by student pseudonyms and placed into online folders. Next, I typed the researcher’s observational field notes into two separate word-processed documents via Microsoft Word. I labeled the documents by week and placed the files into online folders.

The data that I collected during the one-on-one interviews produced two distinct sets of qualitative information through the audio-recorded one-on-one interviews and by
way of my researcher’s hand-written interview notations. Each of the recorded interviews was uploaded to Temi, a speech to transcription service (‘Temi,’ n.d.) as the identification of themes begins with the initial act of transcription (Bernard, Wutich, & Ryan, 2017). Once transcription was complete, I reviewed and corrected necessary errors, before downloading each file into Microsoft Word. Each interview was labeled with the appropriate participant’s pseudonym, class, section number, and date of the interview and placed into separate online folders. My researcher’s handwritten interview notations for each interview were typed into separate Microsoft Word documents and added to their respective interview as an accompanying attachment (Johnson, 2008) within the designated online folder.

Once all data sets were organized and prepared, the inductive analysis of the observational field notes, one-on-one interviews, researcher’s handwritten interview notations and postterm questionnaire open-ended questions proceeded on two levels. These interim processes occurred between the actual data collection and the data’s analysis and conceptualization during the final stages (Clark & Vealé, 2018; Mayer 2015). First, a handwritten memoing process was conducted, followed by computer-aided analysis for coding.

**Memoing.** Once the initial organization and putting together of data had occurred, I printed copies of the qualitative data that I had placed into Microsoft Word documents. The use of printed copies allowed me to utilize memoing to step through the printed documents of each data set and add handwritten notes as I explored, contemplated, and reviewed the data (Birks, Chapman, & Francis, 2008). Through the act of memoing, I placed comments within the margins of the printed documents in support of potential
code considerations (Creswell, 2014; Creswell & Poth, 2017). This approach allowed me to focus intently on the subject matter of each data set and note ideas or instincts that surfaced during this early review (Esterberg, 2002).

During the act of memoing, I engaged more fully with the data and developed a stronger sensitivity to the meaning that it held (Birks et al., 2008; Creswell, 2014). I read over and reviewed each category of data to gain a general sense of the content by reflecting on its meaning and tone (Creswell, 2014) and made abstract leaps from the captured data to the ideas and concepts that more fully explained the research (Birks et al., 2008). As I worked through the data sets one at a time, I added potential codes to the printed copies of each data set prior to moving to the computer screen to begin open coding.

**Computer-aided coding.** For each of the four sets of qualitative data that received inductive analysis, a second level of advanced qualitative data analysis followed the more general approach of memoing. The ideal approach was to blend the general steps with the more specific steps of analysis in the subsequent level (Creswell, 2014). Once initial thoughts and notations had been added to the margins of the printed copies, I returned to the computer to begin the online review and coding process of the raw data that had been previously prepared and placed into Word documents.

To begin computer-aided coding, I uploaded the digital content from the four data sources into Delve, an online digital tool for creating projects and coding digital transcripts (“Delve,” n.d.). I coded the data sets completely, one at a time, beginning with the postterm questionnaire open-ended questions and moving forward through the observational field notes, the one-on-one interview transcripts, and my researcher’s
handwritten interview notations. I began with *Structural Coding* to align the segments of data with the study’s research questions (Saldaña, 2016). I created supporting analytic memos in Delve to offer a description of each code that I generated. I utilized the analytic memos to track my reasoning and to reflect on the fundamental meaning that each code held (Mertler, 2017; Saldaña, 2016).

Next, I completed a second round of *Descriptive Coding* and a third round of *Process Coding* (Saldaña, 2016). Through coding, I delivered an interpretation of the textual content as I sought to capture the spirit of the data in a new and unique way (Belotto, 2018; Clark & Vealé, 2018). Due to my interpretations of the data, some passages received coding for more than one category (Mertler, 2017). During coding, I used analytical questioning to help me ascertain the core meanings that were revealed through the text and in relation to the research questions (Belotto, 2018; Thomas, 2006). By closely reading and reviewing the text, I considered multiple meanings and identified and labeled the online content for the presence of unique classifications (Thomas, 2006).

As a fourth and final round of first cycle coding, I conducted *In Vivo Coding* on the postterm questionnaire open-ended questions, the one-on-one interviews, and the researcher’s handwritten interview notations. Through *In Vivo Coding*, I sought to portray the voices of the study participants (Saldaña, 2016). As the observational field notes did not include the voice of the study participants, they did not receive *In Vivo Coding*.

In seeking to discover categories, I moved from the Delve coding environment back into Microsoft Word. I organized and assembled the codes that I had created during first cycle coding through a code mapping process. During code mapping, I organized
and visually displayed the codes in Microsoft Word (Saldaña, 2016). During a second iteration of code mapping, I reviewed the codes and began to assess, organize, and group the codes within the Microsoft Word document (Saldaña, 2016). I continued to realign the codes until ten categories emerged.

**Identification of themes and presentation.** Once I completed code mapping, as a form of transition from first to second cycle coding, I utilized *Pattern Coding* as a second cycle approach to reduce data into smaller units (Saldaña, 2016). At this stage, I transitioned from the use of my computer and Microsoft Word into a physical environment where I used foam core boards to pin, move, and rearrange the codes by category. As the analysis of qualitative data is an iterative process, I continued to bring order to the amounts of documented and transcribed information (Patton, 1987). I utilized the categories that I had created in the second iteration of code mapping and through pattern coding to group the original codes by pattern. I used pink tabs to add pattern codes to each of the foam core boards as a way to further reduce the data. Next, I created analytic memos for each of the ten categories as a way to critically think about each category and to define what was underway in each category (Saldaña, 2016).

The analysis proceedings continued to evolve as I looked for ways of linking categories and identifying emerging themes and patterns (Clark & Vealé, 2018; Esterberg, 2002). I searched for repetitions, native categories, metaphors and analogies, and transitions that showed a shift in the topic (Bernard et al., 2017). I examined similarities and differences and linguistic connections that denoted causal or conditional relationships in support of theme identification (Bernard et al., 2017). While the connected nature of the categories and themes was important, it was just as important to
search for and include contradictory vantage points that delivered unique and unusual insight (Thomas, 2006). Working from the bottom up, I organized data into increasingly more abstract forms of information (Creswell, 2014).

Finally, I identified themes through my consideration of the categories and their alignment to existing research. I developed three themes to communicate the experiences and behaviors of the study participants (Saldaña, 2016). Then, deductively, I looked back into the early data content to discover if additional evidence was necessary to support the themes that had been revealed to me; although theme identification is an inductive process, my use of deductive thinking played a key role as I moved forward with the data analysis process (Creswell, 2014, p. 186). The establishment of themes offered insight into the relational aspects that were identified during the qualitative data analysis (Richards, 2005).

As I considered the presentation of themes and interpretations, I chose to create a narrative passage with thick, rich descriptions to convey the findings (Geertz, 1973; O’Dwyer & Bernauer, 2013). Furthermore, I used individual perspectives, quotes, and dialogue, identified in each data set, to reflect the culture of the study participants (Creswell, 2014). The use of visuals, including figures and tables, was used to further convey the analysis findings (Creswell, 2014).

**Community of Inquiry analysis.** A fifth qualitative set of data was generated through student peer review posts and responses provided during Week Four and Week Seven of the active term. For qualitative analysis purposes, the student posts were treated as course artifacts as they were considered to be the tools that were essential “to get work done” (Saldaña & Omasta, 2017, p. 74) during peer review.
Following the conclusion of the term, all student posts and responses were downloaded from the D2L Brightspace LMS. The content of the student peer review posts and responses was copied and pasted from a hierarchical thread format in Brightspace into Microsoft Word documents. By reading over the online artifacts at the onset of the analysis, I began to envision the different filters and lenses that were available for analyzing and interpreting each document. It was during this early stage that I made a mental note of items that denoted meaning for the study participants or to me (Saldaña & Omasta, 2017).

Once again, data analysis began with a general approach, followed by a computer-aided approach. The preliminary review of these artifacts began with my organizing and preparing the data for review (Creswell & Poth, 2017). To initiate the COI general review, the Microsoft Word documents were printed and clipped together with the first student’s initial post on top and additional sheets printed and added in descending order to represent the order of student response posts as they had occurred within the peer review thread. The pseudonym of the student who created the initial post was written on the top of each printed stack. All copies in each stack, representative of an individual peer review discussion thread, were stapled together to ensure that the order of posting did not shift. One by one, I began to review the printed peer review posts and responses in the order that they occurred within each student post artifact. I conducted initial memoing and highlighting on the printed copies, based on the seven a priori category codes for social and cognitive presence (Garrison & Arbaugh, 2007; Van der Merwe, 2012) as outlined in Table 3.9. As categories were already established and recognized prior to the
beginning of the COI analysis process, the approach was considered \textit{a priori} (Stemler, 2001).

Table 3.9. \textit{Codes for Social and Cognitive Presence via a Community of Inquiry Review}

<table>
<thead>
<tr>
<th>Components</th>
<th>Coding Categories and Presence Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Presence</td>
<td>o Open communication as indicated by risk-free expression</td>
</tr>
<tr>
<td></td>
<td>o Group cohesion as indicated by examples of encouraging support</td>
</tr>
<tr>
<td></td>
<td>o Affective expression as indicated by emoticons</td>
</tr>
<tr>
<td>Cognitive Presence</td>
<td>o Triggering event as indicated by a sense of puzzlement</td>
</tr>
<tr>
<td></td>
<td>o Exploration through information exchange</td>
</tr>
<tr>
<td></td>
<td>o Integration as indicated by connecting of ideas</td>
</tr>
<tr>
<td></td>
<td>o Resolution as indicated by applying new ideas</td>
</tr>
</tbody>
</table>


Next, I returned to Delve and created a separate project, distinct from the Delve project previously utilized for inductive analysis. I uploaded copies of the student post artifacts into Delve as separate transcripts for Week Four and Week Seven. Following, I created seven codes in Delve to align with Garrison and Arbaugh’s (2007) \textit{a priori} category codes for social and cognitive presence. I created and aligned analytic memos with each of the seven COI codes to further define them.

Based on Garrison and Arbaugh’s (2007) COI categories and presence indicators, I again used a sentence by sentence analysis and coded the student post artifacts that had been uploaded to the online environment of Delve. Social presence was coded first. Next, the student post artifacts received a second round of coding in support of cognitive
presence. Following the completion of coding, the student post artifacts were reviewed three separate times to ensure the accuracy of my coding.

Moving forward, I tallied all of the COI categories and indicators in Delve and entered the totals into an Excel spreadsheet. Social and cognitive presences were labeled as rows on a spreadsheet with a tally of total occurrences and a breakdown of each specific category and indicator (Van der Merwe, 2012). As part of the overall tally count, a percentage reflected the presence of each distinct indicator in comparison to the total of all recorded occurrences within the coded documents. As displayed through these representations, the COI model encourages cognitive freedom and social interdependence in a concurrent manner; through facilitation, construction, and validation of learning, members develop proficiencies that lead to increased learning (Garrison & Anderson, 2003). Within its theoretical framework, the COI approach defines, describes, and quantifies different aspects that support online learning communities and their growth (Van der Merwe, 2012).

Integration

Lastly, through a triangulation mixed methods approach, both quantitative and qualitative data were evaluated during this study. The findings of the two analyses were integrated via a convergent process to allow an informal comparison and to provide a more comprehensive review of the research topic (Mertler, 2017). The interpretation of both forms of data was shared in the discussion section of the study and included a report that compared the quantitative and qualitative results and explained that a convergence existed “between the two sources of information” (Creswell, 2014, p. 223).
Procedures and Timeline

This study took place in Spring 2020 during the online graduate term at UNCM. It consisted of the following three phases: Phase 1: Participant Identification and Preterm Data Collection, Phase 2: Postterm Data Collection, and Phase 3: Data Analysis. The procedures and the timeline for this research study are outlined in Table 3.10 and encompass a thirty-week span. Per the UNCM IRB, data collection and data analysis for this study were required to occur before and after the active GRAD COM term.

Table 3.10. Timeline for Participant Identification, Data Collection, and Data Analysis

<table>
<thead>
<tr>
<th>Phase 1: Participant Identification and Preterm Data Collection</th>
<th>Procedure</th>
<th>Date/Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identified student names and UNCM emails through course roster for upcoming term</td>
<td></td>
<td>Began 1/6/2020 (Two weeks prior to term start)</td>
</tr>
<tr>
<td>2. Composed a correspondence to be used for student email outreach.</td>
<td></td>
<td>Time Frame: 2 weeks</td>
</tr>
<tr>
<td>3. Upon receipt of UNCM IRB approval, sent email with UNCM IRB consent form to students as an invitation to participate in the study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Received signed UNCM IRB consent forms from consenting students via email</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sent email to consenting students with link to preterm questionnaire in SurveyMonkey</td>
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<td></td>
</tr>
<tr>
<td>6. Sent an email reminder to students who had not consented to participate in the study and reminded them of the deadline for participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Students participated in preterm questionnaire in SurveyMonkey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Received SurveyMonkey notice of students’ preterm questionnaire completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase</td>
<td>Procedure</td>
<td>Date/Time Frame</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Phase 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postterm Data</td>
<td>1. Sent UNCM email with link to postterm questionnaire (located in Survey Monkey) to all participating students</td>
<td>Began 3/30/2020 and continued through 4/20/2020</td>
</tr>
<tr>
<td>Collection</td>
<td>2. Students participated in postterm questionnaire</td>
<td>Time Frame: 3 weeks</td>
</tr>
<tr>
<td></td>
<td>3. Received SurveyMonkey notice of students’ postterm questionnaire completion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Sent email reminders to students as necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Began observation of student posts and response participation in support of Week Four peer review activity</td>
<td>Began 3/30/2020 and continued through 4/8/2020</td>
</tr>
<tr>
<td></td>
<td>6. Created hand-written observational field notes in support of Week Four peer review observations</td>
<td>Time Frame: 1 ½ weeks</td>
</tr>
<tr>
<td></td>
<td>7. Began observation of student posts and response participation in support of Week Seven peer review activity</td>
<td>Began 4/9/2020 and continued through 4/19/2020</td>
</tr>
<tr>
<td></td>
<td>8. Created hand-written observational field notes in support of Week Seven peer review observations</td>
<td>Time Frame: 1 ½ weeks</td>
</tr>
<tr>
<td></td>
<td>9. Contacted and scheduled consenting students for one-on-one interviews</td>
<td>Began 4/20/2020 and continued through 4/29/2020</td>
</tr>
<tr>
<td></td>
<td>10. Conducted recorded one-on-one interviews via telephone and Voice Recorder</td>
<td>Time Frame: 1 ½ weeks</td>
</tr>
<tr>
<td></td>
<td>11. Created researcher’s handwritten interview notations during one-on-one interviews</td>
<td></td>
</tr>
<tr>
<td>Phase 3: Data</td>
<td>1. Downloaded preterm and postterm questionnaires</td>
<td>Began 5/22/2020 and continued through 6/2/2020</td>
</tr>
<tr>
<td>Analysis</td>
<td></td>
<td>Time Frame: 1 1/2 weeks</td>
</tr>
<tr>
<td>Phase</td>
<td>Procedure</td>
<td>Date/Time Frame</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>2.</td>
<td>Conducted initial memoing on Part Four of postterm questionnaire</td>
<td>Began 6/3/2020 and continued through 6/17/2020 Time Frame: 2 weeks</td>
</tr>
<tr>
<td>3.</td>
<td>Typed up Week Four and Week Seven observational field notes</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Conducted initial memoing of observational field notes</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Typed up researcher’s handwritten interview notations recorded during one-on-one interviews</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Transcribed one-on-one interview recordings</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Conducted initial memoing of one-on-one interview transcripts and researcher’s handwritten interview notations</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Downloaded student post artifacts from Weeks Four and Seven peer review activities</td>
<td>Began 6/18/2020 and continued through 7/16/2020 Time Frame: 4 weeks</td>
</tr>
<tr>
<td>9.</td>
<td>Conducted inductive analysis on the postterm questionnaire open-ended questions, observational field notes, the one-on-one interview transcripts, and my researcher’s handwritten interview notations</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Conducted COI deductive analysis</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Conducted Cronbach alpha, descriptive statistics analysis, Shapiro-Wilk test, and the Wilcoxon signed rank test on Parts One, Two, and Three of preterm and postterm questionnaires</td>
<td>Began 7/17/2020 and continued through 7/31/2020 Time Frame: 2 weeks</td>
</tr>
</tbody>
</table>

**Phase 1: Participant Identification and Preterm Data Collection**

Phase 1 of the study began on January 6, 2020, with participant identification beginning two weeks prior to the graduate term start date of January 20, 2020. To create
an email listing of potential study participants, I pulled the names and email addresses of 
all students listed within my GRAD COM Capstone course roster for the upcoming term. 
I composed a correspondence to be used for student email outreach. Upon receipt of 
UNCM IRB approval to conduct the study, I utilized UNCM email to send the UNCM 
Capstone Peer Review Institutional Review Board (IRB) consent form to all students in 
my class as an invitation to participate in the study. Students were encouraged to review 
the provided IRB consent form and choose whether or not to participate in the upcoming 
research study (see Appendix B). Students, who agreed to participate in the study, were 
directed to sign and date the UNCM IRB consent form and return it to me by email. 
When a consenting student returned the signed and dated UNCM IRB consent form to me 
by email, I responded to the student with a follow-up email that contained a direct link to 
the preterm questionnaire located in SurveyMonkey (see Appendix C). To ensure ample 
opportunity for the students to participate in the study, I issued an email reminder as a 
follow-up to all students who had not responded and noted the deadline for study 
participation. As each of the consenting students completed the preterm questionnaire and 
submitted it, I received an email notification from SurveyMonkey.

**Phase 2: Postterm Data Collection**

On March 30, 2020, a UNCM email with a direct link to the postterm 
questionnaire, located in SurveyMonkey, was forwarded to all students who had 
previously consented to be in the study. As each of the consenting students completed the 
postterm questionnaire and submitted it during the three-week period from March 30, 
2020 to April 20, 2020, I received an email notification from SurveyMonkey. I issued an
email reminder to complete the postterm questionnaire as a follow-up to all students who
had not responded after one week.

Beginning on March 30, 2020 and continuing through April 8, 2020, I conducted
my observation of student peer review posts and peer responses provided in support of
the Week Four peer review activity. During this time, I observed student peer review
engagement and conversation and recorded descriptive and interpretive field notes
(Creswell, 2014) by using the previously determined protocol, located within the
researcher’s observational field notes document (see Appendix D). Beginning on April 9,
2020 and continuing through April 19, 2020, I conducted observation of student peer
review posts and peer responses provided in support of the Week Seven peer review
activity. Similar to the Week Four observations, I utilized the researcher’s observational
field notes document to record my observations.

On April 20, 2020 and continuing through April 29, 2020, I contacted and
scheduled study participants for volunteer participation in an audio-recorded one-on-one
interview. Over a three-week period from April 30, 2020 to May 21, 2020, I conducted
one-on-one semi-structured interviews with consenting students. The interviews were
conducted by telephone and recorded with Voice Recorder. I used an interview script
protocol and handwritten notation document (Creswell, 2014) to guide the interview
conversation and capture brief notes as the interviews evolved (see Appendix E).

**Phase 3: Data Analysis**

Data analysis began on May 22, 2020, immediately following the completion of
Phase 2. From May 22, 2020 through June 2, 2020, I downloaded the preterm and
postterm questionnaire responses from SurveyMonkey. Following, I conducted initial
memoing on the postterm questionnaire open-ended questions (Part Four). Next, I began typing up the observational field notes from the observed Week Four and Week Seven peer review activities and conducted initial memoing of the observational field notes. Over a two-week period, from June 3, 2020 to June 17, 2020, the researcher’s handwritten interview notations were organized and typed, and the one-on-one recorded interviews were transcribed. I performed initial memoing on the one-on-one interview transcripts and the researcher’s handwritten interview notations. Beginning on June 18, 2020 and continuing through July 16, 2020, I downloaded the student post artifacts, which included Week Four and Week Seven peer review activity, from D2L Brightspace. I conducted inductive analysis on the postterm questionnaire open-ended questions, the observational field notes, the one-on-one interview transcripts, and my researcher’s handwritten interview notations. I conducted COI deductive analysis on the student post artifacts. From July 17, 2020 to July 31, 2020, I concluded by conducting a Cronbach’s alpha analysis for internal consistency, descriptive statistics analysis, the Shapiro-Wilk test, and the Wilcoxon signed rank test on Part One, Part Two, and Part Three of the preterm and postterm questionnaires.

**Rigor and Trustworthiness**

Trustworthiness is an essential component of the research progression (Amankwaa, 2016). To ensure rigor and trustworthiness across qualitative data, strategic approaches were implemented to check for the accuracy and reliability of the findings (Creswell, 2014). As outlined in Chapter 1, I continued to engage in reflexivity and self-reflection to consider the biases that I brought to the study (Mertler, 2017). A progressive subjectivity and the monitoring of my own developing assertions were critical for
establishing the integrity of the study (Guba & Lincoln, 1989). Additional strategies to ensure rigor are provided in the following section and include (a) triangulation, (b) rich, thick descriptions, (c) member checking, (d) peer debriefing, (e) audit trail, and (f) addressing negative data (Creswell, 2014, Mertler, 2017).

**Triangulation**

During the study, qualitative data was obtained from five sources, including observational field notes, postterm questionnaire Part Four, one-on-one interviews, researcher’s handwritten interview notations, and student post artifacts. Through the triangulation of the different qualitative sources of data, I examined and used the sources to build a clear and justifiable claim for theme establishment (Creswell, 2014), Through my COI assessment of the student post artifacts for social and cognitive presence (Garrison & Arbaugh, 2007), I was able to further sustain the themes that I had established through inductive analysis.

The process of triangulation provided me with a view of the situation from all sides while providing greater depth and breadth (Johnson, 2008). Throughout my research, I envisioned triangulation as the use of multiple fishing nets, layered one on another, to create strength and to overcome the shortcomings of another. If one net had a hole, the other supporting nets could sustain the void through their overlapping nature. Similarly, triangulation ensured that the “imperfections of one are cancelled out by the strengths of another” (Lincoln & Guba, 1985, p. 306).

Researchers utilize triangulation as a method for corroborating findings and as a test for rigor (Lincoln & Guba, 1985). Through confirmation of two or more processes, the certainty assigned to data interpretation is increased (Webb, Campbell, Schwartz, &
To triangulate the data from the five qualitative methods, the analyses were conducted so that I could converge the findings and perform an informal comparison of the data sets; this allowed for a review of consistencies in findings and across the themes that had emerged from the coded data (Mertler, 2017). Similarly, negative data and inconsistencies surfaced as part of the triangulation process.

By triangulating the results produced from the observational field notes, postterm questionnaire Part Four, one-on-one interviews, and the researcher’s handwritten interview notations, I possessed the ability to confirm the themes through inductive analysis. Moreover, the opportunity to review and include any documents, artifacts, or supporting materials that were noted by participants during the one-on-one interviews, allowed me to further delve into the behavior of the Capstone students while strengthening the triangulation process (Shenton, 2004). By converging several sources or information via diverse methods, the fidelity of the qualitative data was strengthened (Creswell, 2014). In addition, findings from the preterm and postterm questionnaires were included in additional stages of triangulation in support of my mixed methods approach. While the consistency of results explained the corresponding aspects of my research, the points where the data deviated provided me with greater insight and interest (Pandey & Patnaik, 2014).

Rich, Thick Descriptions

The use of rich, thick descriptions can serve as an important detail in promoting the rigor of a study (Creswell, 2014). I utilized thick, detailed accounts to fully convey the situation that was being studied, as well as the surrounding contexts (Shenton, 2014). Through deep interpretation, I wholly illustrated and delivered an understanding of the
research to the reader. My commentary was based on the reconstruction of text into content that framed actions, shared gestures, and reflected the participants’ feelings, inspirations, and opinions (Alexander, Smith, & Norton, 2011).

To deliver descriptive accounts of the study themes and findings, I used descriptive note-taking processes to ensure that my final study results offered rich, detailed descriptions. The inclusion of descriptive terms, quotes, and detailed perspectives, in support of each theme, allowed me to use the study findings to transport the reader to the study site and envision the setting and the participants. I purposefully included the combination of many perspectives in support of each theme to ensure that the results were richer and more explicable (Creswell, 2014). The thick description is a departure from high science as it is not abstract nor formalist; instead, it serves as a layering effect that forms an understanding of cultural behavior (Alexander et al., 2011). In turn, I delivered the richness of the description through its abundance of interrelated details (Stake, 2010). In reviewing my final account and the study findings, I felt that my integration of thick and fully detailed descriptive text allowed the reader to determine if the study findings were credible and believable (Shenton, 2004).

**Member Checking**

Through member checking, I took the qualitative findings back to the study participants to determine the accuracy of the results (Creswell, 2014). Those who were directly involved in the study received an opportunity to review their interview transcripts as well as the themes that had emerged as part of the polished work (Mertler, 2017). Through member checking, I related participant understandings and interpretations with
my own (Murphy & Dingwall, 2003). Member checking allowed me to confirm that my findings were correct and credible (Merriam, 1995).

Member checking, often considered the most important step in bolstering the rigor of the study (Guba & Lincoln, 1989), proved valuable to me as I was exposed to the study participants’ interpretations of the data. Member-checking strategies provided an opportunity for me to solicit participant thoughts, understandings, and consensus in support of my “analyses and interpretations” (Klenke, 2016, p. 44). Ultimately, the member checking process served as a form of accountability for me to the participants whose thoughts, experiences, and words I had shared (Klenke, 2016).

**Peer Debriefing**

Peer debriefing served as an effective strategy to ensure the trustworthiness of my data (Mertler, 2017). During peer debriefing, I employed the perspective of another in questioning and reviewing the study account that I had created. Earlier in my research, I conducted peer debriefing sessions with dissertation co-chair Dr. Michael Grant. Further into my research, I conducted recorded peer debriefing sessions with dissertation co-chair Dr. Tammi Kolski. Following my development of categories and themes, I conducted an additional review session with two fellow Capstone instructors. Although the instructors were not involved in my research study, they were trusted peers who were familiar with my abilities and my research efforts (Sensing, 2011).

During peer briefing, a trusted reviewer can offer an opinion and illuminate situations in the researcher’s writing that may not otherwise surface or be discussed (Sensing, 2011). Additional peer debriefing sessions with my dissertation co-chair will allow for the further review of the codes, categories, and themes. Additional discussions
will surround my achievement of rigor. The use of peer debriefing has supported and will continue to support the legitimacy of my study findings by offering a plan to compensate for any potential bias that I may have offered during my research (Pandey & Patnaik, 2014).

**Audit Trail**

An audit trail provides documented links to the researcher’s decisions that were made in support of theoretical, methodological, and analytical selections (Koch, 1994). During my research, I created an audit trail to document decision-making processes so that another researcher could follow similar steps and receive comparable results (Koch, 1994; Sandelowski, 1986). The use of an audit trail allowed me to provide research authenticity through a qualitative approach as it included entries that denoted an understanding and appreciation of the study findings instead of researcher bias (Guba & Lincoln, 1989).

To create an audit trail, I kept records of the raw data, field notes, and interview transcripts (Nowell, Norris, White, & Moules, 2017). Halpren (as cited in Lincoln & Guba, 1985), suggested the retainment of raw data, notes regarding data reduction, analysis, and synthesis, process notes, content related to thoughts and perspective, and more. Furthermore, I created a reflexive journal that allowed me to establish, record, and rationalize my processes, as well as produce a tool for connecting and cross-referencing data (Lincoln & Guba, 1985). In addition to providing documentation of daily occurrences, I used the reflexive journal to retain accounts of conversations that occurred and to maintain a self-critical review of my processes (Tobin & Begley, 2004).
Addressing Negative Data

The opportunity to identify and analyze negative data is an integral component in testing the rigor of qualitative research (Maxwell, 2013). As real life provides differing vantage points and views, a discussion of negative data “adds to the credibility of an account” (Creswell, 2014, p. 202). Certain instances that do not align with an interpretation, explanation, or theme can reflect defects or inaccuracies in the account (Maxwell, 2013). I reviewed negative information to detect predispositions and assumptions and evaluate for inaccuracies as a way to monitor any flaws in judgment, reasoning, and methods (Maxwell, 2013).

To ensure the authenticity of the study, negative information that may have run counter to study themes was included in the study and reported. The inclusion of these differing perspectives and contrary information added to the trustworthiness of the study. While I presented themes that emerged from the participants' experiences during the study, it was essential for me to include contradictory insight as well (Creswell, 2014, p. 202). Instead of ignoring the data, I took care to rigorously examine and compare all data, both confirming and discriminant, and determine if the conclusions of the study were accurate or needed to be further revised (Maxwell, 2013). Although this process was time-consuming to complete, I felt more confident and secure in my study findings and interpretations (Yin, 2016).

Plan for Sharing and Communicating Findings

By communicating the results of an action research study through informal and formal means, the research practitioner can become the link that connects academic research to classroom instruction (Mertler, 2017). The problems, issues, and questions
that served as a catalyst for my study may resonate well with other practitioners. By making my study results available, the process becomes more meaningful and richer to me as I allow others to gain new insight from me and conduct further research into similar situations that exist within their own environments (Efron & Ravid, 2013; Pelton, 2010). As unshared work offers limited impact to me as a lone practitioner, my sharing of the research findings with others will allow me to offer an impact outside of a single classroom as I empower others to critique and learn from my work (Hinchey, 2008). Due to research by action researchers such as myself, a change has occurred in the way in which contemporary educational research is viewed, valued, and appreciated (Efron & Ravid, 2013); therefore, the dissemination of research findings “should demonstrate fitness for purpose” (Baumfield, Hall, & Wall, 2012). Plans for sharing and communicating my research findings are provided in the following section and include (a) study participants, (b) UNCM teaching and learning environments, and (c) conferences and journals.

**Study Participants**

To ensure the accuracy of findings and to offer reflection with the study participants prior to sharing the research results with other groups, I utilized a final system of member checking to review the major themes and recommendations that had been identified during the study (Creswell, 2014). This first small step in disseminating the findings with the research participants helped build my confidence in support of sharing what I had learned with others (Efron & Ravid, 2013). Furthermore, this initial engagement allowed me to clarify my thoughts, strengthen my judgment, and articulate the findings as part of my own professional development pathway (Baumfield et al.,
The study participants were able to review the key findings and receive an opportunity to comment on the documented conclusions, as well as confirm that their one-on-one interview transcripts were correct and that their identities had been protected through my use of pseudonyms and limited details (Mertler, 2017). In reviewing the feedback from the study participants, I received the opportunity to integrate their thoughts and recommendations into further inquiry as part of the reflecting stage in the action research cycle (Mertler, 2017). This step was essential for me as the action research spiral recognizes the overt opportunity to change, modify direction, and act differently due to ongoing enlightenment (Townsend, 2013).

**University of North Coast Muscari Teaching and Learning Environments**

Moving forward, it will be essential for me to share my findings with my work colleagues who are not directly involved in my research as this can promote ongoing professional conversation regarding university-wide issues and allow for continued critique, problem-solving, and solutions (Baumfield et al., 2012; Putman & Rock, 2017). To share the results of this action research study locally, a visual PowerPoint presentation will be offered to members of the UNCM Liberal Arts Department during a weekly team meeting, held online in Microsoft Teams. I will provide additional online presentations to share study recommendations and areas for further consideration and action with the following stakeholder groups at UNCM: GRAD COM Capstone Instructors, Graduate and Undergraduate Communication Adjunct Faculty, and representatives of the Learning Science and Outcomes & Assessment Department. The study results will be further shared with members of the university’s educational community through the university’s established online professional networking environments.
Conferences and Journals

As the time, effort, and dedication that I have provided to action research is a significant commitment, sharing the outcomes of my study will provide me with a culminating effect of satisfaction, achievement, and continued professional curiosity (Putman & Rock, 2017). Moreover, it is customary for action research projects, especially those involving university settings and participants, to be presented at conferences and published in scholarly journals (Atweh, Kemmis, & Weeks, 1998). To share the action research findings with a broader community of educators with similar interests, proposals will be submitted for presentation consideration to the Eastern Educational Research Association Conference, South Carolina Educators for the Practical Use of Research Conference, and Association for Educational Communications and Technology Conference. Additional considerations include the South Carolina EdTech Conference, the North Carolina Technology in Education Society Conference, and the Future of Education Technology Conference (FETC). In efforts to share findings with larger audiences with an interest in online learning, higher education, and educational technology, I will submit the study to peer-reviewed academic journals, including The American Journal of Distance Education, Innovative Higher Education, and Research in Higher Education.
CHAPTER 4
ANALYSIS AND FINDINGS

The purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students at the University of North Coast Muscari (UNCM). The findings of this study will aid in determining the effectiveness of the structured peer evaluation system which included an interactive educational technology intervention, a peer review tool kit. Data collection was guided by two research questions:

RQ1. How does using a structured peer evaluation system impact the peer review process in an online Graduate Communication Capstone classroom at UNCM?

RQ2. What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in a Graduate Communication Capstone classroom at UNCM?

This chapter presents the analysis and findings of this mixed methods study. The first section will present the quantitative results. Next, the qualitative outcomes and interpretations will be provided, including a distinct section for COI discourse analysis discoveries.

Quantitative Analysis and Findings

Quantitative data collected in this study included study participants’ feedback from two data sources, a preterm questionnaire and a postterm questionnaire. All analyses of the data were conducted using JASP (Version 0.11.0; 2020), an open-source statistical
software program supported by the University of Amsterdam. Unless indicated otherwise, an alpha level of .05 was used to determine significance in all statistical testing (Mertler, 2017). The following section will discuss the quantitative analysis and findings for the preterm questionnaire and the postterm questionnaire.

**Preterm and Postterm Questionnaire**

As described in Chapter Three, the purpose of the preterm questionnaire was to evaluate the student participants’ perceptions of the existing peer review processes at the university and their participation in prior peer review activities. The preterm questionnaire for this study was constructed from two published survey instruments. Questions 1-10 of the instrument (Part One) were based on Kaufman and Shunn’s (2011) research survey and were positioned to evaluate students’ perceptions regarding online peer assessment. It also included statements pertaining to peer review feedback. The remaining 20 questions of the instrument (17 in Part Two and three in Part Three) were created based on research by Moneypenny et al. (2018) that aligned specifically with Wen and Tsai’s (2006) four subscales of peer review, including positive attitudes, negative attitudes, online attitudes, and understanding and action in support of students’ online peer review activity (Moneypenny et al., 2018).

The postterm questionnaire was reflective of the same three sections and statements included in the preterm questionnaire. As study participants were exposed to the research study innovation after the preterm questionnaire and prior to completing the postterm questionnaire, the only change included verb tense. Echoing the survey design of Kaufman and Schunn (2011), the preterm questionnaire included statements framed in future tense and the postterm questionnaire provided statements in past tense (see
Appendix F). Both preterm and postterm questionnaires included 30 questions for students to rate their responses with a 5-point Likert scale ranging from Strongly Agree (SA), Agree (A), Neither Agree or Disagree (N), Disagree (D), or Strongly Disagree (SD) (see Appendix C). For data analysis purposes, a response of Strongly Agree was converted to a value of 5; a response of Agree was converted to a value of 4; a response of Neither Agree or Disagree was converted to a value of 3; a response of Disagree was converted to a value of 2; and a response of Strongly Disagree was converted to a value of 1.

In order to assess the reliability, or internal consistency, of the instrument items, I calculated the Cronbach’s alpha for each part separately (Cronbach, 1951; Tavakol & Dennick, 2011). The Cronbach’s alpha outcome of Part One for the preterm questionnaire was unacceptable (preterm \( \alpha = .32 \)), and the outcome of Part One for the postterm questionnaire was questionable (postterm \( \alpha = .66 \)). The Cronbach’s alpha outcome of Part Two for the preterm questionnaire was excellent (preterm \( \alpha = .91 \)), and the outcome of Part Two for the postterm questionnaire was acceptable (postterm \( \alpha = .76 \)). The Cronbach’s alpha outcome of Part Three for both the preterm questionnaire and the postterm questionnaire was unacceptable (preterm \( \alpha = -.13 \), postterm \( \alpha = -.13 \)) (see Table 4.1). A negative value for \( \alpha \), indicating a negative average covariance among items, is most likely due to a small sample size and a small number of items (Nichols, 1999). It may be that the items do not have positive covariance and may not form a useful scale because they are not measuring the same thing (Nichols, 1999). With the low and varied internal consistency outcomes, interpretations should be tentative (DeVellis, 2016).
Table 4.1. Preterm and Postterm Questionnaires’ Cronbach’s Alpha Scores by Part

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Cronbach’s Alpha Score</th>
<th>Internal Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part One Preterm</td>
<td>.32</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Part One Postterm</td>
<td>.66</td>
<td>Questionable</td>
</tr>
<tr>
<td>Part Two Preterm</td>
<td>.91</td>
<td>Excellent</td>
</tr>
<tr>
<td>Part Two Postterm</td>
<td>.76</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Part Three Preterm</td>
<td>-.13</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Part Three Postterm</td>
<td>-.13</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>

**Descriptive Statistics**

Descriptive statistics were analyzed based on a 100% response rate by the seven study participants for both the preterm and postterm questionnaires. As shown in Table 4.2, participants’ scores on the preterm questionnaire Part One offered a mean of 3.39 with a standard deviation of 1.13. The participants’ scores on the postterm questionnaire Part One offered a mean of 3.56 and a standard deviation of 1.26. The participants’ scores on the preterm questionnaire Part Two offered a mean of 3.76 and a standard deviation of 1.31. The participants’ scores on the postterm questionnaire Part Two offered a mean of 3.78 and a standard deviation of 1.24. Participants’ scores on both Part One and Part Two of the preterm and postterm questionnaires ranged from a minimum score of 1 to a maximum score of 5 and had a median score of 4. The participants’ scores on the preterm questionnaire Part Three offered a mean of 4.14 and a standard deviation of .96. The participants’ scores on the postterm questionnaire Part Three offered a mean of 3.85 and a standard deviation of .96. Participants’ scores on Part Three of the preterm and postterm questionnaires ranged from a minimum score of 2 to a maximum score of 5 and had a
median score of 4. These results of Part One and Part Two show the participants’
perceptions of the peer review process to have increased after the implementation of the
structured peer evaluation system.

The Shapiro-Wilk, a test of normality, was run in JASP to determine if the data
for the population was normally distributed (Shapiro & Wilk, 1965). The Shapiro-Wilk
test suggested no significant results deviated from normality; thus, the population is
normally distributed (see Table 4.3).

Table 4.2. Descriptive Statistics for Preterm and Postterm Questionnaires by Part

<table>
<thead>
<tr>
<th>Part</th>
<th>Preterm</th>
<th>Postterm</th>
<th>Both Pre and Postterm</th>
<th>Both Pre and Postterm</th>
<th>Both Pre and Postterm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>Median</td>
</tr>
<tr>
<td>Part One</td>
<td>3.39</td>
<td>1.13</td>
<td>3.56</td>
<td>1.26</td>
<td>4</td>
</tr>
<tr>
<td>Part Two</td>
<td>3.76</td>
<td>1.31</td>
<td>3.78</td>
<td>1.24</td>
<td>4</td>
</tr>
<tr>
<td>Part Three</td>
<td>4.14</td>
<td>.96</td>
<td>3.85</td>
<td>.96</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: N=7. The minimum and maximum allowable scores on the preterm and postterm
questionnaires were 1 and 5, respectively.

Table 4.3. Shapiro-Wilk Test of Normality

<table>
<thead>
<tr>
<th>Pre and Postterm Questionnaire Parts</th>
<th>W</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part One Pre Totals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part One Post Totals</td>
<td>0.87</td>
<td>.185</td>
</tr>
<tr>
<td>Part Two Pre Totals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part Two Post Totals</td>
<td>0.84</td>
<td>.098</td>
</tr>
<tr>
<td>Part Three Pre Totals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part Three Post Totals</td>
<td>0.84</td>
<td>.099</td>
</tr>
</tbody>
</table>

Note. Significant results (<.05) suggest a deviation from normality.
Although the Shapiro-Wilk test (Shapiro & Wilk, 1965) indicated no deviation from normality, due to the limited number of seven study participants, the Wilcoxon signed rank test, a non-parametric test that assesses whether the mean scores from two groups are statistically different from one another (Wilcoxon, 1945), was conducted in JASP (see Table 4.4). With more than one questionnaire part aligned to one research question, the Bonferroni adjustment (Streiner & Norman, 2011) test was run to verify if each questionnaire part was independent of each other. To produce a significant result, a test must produce an adjusted $p$ value of <.017. Neither Part One, Part Two, or Part Three of the preterm or the postterm questionnaire produced significant results.

<table>
<thead>
<tr>
<th>Measure 1</th>
<th>Measure 2</th>
<th>W</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part One Pre Totals</td>
<td>-</td>
<td>5.5</td>
<td>.172</td>
</tr>
<tr>
<td>Part Two Pre Totals</td>
<td>-</td>
<td>16</td>
<td>.796</td>
</tr>
<tr>
<td>Part Three Pre Totals</td>
<td>-</td>
<td>15</td>
<td>.048</td>
</tr>
</tbody>
</table>

While there were no statistically significant results found, the mean scores of the student responses on both Part One and Part Two of the postterm questionnaire did improve slightly. It should be noted that although the Part Two preterm and postterm questionnaire mean scores were nearly equal (preterm, $M = 3.76$; postterm, $M = 3.78$), the mean scores for both began and ended with a near agreeable response from the students regarding peer review. The decrease in the Part Three mean score responses of students from the preterm questionnaire ($M = 4.14$) to the postterm questionnaire ($M = 3.85$) are
still agreeable responses; however, the students’ responses to setting expectations for scoring of peer review activities indicate that the responsibility should remain primarily on the instructor to set the expectations.

**Qualitative Analysis and Interpretations**

This study included five qualitative data sources as outlined in Table 4.5. I utilized inductive analysis to analyze student responses to six postterm questionnaire open-ended questions, observational field notes, one-on-one interview transcripts, and my researcher’s handwritten interview notations. A fifth set of qualitative data, student post artifacts gleaned from Week Four and Week Seven of the active term, was analyzed separately through COI deductive analysis.

A total of 335 unduplicated codes were created through *Structural, Descriptive, Process, and In Vivo Coding*. Four levels of coding were provided across the postterm questionnaire open-ended questions, one-on-one interviews, and the researcher’s handwritten interview notations. As the two sets of observational field notes were recorded by the researcher in her own words and did not include the voice of the students, these data sets received the first three rounds of coding but did not receive the fourth round of *In Vivo Coding*. *COI Coding* of student post artifacts took place separately, providing seven additional *a priori* codes and taking the total number of unique codes applied to qualitative data sources from 335 to 342. As many of the 335 unduplicated codes created through *Structural, Descriptive, Process, and In Vivo Coding* were applied to more than one data source, a final total of 437 codes were applied to all qualitative data sources.
To further explain the qualitative process undertaken during this study, the following section will include (a) quantity of qualitative data by source, (b) coding processes, (c) presentation of findings, (d) qualitative accuracy, and (e) summary of qualitative methods and findings.

**Quantity of Qualitative Data by Source**

A qualitative component was purposefully added to the postterm questionnaire to capture student’s perceptions of the structured peer evaluation system. The six open-ended questions were gathered in SurveyMonkey, downloaded, and copied into separate Microsoft Word documents, creating seven additional sources of data. Once the documents were printed, I read through the student responses and conducted initial memoing in the margins of the documents as shown in Figure 4.1.
The researcher’s observational field notes, utilized to document student participation, conversations, and interactions in Weeks Four and Seven of the active term, produced two data sources. I typed my researcher’s observational field notes into separate Microsoft Word documents and printed each. Next, the printed notes were utilized for initial memoing as I explored and reviewed the data (Birks et al., 2008). During the memoing process, I distinguished between descriptive and interpretive notes and added my initial thoughts regarding potential codes to the page margins (Creswell, 2014; Creswell & Poth, 2017), as shown in Figure 4.2.
Of the seven consenting study participants, six students agreed to participate in one-on-one interviews with this researcher. Interview sessions, conducted by telephone and audio recorded with student permission, were recorded with Voice Recorder and recordings were uploaded to Temi, a speech to transcription service ("Temi," n.d.). Once transcriptions were completed, reviewed, and any necessary errors corrected by this researcher, the individual files were downloaded into Microsoft Word, producing six additional data sources. Next, the one-on-one interview transcripts were printed. I conducted initial memoing within the margins so that I could focus carefully on the artifacts and note any ideas or indications that surfaced during my early review of the printed pages (Esterberg, 2002).
In addition to the audio recordings of the one-on-one interviews, I recorded researcher’s handwritten interview notations during each interview session through the use of the Researcher’s Interview Script and Handwritten Notation Document (see Appendix E). These handwritten notations were typed into Microsoft Word and printed, producing six additional data sources. Printed copies were reviewed and I conducted initial memoing within the margins of each page, allowing me to fully engage with the data and develop a stronger grasp of the meaning that the data held (Birks et al., 2008; Creswell, 2014).

Lastly, the Week Four and Week Seven peer review student post artifacts were downloaded from the learning management system (D2L Brightspace). These student post artifacts were entered into two separate Microsoft Word documents by week in the term, producing two additional data sources. The documents were printed, and I conducted initial COI code alignment through memoing and highlighting with different color markers. As shown in Figure 4.3, my initial thoughts pertaining to coding were assigned based on the existing COI a priori codes which signify social and cognitive presence (Garrison & Arbaugh, 2007; Van der Merwe, 2012).

In peer debriefing sessions with my dissertation co-chair Dr. Tammi Kolski, we determined that COI Coding of the student post artifacts would be conducted separately due to its deductive approach based on predetermined codes and indicators. Therefore, COI Coding was not included in first cycle coding, second cycle coding, or code mapping.
Figure 4.3. Printed copy of Week Seven student post artifact with researcher’s initial highlighting and memoing in support of Community of Inquiry Coding.

Coding Processes

Action research, often described as cyclical, involves continuous observation, reflection, and action (Johnson, 2008; Stringer, 2007). Similarly, the reverberant process of coding through stages, levels, and feedback offers a cyclical approach to qualitative
data analysis (Saldaña, 2016). The coding processes for the qualitative data sources identified in Table 4.5 will be outlined in the following section and include (a) first cycle coding, (b) post coding transitions, (c) second cycle coding, and (d) COI coding.

**First cycle coding.** As I completed the handwritten memoing process for each qualitative data source, I transitioned to my laptop for a second round of review by way of computer-aided coding. I uploaded the digital content of each data source, except the student post artifacts, into Delve, an online digital tool for creating projects and coding digital transcripts (“Delve,” n.d.). I coded each data set completely, one at a time, prior to moving on to the next data set. I began first cycle coding with the postterm questionnaire open-ended questions and moved forward through the observational field notes, the one-on-one interview transcripts, and my researcher’s handwritten interview notations.

Coding sentence by sentence, I began with *Structural Coding* in efforts to categorize and align segments of data to the study’s research questions (Saldaña, 2016). Although this process produced just two codes, one for each of the two study research questions, it gave me an opportunity to read over the qualitative content and immerse myself in the data via a digital environment as opposed to a review of the printed hard copies of the data.

I found that this initial review helped me to acclimate myself with each data set and view it from a holistic approach. Furthermore, for each code that I created in Delve, beginning with this first round of *Structural Coding*, I created analytic memos with Delve to provide a unique description of each code generated. The addition of analytic memos allowed me to track my thoughts, reflect on my coding choices and processes, and further expound on the underlying meaning of each code (Mertler, 2017; Saldaña, 2016). For
example, upon completion of all coding, 76 segments of qualitative data were coded with the gerund acknowledging as part of my Process Coding efforts. As shown in Figure 4.4, the associated analytic memo within Delve described the students’ acknowledgment of the structured peer evaluation system, the helpfulness of the tool kit and resources, and their key takeaways through peer review engagement and tool kit interaction.

Figure 4.4. Example of an analytic memo attached to the code acknowledging within the Delve environment.

Following the completion of Structural Coding, I began the sentence by sentence analysis for Descriptive Coding and assigned labels of a word or short phrase to denote the simple topic of the data presented (Saldana, 2016). This approach, which often features the use of a noun, was used due to its appropriateness for studies, such as mine, with a wide variety of data perspectives (Saldana, 2016). Stepping through the data, I examined the basic topic of each sentence and consistently considered, “What is going on here?” as a guide to Descriptive Coding (Saldana, 2016). As shown in Figure 4.5, Descriptive Coding yielded codes such as capable reminders, feedback tips, initial draft,
knowledge checks, perception tool kit, PR anxiety, template, and videos. Through 
Descriptive Coding, I created 53 unique codes.

Figure 4.5. First cycle Descriptive Coding in Delve.

To implement a third round of coding, I utilized Process Coding and denoted 
action through the use of gerunds or “ing words” (Saldaña, 2016, p. 111). As I reviewed 
each sentence, I created codes for observable activity such as posting and reviewing, as 
well as codes for more abstract actions such as anticipating and remembering. Process 
Coding, appropriate for studies such as mine that include an intervention, allowed me to 
apply codes based on actionable routines, changes, consequences, and outcomes that 
were present across the data (Saldaña, 2016). A total of 72 unique codes were created 
through Process Coding as shown in Figure 4.6.
I utilized *In Vivo Coding* as a fourth round of coding for three of the data sets which included the voices of the study participants. This coding sequence included the six postterm questionnaire open-ended questions, the one-on-one interviews, and the researcher’s handwritten interview notations. Through *In Vivo Coding*, I sought to capture the actual words and experiences of the study participants and create codes of short phrases taken literally from their actual language (Saldaña, 2016). Some examples of *In Vivo* codes generated included *definitely had an impact, feedback from different perspective, intimidating to give feedback, and value having others spot mistakes*. In my efforts to prioritize the voice of the participants (Saldaña, 2016), I created 208 unique *In Vivo* codes.

**Post coding transitions.** Before moving into second cycle coding, it was imperative for me to cycle back through first cycle codes so that I could move forward in a strategic manner (Saldaña, 2016). To organize and assemble the codes that I had created...
in first cycle coding, I moved from the Delve environment back into Microsoft Word and conducted code mapping. Code mapping provided a display strategy to organize my data visually and to increase the trustworthiness of my data analysis (Saldaña, 2016). For the first iteration of code mapping, I generated a list of the 335 codes that I had created through Structural, Descriptive, Pattern, and In Vivo Coding as shown in Figure 4.7.

<table>
<thead>
<tr>
<th>Additional insight from peers</th>
<th>“Engagement with students was best part”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Op to learn from others</td>
<td>“Evaluation system was fair”</td>
</tr>
<tr>
<td>Different perspectives to improve</td>
<td>“Everyone on the same page”</td>
</tr>
<tr>
<td>Others’ perceptions of my work</td>
<td>Feel opinion valued</td>
</tr>
<tr>
<td>Path to get info from others</td>
<td>Familiar setting</td>
</tr>
<tr>
<td>Thinking like peers?</td>
<td>Focused my mind</td>
</tr>
<tr>
<td>Understand another’s POVs</td>
<td>Cleared my head</td>
</tr>
<tr>
<td>“Feedback from different perspectives”</td>
<td>Helpful</td>
</tr>
<tr>
<td>“Feedback received was very helpful”</td>
<td>“Just how helpful”</td>
</tr>
<tr>
<td>“Get fresh information”</td>
<td>“I enjoyed it.”</td>
</tr>
<tr>
<td>“Looking to give helpful”</td>
<td>“Intimidating to give feedback”</td>
</tr>
<tr>
<td>“Others’ perceptions of my work”</td>
<td>Knowing others going to read</td>
</tr>
<tr>
<td>“Others read my work”</td>
<td>“Looks good doesn’t help”</td>
</tr>
<tr>
<td>“All in this together!”</td>
<td>Manageable collaborative system</td>
</tr>
<tr>
<td>“Appreciated having feedback”</td>
<td>Fair</td>
</tr>
<tr>
<td>“Changed a few things”</td>
<td>“More specific more helpful”</td>
</tr>
<tr>
<td>“Collaboration and interaction”</td>
<td>“Most intimidating experience”</td>
</tr>
<tr>
<td>Collaboration and interaction without hang-ups</td>
<td>Op to see others’ work</td>
</tr>
</tbody>
</table>

Figure 4.7. Excerpt of first iteration of code mapping in Microsoft Word.

Next, I began to review the list of 335 codes through a second iteration of code mapping. To determine codes that appeared to go together, I began to compare, sort, and group the codes by cutting and pasting codes into potential category groupings within the Microsoft Word document (Saldaña, 2016). For example, after reviewing the supporting analytic memos in Delve for the codes of brought things to my attention, capable
reminders, enjoyed different mediums, quick guide to critical feedback, and tool kit as a guideline, I grouped these codes with additional codes that were reflective of the study participants’ supportive perceptions about the peer review tool kit innovation.

Moving forward, I continued to copy, paste, and realign codes until eleven initial draft category groups appeared. At this point, I stepped away from the data for 24 hours for some time of reflection. Upon my return and further review, I decided to merge the two previously created draft categories pertaining to collaboration and community building into one category unit. Therefore, the second iteration of code mapping produced ten potential categories including Category 1: Structured system impact on student participation, Category 2: Student perception peer review, Category 3: Student perception tool kit, Category 4: Student empowerment, confidence, and validation, Category 5: Student learning through peer system guidance, Category 6: Confidence in peers, collaboration, and community building, Category 7: Student attitude, Category 8: Student approaches to peer review, Category 9: Student suggested improvements, and Category 10: Student use and validation of peer review and tool kit.

Second cycle coding. Having completed the code mapping transition process, I employed Pattern Coding as a second cycle coding method to reduce substantial amounts of data into smaller units in support of theme development (Saldaña, 2016). While first cycle coding provided me with an early summary of my data sources, second-cycle coding provided an opportunity to cluster some of the 335 codes into pattern groupings. Through Pattern Coding, I reviewed all codes, including the categories of codes that I had generated during the second iteration of code mapping. I searched for social
networks and patterns across the codes as well as causes and explanations in the coded data (Saldaña, 2016).

During this stage, I transitioned my approach of code mapping and Pattern Coding from Microsoft Word to a physical environment. I required a way to stand back, look at, and examine the codes under each category on a larger scale instead of scanning through them online or flipping back and forth through printed pages. I printed all 335 first cycle codes, cut them apart, and arranged them vertically by category on the left side of respective foam core boards. By pinning the codes, they could be easily rearranged. Next, I used the categories created in the second iteration of code mapping and through Pattern Coding to further group codes by pattern (see Figure 4.8). Pattern codes were added to the boards through the addition of pink tabs. Last, I pinned a sheet of paper with the appropriate category language to each foam core board. After numerous rounds of review and coding, I felt that I held a strong familiarity with the existing codes and this approach helped me retain the mental connection that I had already established between the first cycle codes and the underlying data.

Once this task was completed for each category, I was able to look from left to right and see the supporting first cycle codes, the over-arching pattern codes, and each respective category in support of theme development. The ability to separate and touch the codes, physically move them, and arrange and display them visually, helped me ensure strong alignment to appropriate categories as I began to consider emergent themes (Saldaña, 2016).
Figure 4.8. Example of second-cycle Pattern Coding in support of Category 2: Student perception peer review.
Next, I met with dissertation co-chair Dr. Tammi Kolski as a form of peer debriefing. I provided Dr. Kolski with a Microsoft Word document which included a listing of the ten categories, their underlying codes, and the respective pattern groupings. During the peer debriefing, I was asked to discuss and reflect upon the categories without looking back at the underlying codes. This conversation prompted me to further delineate each category as well as search for the meaning behind the category. As shown in Table 4.6, for each of the ten categories developed, I created a respective analytic memo to think and write about the study participants, experiences, and processes that were underway in each category (Saldaña, 2016). The production of these descriptive memos forced me to think critically about each category, challenge my assumptions, and keep track of the student experience as the study evolved (Saldaña, 2016).

Table 4.6. *Ten Categories and Supporting Analytic Memos Created by this Researcher*

<table>
<thead>
<tr>
<th>Categories</th>
<th>Analytic Memos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1: Structured System Impact on Student Participation Code Examples: disclosing, inquiring, posting, and works reviewed</td>
<td>This category includes the conversational patterns, depth of review posts, post structure and observances, student interaction and participation, total posts created, and number of works reviewed due to the use of a structured system. In addition, this category includes students’ disclosures regarding the impact of the structured system in their ability to peer review by engaging, advising, posting, supporting, recommending, responding, and reviewing.</td>
</tr>
<tr>
<td>Category 2: Student Perception Peer Review Code Examples: eager, focused my mind, helpful, and reflecting</td>
<td>This category includes students’ perception of peer review including the ability to choose who to review, prior peer review opportunities, the opportunity to gain insight from peers and learn from them, as well as the opportunity to see how others have created their work. Students share the value, usefulness, or dissatisfaction they see in peer review as well as their eagerness, excitement, ease, comfort, stress, and intimidation. This category includes students’ perceptions regarding peer review via structure, fairness, simplicity, management as a system, setting, and engagement. Students</td>
</tr>
<tr>
<td>Categories</td>
<td>Analytic Memos</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Category 3: Student Perception Tool Kit</td>
<td>This category includes students’ perceptions of the peer review tool kit, included as part of the structured approach to peer review during the [REDACTED] term. Students share their thoughts regarding the different components and mediums of the tool kit, including the capable and non-defensive reminders, feedback examples, guiding statements, knowledge checks, REPAIR acronym, sandwich approach, templates, videos, tips, and more. In addition, students share how the tool kit influenced their peer review approach and participation, their thoughts on its length, content, and impact, and the validation, if any, it provided.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td>assessing, capable reminders, encouraging, and feedback tips</td>
</tr>
<tr>
<td>Category 4: Student Empowerment, Confidence, and Validation</td>
<td>This category includes students’ feedback regarding feelings of empowerment and validation or lack thereof through the structured system, the peer review tools and resources, and via peer engagement. Students share their thoughts regarding personal fears, confidence levels, value, and capabilities.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td>empowered confident, enjoying, impact ability to PR, and validating</td>
</tr>
<tr>
<td>Category 5: Student Learning through Peer System Guidance</td>
<td>This category includes the learning, improvement, and development that took place through the peer system and its guidance.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td>guiding and developing</td>
</tr>
<tr>
<td>Category 6: Confidence in Peers, Collaboration, and Community Building</td>
<td>This category includes students’ thoughts regarding acceptance of and confidence in their peers’ feedback, based on peer’s potential use of the structured peer review system, tools, and resources. Students share their feelings regarding lessened anxiety, knowledge that others were dependent on feedback, and the opportunity for peer review to create positive collaboration and build a community of support.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td>building community, collaborating, and confident PR received</td>
</tr>
<tr>
<td>Categories</td>
<td>Analytic Memos</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Category 7: Student Attitude</td>
<td>This category includes students’ attitudes regarding peer review, participation, and the full gamut of emotions experienced before, during, and after peer review. Students share their apprehension of how peer review comments will be perceived by peers, feelings experienced while waiting to receive peer review, and whether peer review components were welcomed.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td><strong>anticipating, attitude, doubting, stressing, and waiting</strong></td>
</tr>
<tr>
<td>Category 8: Student Approaches to Peer Review</td>
<td>This category includes students’ individual approaches to peer review through original peer selection and peer selection for continued review in subsequent weeks. Students share their response to peers who asked for support, the opportunity to self-reflect, and the decision of whether or not to use available resources.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td><strong>changing peers, choosing peers, reviewing, and signifying</strong></td>
</tr>
<tr>
<td>Category 9: Student Suggested Improvements</td>
<td>This category includes an array of student suggestions for improving the peer review process through structure, additions or revisions to tools, introduction of the peer review tool kit, timing of peer review, and posting patterns. Students share their thoughts regarding the need for peers to ask for specific feedback, assigned peers, and required participation.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td><strong>additional anxiety tips, assigning, checklist, and help needed here</strong></td>
</tr>
<tr>
<td>Category 10: Student Use and Validation of Peer Review and Toolkit</td>
<td>This category includes students’ confirmed use and validation of peer review and the associated tool kit. Students shared their access to peer review and the tool kit, the positive outcomes, including the value, usefulness, and ability to understand one’s role in peer review.</td>
</tr>
<tr>
<td>Code Examples:</td>
<td><strong>accessing, acknowledging, and comprehending</strong></td>
</tr>
</tbody>
</table>

Finally, I began to identify themes by considering category alignment and existing research. Initially, I created five themes including, Theme I: Student perceptions and recommendations, Theme II: Attitudes and approaches to peer review, Theme III: Student empowerment and learning through intervention, Theme IV: Impact of structured
system intervention, and Theme V: Peer collaboration and community. However, during the next peer debriefing session, I quickly realized that my themes were not abstract enough; they were much more closely aligned to topics or categories. During this session with my dissertation co-chair, I realized that it could prove beneficial for me to step away from the data for a bit. I wanted to take time to contemplate and consider what was going on with my data and analysis (Saldaña, 2016).

At this stage, I stepped away from my laptop and from visible access to the supporting codes and categories. Away from these visual reinforcements, I began to think about, reason, and verbally articulate what the data and my analysis were telling me through more of a conceptual lens (Saldaña, 2016). During this process, I spoke aloud and jotted notations of key words and phrases as I discussed what the data had unveiled to me. Once I had finished this approach, I looked back over my notes to identify patterns through the repetition of words and phrases. In doing so, I created a list of repetitive terms that had surfaced and included phrases such as, anxiety, appreciation, building community, collaboration, confidence, empowerment, engagement, focus, learning, peer review tool kit, and structured peer review system.

Thinking more abstractly, while referencing my newly created list, the prior draft themes, and the existing categories and codes, I approached the creation of themes once more. In turn, I developed four overarching themes to convey my students’ experiences and behaviors (Saldaña, 2016). Upon further review, I noted high similarity between two themes regarding building community and collaboration, and I merged the two, which then resulted in three final themes. During my next peer debriefing session with Dr. Kolski, we discussed the themes and the ten supporting categories, making only minor
wording changes. The final themes were Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment, Theme II: Peer review engagement fostered appreciative, collaborative community of learners, and Theme III: The structured peer review system transformed student’s anticipation and anxiety into a focused approach to learning.

**Community of Inquiry coding.** Following the initial memoing and highlighting of the printed student post artifacts based on the seven *a priori* category codes for social and cognitive presence (Garrison & Arbaugh, 2007; Van der Merwe, 2012), I returned to the digital environment of Delve. I created a separate project from the previous qualitative coding project and entitled the new project as Community of Inquiry. Next, I uploaded digital copies of the student post artifacts as two separate transcripts, one for Week Four and one for Week Seven.

To begin, I reflected on the initial memoing and highlighting that I had conducted on the printed student post artifacts. In addition, I read over the 24 threads within the student post artifacts to reacclimate myself with the transcripts now housed within Delve. Next, I created seven *a priori* codes that aligned with Garrison and Arbaugh’s (2007) COI for social and cognitive presence and created analytic memos to fully define each code as shown in Table 4.7.

<table>
<thead>
<tr>
<th>Components</th>
<th>Coding Categories and Presence Indicators</th>
<th>Analytic Memos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>• Open communication as indicated by risk-free expression</td>
<td>This code encompasses communication that is shared in an open, uninhibited, and guilt-free manner. The student offers ownership of comments with comfort in disclosing about</td>
</tr>
<tr>
<td>Presence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Components</td>
<td>Coding Categories and Presence Indicators</td>
<td>Analytic Memos</td>
</tr>
<tr>
<td>------------</td>
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<td>----------------</td>
</tr>
<tr>
<td>Group cohesion as indicated by examples of encouraging support</td>
<td>This code is exhibited through agreement, compliments, and encouraging collaboration. The student may ask about, refer to, or quote another student’s work and continue conversation through the use of continued threads. This code can be observed through comments that engage and foster healthy relationships.</td>
<td></td>
</tr>
<tr>
<td>Affective expression as indicated by emoticons</td>
<td>This code is exhibited through the use of emoticons.</td>
<td></td>
</tr>
<tr>
<td>Cognitive Presence</td>
<td>• Triggering event as indicated by a sense of puzzlement</td>
<td>This code is exhibited through the recognition of a problem with a sense of puzzlement or via the arousal of curiosity. The student may recognize a problem or issue in support of further investigation.</td>
</tr>
<tr>
<td></td>
<td>• Exploration through information exchange</td>
<td>This code is exhibited when information is exchanged between peers in the form of suggestions, brainstorming ideas, or possible conclusions. This code can include divergence and the potential to go in a different direction from the one that is present.</td>
</tr>
<tr>
<td></td>
<td>• Integration as indicated by connecting of ideas</td>
<td>This code is exhibited by the convergence of ideas, including those ideas brought forth during exploration and information exchange. By connecting ideas, the student can provide creative solutions and create meaning through interaction and integration.</td>
</tr>
<tr>
<td></td>
<td>• Resolution as indicated by applying new ideas</td>
<td>This code is exhibited by the application of new ideas that have not been previously considered or shared. During resolution, newly gained knowledge can be shared in support of potential testing, real-world application, or in efforts to defend a solution.</td>
</tr>
</tbody>
</table>

self as well as greetings to peers. The student does not exhibit any fear of prejudice during disclosures.

Based on Garrison and Arbaugh’s (2007) COI categories and presence indicators, I utilized the Delve environment to code 11 peer review student threads from Week Four and 13 threads from Week Seven as shown in Figure 4.9. The seven unique *a priori* codes were applied to the two data sources where 598 pieces of data were coded.

![Figure 4.9. Example of Community of Inquiry Coding in Delve via the use of the seven *a priori* codes based on research by Garrison and Arbaugh (2007).](image)

**Presentation of Findings**

As outlined in Table 4.8, ten supporting categories and three themes emerged from the analysis of four qualitative data sources, including the six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews,
and the researcher’s handwritten interview notations. The study themes and the COI results will be outlined in the following section and include (a) comprehensive peer review tool kit promoted student confidence and empowerment, (b) peer review engagement fostered appreciative, collaborative community of learners, (c) the structured peer review system transformed student anticipation and anxiety into a focused approach to learning, and (d) COI findings and implications.

Table 4.8. Alignment of Supporting Categories to Themes

<table>
<thead>
<tr>
<th>Themes</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment</td>
<td>○ Category Three: Student Perception Tool Kit Innovation</td>
</tr>
<tr>
<td></td>
<td>○ Category Four: Student Empowerment, Confidence, and Validation</td>
</tr>
<tr>
<td></td>
<td>○ Category Nine: Student Suggested Improvements</td>
</tr>
<tr>
<td>Theme II: Peer review engagement fostered appreciative, collaborative community of learners</td>
<td>○ Category Six: Confidence in Peers, Collaboration, and Community Building</td>
</tr>
<tr>
<td>Theme III: The structured peer review system transformed student anticipation and anxiety into a focused approach to learning</td>
<td>○ Category One: Structured System Impact on Student Participation</td>
</tr>
<tr>
<td></td>
<td>○ Category Two: Student Perception Peer Review</td>
</tr>
<tr>
<td></td>
<td>○ Category Five: Student Learning through Peer System Guidance</td>
</tr>
<tr>
<td></td>
<td>○ Category Seven: Student Attitude</td>
</tr>
<tr>
<td></td>
<td>○ Category Eight: Student Approaches to Peer Review</td>
</tr>
<tr>
<td></td>
<td>○ Category Ten: Student Use and Validation of Peer Review and Tool Kit</td>
</tr>
</tbody>
</table>

In the following section, study participants are identified by a numeric pseudonym for confidentiality purposes. All student quotations were taken verbatim from the
postterm questionnaire open-ended questions and the one-on-one interviews. The researcher’s handwritten interview notations were utilized to identify potential student quotes; however, those quotations were then reviewed and verified with the transcripts from the one-on-one interview recordings to ensure accuracy in reporting.

**Comprehensive peer review tool kit promoted student confidence and empowerment.** This theme represents the integration of an educational technology tool kit as a means of empowering online GRAD COM students and elevating their confidence levels in support of Capstone peer review participation. When students host a distaste or apprehension for peer review, they can lack the motivation to participate in peer review and resist engagement with peers (Brill, 2016; Wang, 2016). Llado et al. (2014) asserted that students’ initial stress, lack of confidence, and discomfort for peer review is due to their belief that they do not have the appropriate knowledge to assess peers. Therefore, the use of proactive training and support can help students understand how to give and receive feedback prior to their participation in actual peer review activities (Alnasser, 2018; Baker, 2016; Dar et al., 2014; McMahon, 2010). Llado et al. (2014) confirmed training as critical for educators to provide and endorse the application of unique strategies and instruction to clarify peer review tasks and to deliver supportive tools to students. One-on-one interview feedback received during this study aligned with prior research findings. Eastyn stated, “It is intimidating to give peers your feedback.” Following the integration of the peer review tool kit and after the end of the term, Justice discussed the tool kit in the postterm questionnaire open-ended questions. Justice stated, “You knew what was expected…with less anxiety of critiquing work.”
As part of the structured peer evaluation system launched during the research term of this study, Capstone students were introduced to an educational technology innovation, a peer review tool kit. The peer review tool kit was designed and implemented during the active research term to promote student participation in peer review activities and to empower higher-quality student engagement. The tool kit included brief instructor videos, student feedback examples, student peer review training, prompts, guiding statements and questions, feedback templates and forms, rubrics, practice and reflection, and independent problem-solving. The following section will outline the research study categories subsumed in support of this theme and include (a) student perception tool kit innovation, (b) student empowerment, confidence, and validation, and (c) student suggested improvements.

**Student perception tool kit innovation.** Of the seven study participants, all seven students expressed some level of positive feedback regarding the peer review tool kit innovation and its supporting tools and resources. Of the seven students, one student offered mixed reviews on certain aspects of the innovation through the delivery of both positive and negative commentary. In feedback shared during the one-on-one interview, Skyler described the feedback sandwich template as both “fun” and “cheesy.” A second student, Marlo, discussed the length of the tool kit in feedback during the one-on-one interview but qualified the comments with the useful nature of each element. Marlo stated, “It was long, but…all of this is really helpful.” In the following section, positive perceptions of the students will be shared first. Next, negative perceptions will be discussed.
Positive perceptions. The study participants reported that the use of the tool kit and its tools and resources provided them with a focus and a clear mindset in support of the peer review task before them. In addition, students stated that the innovation served as a readily accessible resource and guide. Prior research findings confirm the opportunity to utilize peer review training to support student needs (Baker, 2016; Barnard et al., 2015; McMahon, 2010; Sridharan et al., 2018; Tricio et al., 2018). Furthermore, Llado et al. (2014) endorsed the application of unique strategies and training to clarify tasks and to deliver supportive tools. In their responses to postterm questionnaire open-ended questions and one-on-one interviews, study participants commented on the tool kit innovation as a viable training strategy and a supportive resource, reminder, and guide:

Skyler It was good because I think it focused people, but I think that was also helpful because you don’t want to sit there reading like a, you know, seven page discussion board post.

Justice Yes, you knew what was expected but at a more relaxed community with less anxiety of critiquing work…I just used as in general. Before peer review, I just went back just to refresh my mind.

Oakley But I thought the toolkit was also good as a reminder to me like, hey, this is something that we're doing as a team and it will be helpful to just dive in and do it.

Marlo It just made it a lot easier. I felt like I didn’t have to struggle. I just had so many points that were summarized that I felt like, oh, this is really good. I was like,…all of this is really helpful… It just
cleared my head and it made me focus. It just set me up nicely to be in that mindset, you know, to like make sure I was very positive at the beginning.

Study participants acknowledged that they could tell if and when their fellow peers used the tool kit and when it was used by peers, students reported positive implications through the feedback received. Prior research asserts that training can be introduced to teach students how to provide constructive feedback (Barnard et al., 2015) or to guide those students who may be overly critical (McMahon, 2010). Additional research suggests the use of training sessions as a collaborative method for teaching students to peer assess and to deliver effective feedback (Sridharan et al., 2018). In their one-on-one interview comments, study participants further reiterated the use of the tool kit as instrumental in their peers’ delivery of supportive feedback as well as in the uniformity of feedback received:

Skyler  It helps me that they use that format because it was like a similar language and we were like, we’re going towards the same goal regardless of what the organization was or the paper was. We had the same like outline of what we needed to do, you know, a commonality.

Eastyn  So I really do think that our cohort paid attention to the peer review tool kit. It was so strange because it seemed like people would start by saying, you know, this is shaping up really nicely and then we would have the constructive criticism and then I
would always end on a positive note. It served as a great tool to remember how best to structure peer review.

**Oakley**

I think I could definitely tell the difference when I was reading it, who had taken the time, who either had experienced in giving communication product feedback before or who had used the toolkit to give more helpful.

Study participants reported that their use of the tool kit prompted them to be more cognizant of the upcoming peer review activities and this motivated them to work more intently and carefully on their draft work. Prior research confirms that when students are aware of an upcoming peer assessment, they can offer stronger care in the preparation of their work (Dar et al., 2014; Llado et al., 2014). Often, students can become more diligent in their pursuit of the details surrounding the assignment when an upcoming peer assessment is involved (Llado et al., 2014). In feedback provided during the one-on-one interview, Salem shared, “I read through all of the tool kit. The impact was just that it made me more mindful my content and the requirements because there would be multiple people looking at it.” Salem continued, “I mean, mostly…it was the concept of people are going to be reading this and reviewing it the way that I will be reviewing their work.” In response to the postterm questionnaire open-ended questions, Skyler added, “I found it helpful to know that others were going to read my work and provide feedback.”

In their review of the tool kit, the study participants provided feedback regarding the look and feel of the tool kit and the inclusion of the various tools and resources. Prior research confirms that there is an array of opportunities to integrate various peer review tools into the peer-to-peer academic setting (Mulder et al., 2014; O’Connor & McQuigge,
Through preemptive training, students can learn and better comprehend how to give and receive feedback prior to peer review participation (Alnasser, 2018; Baker, 2016; Dar et al., 2014; McMahon, 2010). In their one-on-one interviews, the study participants reported a positive perception regarding the tool kit design and expressed a sense of approval with its presentation:

Skyler So with the toolkit, I felt like the sections had the right idea.
Justice And then you have like a little announcement from you and the rubrics to keep following along. I enjoyed the different mediums. But it's also, I want to be able to hear, see, and do what's being taught to me.
Eastyn I thought the videos were an excellent touch as well, just to be able to see a face to kind of, you know, going through it in a visual format. The text was a really good accompaniment. The images kind of helped break things up a little bit and especially the form sheets and you know, those types of resources. It was just such a well put together tool kit.
Marlo But, I just thought everything was helpful. Like little reminders and I love the visual aspect of it, like the videos and also the sandwich because then I just like didn't even have to download it.

In their feedback regarding the various components of the tool kit, it was apparent that the study participants had utilized the tool kit and had become familiar with the various tools and resources provided. Furthermore, research including graduate instructional design students suggests the need to support peer review through scaffolding
and the provision of ample resources, such as checklists and models, to assist students in conveying effective feedback dialogue (Brill, 2016). Training provides students with an opportunity to comprehend the purpose behind peer review and to better understand the value that they will receive from peer review participation (Llado, et al., 2014). In the one-on-one interviews and in response to the postterm questionnaire open-ended questions, the study participants offered positive commentary in support of the tool kit and the various tools and resources that it offered:

Skyler  Like the REPAIR acronym for example, was awesome because I had never heard that before and it ended up being like really useful. Yeah and I mean I liked the refresher and was like, oh yeah, I got to remember not to get like defensive with the feedback.

Justice  It was all pretty straightforward. Easy to understand. You gave us like an overall this is what you're looking for. This is what you need to be including in your critique.

Eastyn  I especially enjoyed the tips on how to ensure the feedback we gave didn't come across as too harsh to our peers.

Oakley  I would say overall, I mean the videos I liked because it’s an easy thing to watch. You know you hit play, drink a cup of coffee, and say, okay, this is what we’re doing today. You click on it and … you're like, oh, this is a good nugget. That's a good nugget, and it was useful. It was good information.

Marlo  Yeah, the sandwich and the videos. Those two parts were really good.
Furthermore, Justice called out the synergy between the tool kit and the Capstone rubric, which was purposefully included as a supplemental resource within the tool kit. Prior research asserts that rubrics can be used to help students navigate the peer review process and deliver feedback that aligns with the critical elements of the rubric (Baker, 2016; De Grez et al., 2012; Elshami & Abdalla, 2017; Gikandi & Morrow, 2016; Kelly, 2015; Llado et al., 2014; Ng, 2018; Ratminingsih et al., 2017; Sridharan et al., 2018). During the one-on-one interview, Justice commented that the tool kit and the rubric worked in harmony. Justice stated, “I looked at the tool kit more as an extension of the overall rubric.”

One study participant, Skyler, noted the value of the standardized forms and templates that were available within the tool kit. Prior research sustains that the use of forms and templates serves to illustrate expectations and standardize peer review feedback within a structured setting (Baker, 2008, 2016; Dijks et al., 2018; Gielen & De Wever, 2015; McMahon, 2010; Mulder et al., 2014; Tricio et al., 2018). A highly-structured feedback form or template can provide students with the competencies or an outline of the main benchmarks that need to be reviewed and evaluated (Baker, 2008, 2016; Dijks et al., 2018). In one-on-one interview feedback, Skyler shared that the tool kit section pertaining to receiving and accepting feedback was beneficial. The section included guides, a six-step approach, and templates for understanding and overcoming defensiveness and for handling feedback. Skyler stated, “Yes, that template was very helpful to me, and I think it was helpful probably to other people too.” Additionally, the student described the sandwich feedback template and supporting content to be beneficial.
as well. Skyler stated, “It's a feedback sandwich template and this is fun! And, then next to it, this positive introduction, like that part was helpful.”

Negative perceptions. Although most of the feedback received from study participants was extremely positive with regards to the provided tool kit, tools, and resources, some negative commentary was received. One of the students felt strongly that the tool kit contents were too basic. In feedback provided during the one-on-one interview, Skyler stated, “I did use the tool kit and I thought it was very elementary.” The student relayed that at the Capstone stage, a graduate student should have the skills covered in the tool kit. When asked if the tool kit and resources were helpful, Skyler stated, “Not helpful to me personally, but it might be helpful for the people who’ve maybe not done peer reviews before.” With respect to the feedback sandwich template that the student had previously described as “fun,” Skyler later added, that the sandwich graphic on the template “was kind of cheesy.”

In designing the tool kit, the individual segments were created to be purposefully brief. When timed, many of the tasks embedded within the tool kit took only one to two minutes to complete. Students were encouraged to review all of the tool kit or use a cafeteria plan approach and pick and choose which tools and resources to use. One study participant discussed the overall length of the tool kit on two different occasions; however, each time, the student followed up with a positive comment as well. In feedback offered during the one-on-one interview, Marlo stated, “I mean I thought it was so long, but when I started reading it, I took the value of every single thing. I actually just read it.” Later, the student once again echoed her earlier thoughts and stated, “Like I said, it was long, but then I was like, oh yeah, you know, all of this is really helpful.”
**Student empowerment, confidence, and validation.** Prior research asserts that students who lack peer review experience, who have had previous negative encounters with peer review, or who have been the recipients of negative peer feedback can exhibit a lack of confidence and a hesitancy to participate in peer review activities (Cheng et al., 2014; Llado et al., 2014). In turn, the peer review tool kit was designed to scaffold student learning and offer empowerment through increased confidence and by way of student validation. The implementation of the necessary support systems provided assistance for students in the early stages of peer review; however, once students gained familiarity and proficiency with peer review, those scaffolds were no longer a necessity (Brown & Stefaniak, 2016). The following section will discuss the peer review tool kit and its tools and resources as a way to promote and instill (a) student empowerment, (b) confidence, and (c) validation.

*Student empowerment.* Study participants reported that the use of the peer review tool kit, its resources, and tools helped to empower them and move them forward during the peer review activities. Prior research asserts that students often question their expertise, experience, and capacity to deliver adeptness in peer review (Barnard et al., 2015; Fotheringham & Mowat, 2012; Mulder et al., 2014; Nagori & Cooper, 2014; Wang, 2016). The study participants relayed their experiences of empowerment through the responses they provided during the one-on-one interviews:

Eastyn  Yes, at 100% it did. It was just fantastic. It really helps to know that we were all in it together, and we’re perfectly capable of helping each other out.
Oakley  It was like, your fellow students are depending on you to help them get through this class…I think it made it more important for me to give feedback…a reminder that we all have something to provide.

Lastly, one student noted that peer review liberation was further enabled through a sense of familiarity for the peer review posting environment. Marlo explained, “It wasn’t like a different kind of a setting, you know, just go in and do what we do every week.”

Confidence. In the feedback received from the study participants, the students expressed that the use of the peer review tool kit and its resources and tools helped them feel more confident. Prior research asserts that students can exhibit a lack of confidence or experience feelings of intimidation as they consider the responsibility and the amount of time that is required to review and mark the work of their classmates (Llado et al., 2014; Moneypenny et al., 2018). Therefore, during the design of the tool kit, it was essential to build in components to address confidence. During the one-on-one interview, Eastyn described the encounter with the tool kit, resources, and tools and how this interaction impacted the student’s confidence level:

It definitely made me more eager to engage cause like…I kind of went into the class a little bit scared…I mean it is intimidating to give peers your feedback. I also appreciated the encouragement that I was capable of offering quality peer review.

Validation. Study participants reported that the tool kit and supporting resources and tools provided them with a sense of validation, not only in themselves but in the peer review process. This confirmation is essential as research asserts that students
acknowledge that they question their own abilities and report that the peer review experience is unsettling and can create a reluctance to participate further (Nagori & Cooper, 2014). During the one-on-one interview, Oakley reflected on the tool kit resources and stated:

> It was that reminder of, you know, everybody has something to offer. Everybody has something to give. It put a why behind why you’re doing this. Like I remember at one point it actually said something in there about, you have value to add… and that you do know enough to provide feedback.

Echoing the thoughts of Oakley during the one-on-one interview, Eastyn confirmed, “There was a section that was dedicated to that very topic in the peer review tool set and it was extremely helpful in making me feel like I was more than capable of being able to provide peer review.”

**Student suggested improvements.** While study participants were complimentary of the peer review tool kit, resources, and tools, some students offered suggestions for improvement. This feedback was welcomed as prior research by Gielen and De Wever (2015) found that to promote student buy-in and support, there is an opportunity to include students in the design and creation of peer review collateral. Although the study participants provided feedback after the end of the term, I shared with students that I would consider their feedback in the tool kit design for future terms. The students offered a good selection of improvement options in the one-on-one interview responses and on the postterm questionnaire open-ended questions, including how to approach feedback as well as who to approach:
Skyler: I think it should be required. Assigning a partner would be helpful, like everyone has to give feedback to two people, but one of those people has to be Bill Smith [pseudonym]. It would keep me in touch with Bill throughout the class.

Eastyn: Yeah, it’s just maybe encouraging students like, especially if a classmate was unfortunately a little bit too rough with their criticism. Or, those students who haven’t necessarily received feedback just to maybe encourage students to maybe give those students some attention so…everyone can get feedback.

Marlo: I mean it’s fun to look around and look at other people as you know, without having to go to the same person, but I think there's some value in following up, so I don't know. If there's a way that you could be assigned or to one or choose one person and then make sure we follow up with at least the same person the next time.

In addition, Skyler felt that it was important for the recipients of peer feedback to respond to those who had provided them with feedback. Previous research asserts that the opportunity for students to review, engage, and discuss potential improvements can build student ownership and clarify the assessment criteria through conversation and feedback (Baker, 2008). Skyler stated, “I just wish I had, like once I’ve given feedback, I wish whoever I was reviewing would let me know. Like, was that helpful or how did they feel about it?” Skyler further explained the reasons for the concern and added, “I didn't know
how the person felt about it. I was like, did I offend the person? You start questioning yourself about your own ability to give the feedback.”

Although this approach was encouraged during the research term, Justice and Oakley conveyed that it was important for the peer reviewees to point out where they were struggling and to denote specific areas where the peer reviewer could support them with additional guidance and feedback. In prior research, Gielen and De Wever (2015) found that the roles of reviewer and reviewee could be more strongly defined when the reviewee requested specific feedback from those reviewing the work. In one-on-one interview feedback, Oakley stated, “Just like…encouraging the students themselves to ask for, ask specific questions for feedback.” Justice shared similar thoughts during the one-on-one interview and stated, “When I give feedback, I look for comments, so I need help in this area, but this area is blank because I'm still working on it. I’m asking can you just kind of give me a little go to?”

Additional comments offered in the one-on-one interviews supported possible improvements to the peer tool kit, its placement, the resources and tools, and the study participants’ approach to peer review. Oakley commented that it could be helpful to include “a question to get people started.” Both Skyler and Salem described an opportunity to place the tool kit in an earlier course along the graduate learning pathway. In addition, Skyler stated, “Like you talked about like overcoming anxiety in the tool kit. Put more effort into that because I think you’re right.” Skyler reflected on this further and provided examples of how this could possibly be accomplished. “Give examples of like, people who have already gone through the class and you have videos or even statements from them of like what worked for them.”
Peer review engagement fostered appreciative, collaborative community of learners. This theme represents the positive interaction, collaboration, and community building that occurred among online GRAD COM students during their Capstone peer review participation. Prior research asserts that student collaboration and interaction do not occur spontaneously in an asynchronous learning environment (Zhao et al., 2014). Even so, a lack of student engagement in higher education is a problem that can be conquered by taking the necessary steps to support student needs (Kearney, 2013). During peer review activities, students can experience heightened levels of interaction and collaboration and through meaningful exchange, they can offer questions, deliver positive remarks, and identify areas for possible improvement (Ching & Hsu, 2016; Gikandi & Morrow, 2016). Kearney (2013) claimed that peer assessment could propel students into learning communities and create stronger learning, comprehension, and skill development. In research by Dar et al., (2014) higher education students confirmed that peer review activities improved the learning environment and heightened social engagement. As part of this researcher’s study, online GRAD COM Capstone students participated in two separate peer review activities during the research term. Through one-on-one interview feedback received during this study, participants confirmed previous research findings. Discussing peer review engagement during the research term, Eastyn stated, “It really helps to know that we were all in it together.” Oakley confirmed a similar experience and stated, “This is something that we're doing as a team.” The following section will outline the research study categories subsumed by this theme and include (a) confidence in peers, (b) collaboration, and (c) community building.
**Confidence in peers.** The study participants reported that during the research term’s peer review activities, they experienced increased confidence in their peers and the feedback and assessment that their peers delivered. In previous research by Dar et al. (2014), students confirmed that a peer assessment activity allowed them to overcome a reluctance to post questions to their classmates due to an improved and highly social peer review environment. Furthermore, students’ confidence and competence in peer review can grow as peer review abilities are developed through a scaffolding approach (Barnard et al., 2015). In their responses to the one-on-one interviews and the postterm questionnaire open-ended questions, the study participants reported experiencing openness to peers, receptiveness to their assessment, and a level of confidence in their peers’ feedback:

- **Skyler**: I don't think it affected my ability to give it, but definitely to receive it on the other side. Yeah, no, definitely, you could tell that there were those who used the tool kit to structure their responses. It was obvious.

- **Justice**: Yes, I had more faith in peer review feedback because what I fell into in my other classes was, it was a lot of people who said, looks good to me, but that doesn’t help me. To reflect back on other courses, there was no structure. This was, you know different. It gave you the full backing to feel comfortable. There was still something they had to look at to fulfill a need. They couldn’t just write, hey, you’re doing great.
Oakley  

It became more of a task and more because of the content provided in the cool tool kit, like pointing out…hey, you can learn from them…Whereas the folks who used the tool kit actually did give me significant feedback on the communication product itself that I did.

During the one-on-one interviews, two additional students confirmed their confidence in peers’ feedback. Salem stated, “Yes, I felt more confident in their feedback.” Marlo relayed that peers’ feedback revealed areas of improvement that had not been previously considered. Marlo shared, “Yes, absolutely, because [there were] a couple of a few things that I never would have paid attention to if I hadn’t gotten that feedback.”

**Collaboration.** The peer review opportunities provided in the research term offered an opportunity for the online graduate students to engage and collaborate with one another. Cooperation among students was an essential consideration in the structured peer evaluation system as a failure to experience interaction and collaboration can offer a negative impact on student retention and success in the online learning environment (Heyman, 2010; Lee & Choi, 2011, Willging & Johnson, 2009). Due to the tendency for students to experience learner isolation in online courses, collaboration becomes a key approach for fostering interaction among online students (Conrad & Donaldson, 2004). During the one-on-one interviews and through their responses to the postterm questionnaire open-ended questions, the study participants relayed the positive outcomes that they experienced due to peer review collaboration during the research term:
Skyler  
I liked the engagement part with the students and I think that was probably the best part of the whole thing.

Oakley  
It helped me understand if I was thinking the same things other students were thinking.

Salem  
The peer evaluation system allows for collaboration and interaction without being hung up on someone else’s lack of effort.

During the one-on-one interview, Oakley shared additional feedback regarding the ability to collaborate with and provide support to a fellow student who had considered dropping the Capstone course. Oakley relayed the experience and stated, “She was falling behind cause she had a lot going on…and she was really struggling.” Following the initial peer review interaction with the peer, Oakley secured resources to provide additional support for the classmate. “I know some sources for that and I went and found them for her. I provided her a couple of links and then she actually hit me up on a private email. We started talking back and forth.” Oakley explained that although the initial conversation had started in the peer review environment, peer collaboration continued to grow, and it extended well beyond the peer review setting. Concluding, Oakley added, “Once you started truly having dialogue, it was great.”

Community building. The study participants reported that during their collaborative exchanges, as part of the peer review activities, they became linked to one another through their interchange of inquiries, suggestions, and shared goals. Prior research confirms that when students interact with one another and share their experiences, a community of learners emerges (Moneypenny et al., 2018). In support of the collaborative peer review process, students can experience a transition in the role that
they play. As students share experiences and deliver feedback and guidance to one another, students can move from the part of hesitant observer to one who is actively engaged in a robust learning community (Dar et al., 2014; Gikandi & Morrow, 2016; Kearney, 2013). During the one-on-one interviews and in the postterm questionnaire open-ended questions, the study participants were asked if the structured peer review promoted a sense of community among peers during their peer review activities. In response, the students discussed their cooperative experiences and how their care and support developed:

**Eastyn**  Yes. I know the feedback I received was very helpful and never came across as too strong or unhelpful. Cause, you know, while we’re all in this together, it just doesn’t feel like one of us is more qualified than the rest of us to give. I am a firm believer in having others review my work before I finalize it.

**Salem**  Yes. I believe my classmates are seeking to be helpful and their feedback was always done in a spirit of positive assistance…I see the value in having others spot mistakes that I don’t see or say holes in the presentation where they can offer, just not criticism, but just advice as to how to improve the overall product.

**Marlo**  Yes. We had to take the time to understand someone else’s point of view and plans for their project. It was also important to receive feedback from a different perspective, to improve our work.

Oakley reiterated that community building was an outcome of the peer review experience and shared how learning about the unique work of others offered a personal
impact. “I think it did…reading people’s stories and what they cared about made me root for some.”

The structured peer review system transformed student anticipation and anxiety into a focused approach to learning. This theme represents the use of a structured peer review system as a way to change the anxiety and eagerness associated with peer review into a scaffolded and centered approach to learning for online GRAD COM students. As students may enter the peer review process with anticipation, anxiety, and fear, there is a vast opportunity to structure an approach to peer review that can channel emotions into productive learning. Prior research confirmed that students report feelings of nervousness and anxiety and can experience dread due to intimidation and concerns for their role in providing peer review feedback (Demirbilek, 2015; Fotheringham & Mowat, 2012; Lee, 2016; Mulder et al., 2014). In research conducted by Lee (2016), the majority of students described the peer review process as one that triggered angst at its onset. However, Brutus et al. (2013) asserted that a structured approach to a standardized peer evaluation system could allow students to gain comfort with peer review and train them to become more proficient in their peer assessment. Furthermore, Brown et al. (1989) and Collins et al. (1987) endorsed cognitive apprenticeship teaching methods, such as those used in this study, as valid approaches for transforming student behaviors into authentic practices. Study participants in this researcher’s study confirmed the use of the structured peer evaluation system. In response to a postterm questionnaire open-ended question, Salem stated, “I found the peer review helpful. It was beneficial to understand others’ perception of my work.” In one-on-one interview feedback, Marlo confirmed the use of the structured system and stated, “I felt
like it was such a huge path…I could get information from other people.” The following section will outline the research study categories subsumed in support of this theme and include (a) structured system impact on student participation, (b) student perception peer review, (c) student learning through peer system guidance, (d) student attitude, (e) student approaches to peer review, and (f) student use and validation of peer review and tool kit.

**Structured system impact on student participation.** This study embodied a structured peer review process as part of an organized approach to allow students to become more comfortable and engaged during the peer assessment opportunities (Brutus et al., 2013). As opposed to peer review processes that can vary from course to course, a structured and standardized peer-evaluation system promotes student success through uniformity and effectiveness (Brutus & Donia, 2010). The researcher’s observational field notes revealed an impact on student participation through student involvement in the structured system.

In reviewing the depth of peer review response posts by study participants, I observed that every initial response post was more than 100 words in depth. With respect to conversational patterns, students were almost twice as apt to post an initial peer review feedback response to a peer’s work where another peer had already provided feedback. For example, when examining the total initial peer review response posts by the consenting study participants for one week, nine out of fourteen total initial response posts were provided within a thread where a peer had already provided feedback. In review of response posts where feedback had previously been received, the subsequent peer review often included a reference to and acknowledgment of the feedback that had
been offered by another classmate. In alignment with social constructivist theory of learning, this dialogue created a collaborative culture of learning, and students’ knowledge was further shaped through cultural interaction (Vygotsky, 1962). The tool of language encouraged cultural activity while promoting one’s thinking and reasoning (Vygotsky, 1978), delivering the feel of several students working collectively to resolve an issue. Lastly, in observation of the structure of students’ peer review response posts, feedback commentary was formatted in various ways, including bullet points and concise sentences, as well as lengthy reviews where one student downloaded the peers’ work and commented on the paper similar to an instructor. It was apparent to this researcher that students were aligning their feedback to best practices that had been provided as part of the structured peer review approach.

In my observation of the study participants’ posting patterns of original draft work for Week Four and Week Seven peer review, all but one student posted original draft work by the deadline in both weeks. With respect to peer review response time for posting to the original draft work provided by their peers, I observed a strong tendency for students to post after the initial 24 hours. In both Week Four and Week Seven, only one of the seven study participants posted a response to a peer’s draft work within 24 hours. In review of the strong quality of peer review responses, this delay seemed to indicate that students were taking the time to intently review the work of their peers and offer guidance that was well-reasoned, aligned to research, and helpful. Of the seven study participants posting peer review responses in both Weeks Four and Seven, all but one student reviewed at least two draft works by their peers, as required.
In reviewing unique observances pertaining to peer review posts provided by the study participants, I observed that students went well beyond the provision of a brief affirmative response. Although peer review was utilized for assessment purposes, it fulfilled an essential classroom component through peer learning too; students not only learned alongside each other but from one another as well (Boud, 2000, 2013). In their peer review responses, study participants included links to outside resources and referenced instructor guidance that had been provided earlier in the term. In addition, students cited their sources and included intext citations and reference source listings to validate their claims. I observed that students were utilizing the tools and resources provided in the peer review tool kit to structure their feedback and to ensure that feedback was delivered in a helpful and constructive manner. Students asked questions pertaining to peers’ draft work and their responses to their peers were framed in a positive and friendly tone.

In observing student peer review participation within Week Four and Week Seven, I recorded observational field notes of examples that stood out to me as being distinctive. Of particular interest to me was the observation of one student’s open and honest disclosure in providing responses to peers. At the onset of one of the student’s initial response posts in Week Four, Oakley revealed, “I HATE reviewing peers.” However, the feedback that immediately followed Oakley’s statement was well-reasoned, thorough, and aligned to research. The additional feedback was formatted in alignment with the approaches shared in the peer review tool kit. In a separate post, Oakley exclaimed, “Your paper flows great - in fact, I'm 'stealing' some ideas on how to make my paper flow better, so thanks for the inspiration!” I recorded in my observational field
notes that Oakley offered conversational comfort and provided open communication and disclosure.

Further observations that stood out to me were those that offered a strong level of initial motivation, strength, and support for peers, as encouraged in the structured approach to peer review and via the feedback sandwich example included in the tool kit. Prior research sustains that learning becomes a social activity in settings where learners interact and where cognitive growth is stimulated (Schunk, 2008). Furthermore, during peer review activities, students receive an opportunity to evolve from the position of inexperienced learner to that of the more knowledgeable other, as described in social constructivist theory (McGarrigle, 2013). This transition had the capacity to empower students and to enhance the level of encouragement and support for their peers. In Week Seven, Campbell stated, “First off--Hang in There!! You are almost there and by the looks of your rough draft, very talented and capable.” Skyler introduced encouragement for a fellow student as well and noted, “I totally hear you on second guessing yourself [done it too!], but I want to reassure you that you have a great start!” In Week Seven, Marlo offered similar positive reinforcement by stating, “First, I want to say I am very impressed by the organization of your paper! It was really easy to understand and navigate through. Well done!” In each case, these positive affirmations were then followed by more constructive feedback to assist peers in improving upon their work.

**Student perception peer review.** Study participants shared their views of peer review, including prior peer review participation and the peer review activity that took place during the research term. Students elaborated on their feelings surrounding peer review, the opportunities that could be received through peer review, and the manner in
which peer review supported their learning. The following section will discuss (a) students’ reflections (b) opportunity to learn from peers, (c) opportunity to look at peers’ work, and (d) structured peer review process.

Students’ reflections. In disclosing their perceptions surrounding peer review, the study participants revealed an array of diverse feelings and emotions that they experienced prior to and during peer review. Prior research asserts that during the early stages of peer review and due to a lack of experience with the peer review process, students can exhibit initial shyness and feelings of discomfort (Dar et al., 2014; Elshami & Abdalla, 2017). Additional research reveals that students often share that they experience feelings of trepidation as they worry over peers’ review of their work, including observations of their individual weaknesses (Dar et al., 2014; Llado et al., 2014). Further research sustains that university students worry over how peers will respond to the comments that they provide to them (Fotheringham & Mowat, 2012; Lee, 2016) and explain difficulties in creating a good balance between positive and negative feedback (Mulder et al., 2014). Nevertheless, in the one-on-one interviews and in their responses to the postterm questionnaire open-ended questions, three of the study participants offered positive initial thoughts surrounding peer review opportunities:

Eastyn  
So just in general, my thoughts on peer review…I've always been such a strong proponent for it just because it's in truth, it has instructor feedback, but it can also mean a lot just to have, you know, feedback from peers.

Salem  
I was comfortable with the idea of peer review. So, my understanding was it would be helpful. I think it is the most
manageable form of a collaborative system…In general, collaboration is difficult to navigate in a school environment because there are some who work and some who do not.

Marlo I was definitely really excited because I felt like it was such a huge path just for me that I could get information from other people the way it looks throughout my work, other than you of course.

In contrast to their fellow students’ perceptions, one student offered initial feelings of negativity while a second student discussed feelings of apprehension. In the one-on-one interview, Oakley stated, “This is my second shot at the Capstone. We did not have the tool kit in the first one, and I know that I did not participate. I was like, yeah, you know, who cares about peer review.” Justice offered preliminary feelings of unease based on prior peer review experiences. During the one-on-one interview, Justice shared, “Initially, it was anxiety. I haven’t had a good experience with peer review.” Justice continued explaining past encounters and shared, “In my past classes, the reviews were assigned…the professors assigned to us for reviewing versus the Capstone where you said you need to do two of them.” Through the structured peer review system, Justice found some relief from stress due to the way the approach to peer review was formatted. “It was left to you, basically, who you choose…so that kind of alleviated a lot of stress. Overall, it was more structured but more open.”

Opportunity to learn from peers. In sharing their thoughts regarding peer review, the study participants commented that peer review provided valuable opportunities to learn from their peers. Prior research confirms that during peer-to-peer feedback, the exchange of information allows students to increase knowledge comprehension and learn
new approaches to materials through an array of diverse perspectives (Demirbilek, 2015; Gikandi & Morrow, 2016; Hogg, 2018). In response to the postterm questionnaire open-ended questions, Salem explained, “I found the peer review helpful. It was beneficial to understand others’ perception of my work.” During the one-on-one interview, Eastyn shared, “It’s a really good way to get insight from folks who are, I guess…like a peer instead of an instructor…Both of those combined really helped with the experience.” Prior research aligns with the assertions made by Eastyn regarding feedback from peers. As opposed to feedback provided by only one instructor, peer review offers an increased amount of feedback (Hamer et al., 2015) and offers the provision of enhanced feedback in a timely manner (Alnasser, 2018).

*Opportunity to look at peers’ work.* Study participants shared a strong appreciation for the opportunity to view others’ work during peer review activities. Prior research suggests that when students compare their work to that of their peers, they are able to gain insight into views that are different from their own (Gikandi & Morrow 2016; Nicol et al., 2014). Through an affinity to the experiences and diverse vantage points of peers, students can further differentiate those unique views which can help them improve upon their work (Gikandi & Morrow, 2016; Hogg, 2018; Nicol et al., 2014). During the one-on-one interview, Marlo relayed feelings of excitement in having the opportunity to examine the work of peers as a benchmark:

I was so really excited, and I couldn’t wait because I felt like every week, every second I was thinking of doing my work and when I was not, I started to second guess myself. I could not wait just to make sure when I was doing the look, and I
checked a couple of times. I was like…it just doesn’t look the way I want it to look.

In the review of peers’ work, Marlo saw opportunities to create improvements through comparison. Marlo shared, “This person’s looks so, so nice! I didn’t go back and copy anything, you know, but I still looked and just thought. I changed a few things, most like visual.” Marlo reiterated, “I could not wait to see how people did their work.”

*Structured peer review process.* The participants in this study provided commentary that described the structured peer review system and confirmed it as a process that delivered a focused approach to learning. Prior research confirms that a structured peer evaluation system is used for promoting, facilitating, and standardizing peer review processes (Brutus et al., 2013). In prior research by Demirbilek (2015), students reported that the feedback process encouraged them to share their thoughts and knowledge, creating a stronger interpretation of the assignment’s guidelines and critical elements. Further research sustains that through the receipt of peer feedback, students are better able to understand assignments and offer more complete work with the help of diverse feedback from peers (Hogg, 2018). In turn, for students to engage in the structured system and reap the rewards of peer review, students must find the process conducive to learning. In feedback shared during the one-on-one interviews and in response to the postterm questionnaire open-ended questions, the study participants outlined their perceptions regarding the structured peer review process implemented during the research term:

*Oakley* I think having it there, waking up, having that reminder on the announcements that you’re going to do this this week, having the
instruction made it more of an, okay, this is something I'm going to go do this week because it's a task I've been given. That definitely had an impact.

Marlo The evaluation system was fair and requested at specific times giving time for each student to complete a good amount of work to be reviewed. Peer review activities were very valuable and positive. Because we were so familiar with the discussion board, I just thought it was simple.

In the one-on-one interview with Eastyn, the student upheld the merits of the structured process and shared, “I really cannot stress enough just how helpful the peer review tool kit was and just the peer review as a whole in the class.”

**Student learning through peer system guidance.** The study participants shared that learning and development took place through their involvement with the structured peer review system. During peer review, knowledge was constructed collaboratively. In alignment with Dewey’s (1916, 1938) theory of constructivism, knowledge is not passed from the instructor to the learner through rote memory but instead, knowledge is created by the student through experience (Dewey, 1938; Ertmer & Newby, 2013; Jaramillo, 1996) and by utilizing frameworks that have the capacity to enhance student learning (Biggs, 2011). Prior research confirms that through peer review participation, students can elevate their learning and develop essential skill sets (Baker, 2016; Mulder et al., 2014). In their responses to the postterm questionnaire open-ended questions, the study participants explained how the peer review system delivered guidance and further supported their learning and peer review engagement:
Skyler  I didn't feel like…I was reading another sheet of paper [and] that I was going all over the place; it kind of made me…focus.

Justice  I looked at the whole, but then I went back and gave more focused feedback. What can I contribute to make it the most effective?
What can I contribute to their project?

Eastyn  I tend to do better if I’m able to see examples of something and that really helped. I picked up some language that I hadn’t thought of before.

Marlo  Everything I read made sense. I grasped the concepts and summarized it into my brain. I just ran with it.

In addition, Campbell discussed peer feedback in alignment with the final project. In response to the postterm questionnaire open-ended questions, Campbell stated, “I appreciated having the feedback throughout the process of creating my final project. I feel it helped me create a strong campaign proposal.”

**Student attitude.** During one-on-one interviews, the study participants shared their attitudes regarding peer review, participation, and the emotions that they felt prior to, during, and after peer review. As prior research asserts, some students acknowledge an inability to separate the critique of their work from a critique of self, hence taking feedback personally and experiencing a decreased level of confidence (Cheng et al., 2014). Research by Lee (2016) confirmed that students described peer review as anxiety-laden due to concerns over the feedback that they provided and how it would be received by peers. However, over time, students gained a greater comfort with peer review and
increased their understanding of assignment instructions as they became more familiar with the peer review process (Lee, 2016).

Similar to findings in previous research, Justice and Eastyn relayed initial anxiety toward peer review. During the one-on-one interview, Eastyn reflected on the cohort’s graduate journey. Eastyn stated, “This was obviously like the most intimidating experience that,…I guess me and probably everyone in my cohort has been through.” However, in a later reflection, Eastyn acknowledged how the structured system supported the strong use of peer review in the contemporary workplace. Eastyn stated, “I think that's so important that you're able to give feedback in a constructive manner and people can learn from that. But many people shut themselves off from that.” After completing the peer review activities, Eastyn further connected the classroom peer review experience to skill development in the work environment. Eastyn shared, “I think that's what we were trying to do, help develop those skills because we want students to leave…with that ability.”

While Salem described feelings of confidence prior to the onset of peer review and Marlo noted feelings of excitement, both students acknowledged that the use of the structured system made them more mindful of the content that they created and more attuned to the assignment requirements. Following the conclusion of the peer review activities, Marlo expressed an attitude of appreciation for the opportunity that was provided through the structured system. During the one-on-one interview, Marlo stated, “Yes! I was able to get more, you know, like…fresh information on what and how I was doing.” Eastyn, who experienced initial feelings of trepidation at the onset of peer review, later described an attitude of longing for peer feedback when not received. In response to
the postterm questionnaire open-ended questions, Eastyn stated, “While I got feedback on my situation analysis, I received nothing from my peers for the campaign report, so I felt like I was going into my final project somewhat blindly.” Eastyn added, “I really wish I'd received feedback on this component from my peers!”

**Student approaches to peer review.** Each of the study participants described an individualized approach to the structured system and to peer review engagement. The students offered justifications for how and why they approached these aspects as they did during the research term. The following section offers student approaches to (a) resources and tools provided, (b) choosing peers for review, and (c) how feedback was provided.

**Resources and tools provided.** Of the seven study participants, each student acknowledged that if resources and tools were provided to them, they felt it important to review and utilize them. Interestingly, prior research by Nicol et al. (2014) confirmed that higher education environments fail to equip students with the necessary knowledge and support for peer review assessment. Their research asserted that students do not receive preparation and training for creating feedback for peers, nor do students receive guidance on how to accept and interpret the feedback they receive (Nicol et al., 2014). As these support systems were provided to the participants in this study, it was important to acknowledge their individual perspectives and approaches to the supplied resources and tools, as shared during their one-on-one interviews:

Justice

I went through those [list of tool kit topics] and like if I found one that was interesting by the topic title, that's how I was like, oh wait, like the REPAIR acronym for example, was awesome because I had never heard that before. So, like I was like, oh, what is this?
This is something I don't know. And it ended up being like really useful. So that's how I personally made that determination for myself. It was just looking at the outline and being like, okay, what do I know? What looks interesting?

Eastyn

So while peer review wasn't necessarily a new concept for me, I know that, I mean there's always something new to learn and I kind of just assumed that I would be able to pick up some tips that I hadn't considered before. So that was my main reason for checking it out and it was extremely helpful.

Oakley confirmed the perceptions of Justice and Eastyn but noted a special attraction to the video aspect of the provided tools and resources. Oakley stated, “I’m the kind of person who will at least open something and watch it, and mainly because it was a lot video-based.”

Choosing peers for review. Guided by the structured peer evaluation system, the study participants offered unique approaches as they considered the selection of peer work for review. Research by Livsey and Lavendar-Stott (2015) asserted the opportunity for researchers to place students into dyads, while separate research by Barnard et al. (2015) suggested that students should be allowed to pick peer review partners of their own choosing. During the one-on-one interviews, the research study participants relayed their individual methodologies and reasons for choosing students’ work for peer review:

Skyler

Personally, it’s like if I see like nobody has replied on it, like the thread of a discussion board, I’m going to go to that person. Now, that’s just me.
Justice So, I'm the type of person throughout the whole degree, I went for the ones that either didn't have any comments or only had one versus the ones that had seven, eight, to ten comments. I went to those and I really just,…I used the tool kit as a guideline for looking.

Salem I would generally look for someone who didn't have any yet or had the least amount, but, otherwise there were some people I enjoyed giving feedback to because I found their writing to be higher caliber, so they were easier to interact with.

Marlo offered that once a peer had been selected, that individual’s work was reviewed again during the next peer assessment. Marlo explained, “I tried to go back to the same people. I didn’t want to jump around. If somebody gave me some feedback, I tried to go and look at theirs.”

How feedback was provided. The Capstone students received guidance on how to deliver constructive feedback via the structured system, and the study participants acknowledged that they looked for these key indicators to drive their feedback decisions. In the one-on-one interview, Justice explained that reviewee commentary helped guide this approach and shape feedback delivery. Justice stated, “When I looked at a paper, I would not just review what they gave, but I looked at the comments they left…like, there’s a big need in this area…because I’m still working on it.” In response to the postterm questionnaire open-ended questions, Skyler described how the feedback guidance that was provided in the structured peer evaluation system assisted in the delivery of objective feedback:
I feel that was a good part of the tool kit, knowing how to write said feedback was useful in that it made me think about the type of feedback I was giving. For example, not so much the specifics, but did the classmate meet the criteria being asked of in the rubric? Did it flow and make sense? Was the scholarly research there?

Skyler reiterated that with the guidance provided through the structured system, the student was better able to navigate the peer review process.

**Student use and validation of peer review and tool kit.** Of the seven consenting study participants, all students confirmed the use of the structured peer review system and the associated tool kit. The students’ commentary further validated the use of the structured system to create a focused approach to learning. Participant feedback provided additional insight into access to the peer review activities, resources, and tools, and the positive outcomes received through this use. In addition, the students communicated the value and overall effectiveness of the structured system, including a realization of one’s role as part of the peer review process.

Previous research asserts that through a provided peer assessment framework, students construct new meaning as they assess the information they receive and interpret this input to create a reality that is uniquely specific to them based on experiences, beliefs, and cognitive structures (Jaramillo, 1996; Jonassen, 1991; Powell & Kalina, 2009). In turn, students’ participation in peer review becomes a personal learning experience. As peer review delivers a Constructivism approach, students connect new knowledge with existing knowledge (Clark, 2018). During peer review, students receive the opportunity to construct new knowledge as they connect the diverse interpretations of
the course content as conveyed through the unique vantage points of their peers (Gikandi & Morrow, 2016; McMahon, 2010). Study participant feedback from the one-on-one interviews offered proof for the value of the structured peer evaluation system and the use of its supporting components:

Eastyn  Okay. So, the tool kit that was included in the Capstone course, I found that incredibly helpful. I hate to go on about something that's just kind of like a minuscule part of that, but the little sandwich diagram that showed, you know, you begin with something that's just kind of saying you're doing a great job and then you kind of transition into some constructive criticism and then you end with something like a compliment to say you're doing a great job.

Oakley  I think that the direction and guidance was more specific, more helpful as well. Then, once I got started giving back feedback to someone, especially cause I talked to someone about a graphic on theirs and what they could do. You don't have a problem giving someone feedback and they're talking about a company, obviously I'm going to go check out that company before I give them feedback. I’m invested.

Salem  I reviewed. I reviewed everything.

Furthermore, study participants acknowledged that they moved forward with the structured content in a quick and easy manner and found the information in the resources and tools to be valuable, noteworthy, and concise. During the one-on-one interviews, the
students explained their use of the content that was provided to them as well as their involvement through the structured approach:

Oakley  Yes, and it was not time consuming. And not overwhelming because if you push it all together in one thing, you would have been like, oh my God, this is huge! But, you open it up and be like, oh, this is only a minute, that's quick. It was quick and it was concise. It’s just if the first one’s good information, you look at the second one. Like there wasn't any extraneous content….I would say overall, I mean the videos I liked because again, you could do those easily and then just a reminder…that then you do have the information to give.

Salem  No, I thought it was comprehensive. I'm the type of person that can adapt to whatever I'm given, so I don't tend to go into it saying I'm not going to have something or I work with what I've got, if that makes sense. My personality type, I really got a lot out of it. It brought some things to my attention.

Marlo  I thought it quite a bit of comprehensive. and I mean it was…in the sense of many separate parts, but every single one was very, very quick to go from. I would pick and choose some things…I just kept going.

When asked if there were any necessary changes to the supporting structured peer evaluation system tool kit, Marlo replied, “I could not even think of one extra thing.”
Community of Inquiry findings and implications. Based on Garrison and Arbaugh’s (2007) COI categories and presence indicators, I coded 24 student threads from Weeks Four and Seven of the research term to denote social and cognitive presences. During my coding, I utilized the seven established *a priori* categories from Garrison and Arbaugh (2007). In addition, I referenced the supporting analytic memos that I had created, which included additional category and presence insight gleaned from the COI concept map housed online through Athabasca University, Canada (Van Schie, 2008). In the following section, the COI process will be discussed and include (a) COI code tally, (b) COI findings, and (c) COI alignment to themes.

Community of Inquiry code tally. On three separate occasions, I stepped away from the COI coding in Delve and returned to review the applied codes. This effort was conducted to ensure that my coding mindset offered uniformity throughout the review of the 24 student threads within the student post artifacts. In the first review, three codes were adjusted and recoded. The second review produced one aspect of recoding, and there were no recoding adjustments found to be necessary following the third review. Following the final review of COI coding in Delve, the total number of social and cognitive presences across the 24 student threads was tallied, as outlined in Table 4.9. Individual code tallies, as aligned to categories and indicators, are discussed in the section that follows.
Table 4.9. Community of Inquiry Presences Coded Across Student Post Artifacts

<table>
<thead>
<tr>
<th>Components and Categories</th>
<th>Sample Presence Indicators</th>
<th>Code Tally</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Presence</td>
<td>Open communication</td>
<td>Risk-free expression</td>
</tr>
<tr>
<td></td>
<td>Group cohesion</td>
<td>Encourage collaboration</td>
</tr>
<tr>
<td></td>
<td>Affective expressions</td>
<td>Emoticons</td>
</tr>
<tr>
<td>Cognitive Presence</td>
<td>Triggering event</td>
<td>Sense of puzzlement</td>
</tr>
<tr>
<td></td>
<td>Exploration</td>
<td>Information exchange</td>
</tr>
<tr>
<td></td>
<td>Integration</td>
<td>Connecting ideas</td>
</tr>
<tr>
<td></td>
<td>Resolution</td>
<td>Applying new ideas</td>
</tr>
<tr>
<td></td>
<td>Total Number of Codes</td>
<td></td>
</tr>
</tbody>
</table>


**Community of Inquiry findings.** In review of the COI categories and presence indicators that were found to be present across the 24 student threads, there were 349 occurrences of social presence and 249 occurrences of cognitive presence. As outlined in Table 4.9, a total of 598 codes were applied across the 24 threads within the student posts artifacts. In the following section, the COI findings of social presence will be discussed first. Next, cognitive presence will be examined.

**Social presence.** Through student engagement in the Week Four and Week Seven peer review activities, a strong existence of social presence was recorded. These occurrences included group cohesion, revealed through examples of encouraging support, and additional indicators as outlined in the supporting analytic memo in Table 4.7. Of the three categories of social presence, group cohesion was the most highly coded category with 210 occurrences. The study participants exhibited group cohesion through
encouraging support, through agreement and compliments, by referring to another’s work, and through continued conversations within the existing threads. Furthermore, group cohesion was coded through occurrences where students sought to create and sustain healthy relationships with one another through care and support:

Skyler I know for me, I’ve been looking at this campaign and paper for some time now that it’s all blending together, and it’s hard not to lose track. But you’re in better shape then you’re probably giving yourself credit for!

Oakley First and foremost, thank you for your service and from one army family to you, may you stay safe along with your unit for the duration of your deployment. Also, kudos to you for sticking with the class and finding the spare minutes to work on this class.

FINISH STRONG! You got this.

Open communication, as indicated by risk-free expression, was coded for social presence across the 24 student threads for a total of 123 times. The open communication code included communication that transpired in an open, uninhibited, and guilt-free manner. During open communication, students demonstrated ownership of their comments and displayed comfort in disclosing aspects about themselves. In addition, open communication included friendly greetings and a level of comfort in addressing their peers by name. The study participants exhibited open communication in their peer review conversations:

Eastyn I really struggled with my strategies/tactics section as well, and for some reason, I was drawing a blank on the differences between a
strategy and a tactic. I’ve overthought everything in this course, so I’m right there with you!

Campbell I can't believe we are only a few weeks away from completing our program!! Is it just me, or does everyone suddenly feel very unsure? I know I'm spending a lot of time second-guessing myself.

Marlo I spent more time than I thought making changes to the situation analysis, and I couldn’t crank the wheels as fast as I wanted to on the proposal.

In support of COI social presence, affective expressions were included for a total of 16 times across the 24 peer review threads. Affective expressions were exhibited through the use of emoticons. Study participants used emoticons to further extend the delivery of statements surrounding emotion, to provide agreement with peer content, and to deliver an element of humor following constructive feedback. In a conversation regarding the personal impact of the student’s work on a campaign in support of childhood cancer research, Campbell shared, “I end up in tears every time I work on this. 😢” In another example of emoticon use, Eastyn offered support for a statistic shared by a peer and stated, “It’s no secret – millennials and members of Gen Z love to talk about themselves and their experiences. 😊 This is awesome!” Lastly, Marlo included an emoticon as part of a suggested improvement and stated, “I love the logo and the colors on the cover page. Maybe go a bit crazy and use some colorful or different size fonts too? 😄”

Cognitive presence. In my review of the Week Four and Week Seven student posts artifacts, I coded 249 instances of cognitive presence. These occurrences
encompassed four categories and supporting indicators, including a triggering event through a sense of puzzlement, exploration through information exchange, integration by connecting new ideas, and resolution by applying new ideas (Garrison & Arbaugh, 2007).

A triggering event, identified when a student provided recognition of a problem through a display of puzzlement or through an arousal of the student’s curiosity, was coded 69 times across the 24 peer review threads in the student post artifacts. In reviewing the work of a peer, Eastyn offered a sense of puzzlement and inquired, “Is that to say that people are spending a little longer in the sales cycle to hear more from a brand before actually buying?” Similarly, when reviewing a peer’s situation analysis, Skyler asked, “Another question I had is what methods are you going to use to accomplish promoting the internship program?”

The cognitive presence category of exploration was coded 94 times across the Week Four and Week Seven peer review threads. Exploration was indicated through information exchange and was exhibited between peers through suggestions, brainstorming ideas, or the integration of possible conclusions. In addition, exploration included a divergence with the possibility for consideration of a direction that was different from the one that had been presented. In review of a peer’s work, Skyler suggested, “I would say too, for the outline you have started, I’d think about differentiating new media tools vs traditional.” In addition, Oakley provided a suggestion for a peer and stated, “WF has an app, but it doesn't push notifications…Since WF's have a ton of neat events,…maybe that’s a good idea since your target audience loves apps and is more likely to allow push notifications due to FOMO.”
The cognitive presence of integration, indicated through occurrences of connecting ideas, was coded 41 times across the 24 student threads. This included the convergence of ideas that had initially surfaced during exploration and during previous information exchanges. Campbell integrated earlier brainstorming suggestions and stated, “In support of research about the increase of purchases in prepared food…and with the amazing options WF has on their prepared food bar, emphasizing what drink would complement their food selection could really boost sales.”

The cognitive presence of resolution, identified by the application of new ideas not previously shared or considered, was coded a total of 45 times across the 24 student threads from Week Four and Week Seven. Incidents of resolution included the application of new ideas in the real-world environment, in support of testing, or in efforts to defend a solution. Campbell suggested a new idea in a real-world context and shared, “Also, promoting and providing a local craft beer or wine area would be a good way to reach the WF crowd given that audience's commitment to purchasing local.” In support of real-world funding and efforts to defend a campaign solution, Eastyn shared, “Having the whys explained here (updated and new parent courses) will help promote buy-in on why money should be spent on the campaign.”

Community of Inquiry alignment to themes. To examine the COI findings in support of themes, I reviewed the results of the categories to themes analysis in Table 4.8 and the results of my COI coding as outlined in Table 4.9. I created an additional table to align the COI findings with the three qualitative themes produced from the six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, and the researcher’s handwritten interview notations. As outlined in Table 4.10, COI
findings were aligned with the research study themes and further sustained through student examples from the research study and by prior research by scholars. Based on the information provided in this section and in Table 4.10, the COI findings align with and support the three qualitative themes revealed through the research study.

**Qualitative Accuracy**

To ensure rigor and trustworthiness in support of the qualitative data, I implemented strategic approaches to check for the accuracy and reliability of my findings (Creswell, 2014). As part of an ongoing self-assessment, I practiced reflexivity and self-reflection to make sure that I remained cognizant and fully aware of any biases that I brought to the study (Mertler, 2017). In addition, the constant monitoring of my developing thoughts was crucial for maintaining the integrity of the research study (Guba & Lincoln, 1989).

During the study, qualitative data was obtained from five sources. Triangulation of the six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, and my researcher’s handwritten interview notations allowed me to examine and use these data sources to build a strong and valid claim during theme establishment (Creswell, 2014). Furthermore, the COI findings were compared to the established themes to confirm alignment. Through triangulation of the qualitative data, I was able to view the results from numerous perspectives and provide greater depth and breadth in my results (Johnson, 2008). During the triangulation process, outliers or inconsistencies became apparent; however, I included any discrepant content or data deviations as this not only gave me greater insight (Pandey & Patnaik, 2014), but it added to the integrity of my findings.
Table 4.10. Community of Inquiry Findings to Themes with Examples and Prior Research

<table>
<thead>
<tr>
<th>Qualitative Themes</th>
<th>Community of Inquiry Findings &amp; Alignment</th>
<th>Study Participant Examples</th>
<th>Prior Research</th>
</tr>
</thead>
</table>
| Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment | • Of the three social presences observed 349 times in the Week Four and Week Seven student post artifacts, open communication was observed and coded a total of 123 times.  
• During open communication with peers, the study participants demonstrated confidence and a sense of ownership for their comments.  
• Empowered by the structured peer evaluation system and more specifically, by the resources and tools shared within the peer review tool kit, study participants displayed a freedom to engage with peers.  
• Students displayed a sense of comfort and self-confidence in disclosing aspects about themselves. | • Salem explained, “The …School sounds like a wonderful opportunity for students in Rhode Island! I am a huge proponent of educational choice and love the idea of alternative learning environments to suit the needs of different students.”  
• Justice explained, “I enjoyed reading what you have so far and seeing the progress, gave me more to think about of structure for my own actually.”  
• Eastyn disclosed, “I really struggled with my strategies/tactics section as well, and for some reason, I was drawing a blank on the differences between a strategy and a tactic. I’ve overthought everything in this course, so I’m right there with you!” | Instructors can implement unique methods and tools to motivate and encourage student participation in peer review activities (Baker, 2008; Ghadirian et al., 2016; Hamer et al., 2015; Jin, 2017; Wang, 2016).  
Prior research findings confirm the opportunity to utilize peer review training to support student needs (Baker, 2016; Barnard et al., 2015; McMahon, 2010; Sridharan et al., 2018; Tricio et al., 2018).  
Llado et al. (2014) endorse the application of unique strategies and training to clarify tasks and to deliver supportive tools. |
<table>
<thead>
<tr>
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<th>Prior Research</th>
</tr>
</thead>
</table>
| Theme II: Peer review engagement fostered appreciative, collaborative community of learners | • Of the 349 occurrences of social presence recorded across the 24 threads from Weeks Four and Seven, group cohesion was the most highly coded category with a total of 210 occurrences.  
• The social presence category of group cohesion, exhibited through encouraging support, agreement, and compliments, aligns with the second qualitative theme. These social interactions, exhibited during peer review engagement, fostered a collaborative community of learners. | • Oakley stated, “First and foremost, thank you for your service and from one army family to you, may you stay safe along with your unit for the duration of your deployment. Also, kudos to you for sticking with the class and finding the spare minutes to work on this class. FINISH STRONG! You got this.”  
• Salem shared, “Overall, your campaign is strong and presents the school in a very positive light. I think it is an exciting concept and you highlight the advantages of the program.” | During peer review participation, students can experience high levels of interaction and collaborative exchange with their peers. Through meaningful and active engagement, students offer inquiries, deliver positive commentary, and identify areas of concern with suggestions for improvement (Ching & Hsu, 2016; Gikandi & Morrow, 2016).  
As students interact and share their experiences with one another, a community of learners emerges (Moneypenny et al., 2018). |
| Theme III: The structured peer review system transformed student anticipation and anxiety into a | • In review of the 24 Week Four and Week Seven student threads, cognitive presences were observed and coded 249 times.  
• Cognitive presence was observed through occurrences of a triggering | • Justice offered, “I enjoyed the images you included for the comparison. My only critique would be make sure that the images hold value to be in the document. Your last image speaks to your campaign but the | Through a structured approach to peer review and repeated exposure to a standardized peer evaluation system, students can gain comfort with the process and become more |
<table>
<thead>
<tr>
<th>Qualitative Themes</th>
<th>Community of Inquiry Findings &amp; Alignment</th>
<th>Study Participant Examples</th>
<th>Prior Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>focused approach to learning</td>
<td>event brought on by a sense of puzzlement, exploration through information exchange, integration by connecting ideas, and resolution by applying new ideas (Garrison &amp; Arbaugh, 2007).</td>
<td>other two seem to just be placed there with no lead up or explanation other than the caption.”</td>
<td>effective as peer assessors (Brutus et al., 2013).</td>
</tr>
<tr>
<td></td>
<td>Of the 249 occurrences of cognitive presence across the 24 student threads, exploration through information exchange was the most highly coded cognitive presence with a total of 94 incidents.</td>
<td>- Marlo explained, “I don’t see examples yet on your work about the ways to combat apathy and engage those involved on the use of social media, but I assume you are considering stories (use of emotions to gain followers), creative content, video, and pictures.”</td>
<td>A structured peer evaluation system can be utilized to “promote, facilitate, and standardize” (Brutus et al., 2013, p. 18)</td>
</tr>
<tr>
<td></td>
<td>Students were able to utilize the structured approach to peer review to move past feelings of excitement or trepidation and engage fully and purposefully with peers through a focused approach to learning.</td>
<td>- Campbell stated, “I would also consider in-person events to promote sales. Things like wine pairings with meals or on site cooking shows with different beer and/or alcohol in the recipes.”</td>
<td>Vygotsky (1962) proclaims that students’ skills and knowledge are shaped through cultural interaction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Learning becomes a social activity in an environment where learners interact and where cognitive growth is stimulated (Schunk, 2008).</td>
</tr>
</tbody>
</table>
In reporting themed content, I utilized thick, rich descriptions to fully convey the study topic and the surrounding contexts (Shenton, 2014). When providing qualitative comments, I felt that it was important to reflect and convey the feelings and beliefs of the study participants in an accurate manner (Alexander et al., 2011). By including perspectives and quotes from all seven of the study participants, the themed results were not only more balanced, but the themes became richer and more fully understandable (Creswell, 2014).

To determine the accuracy of my study results, I conducted member checking by taking my findings back to the study participants (Creswell, 2014). I sent an email to each student, attaching each student’s respective transcripts for review. I received response emails from Justice, Eastyn, and Marlo. Each student confirmed the accuracy of their interview transcripts and agreed with the themes that were established during the triangulation of qualitative data.

To ensure the trustworthiness of my data, I conducted peer debriefing to introduce the perspective of a trusted peer (Mertler, 2017). During recorded sessions with my dissertation co-chair, Dr. Tammi Kolski questioned, reviewed, and guided my study progress each week. Following the development of categories and themes, I conducted an additional review session with two Capstone instructors who were not involved in the research study. Through this interaction, I was able to converse with my university colleagues as trusted peers who were familiar with my abilities and the research goals (Sensing, 2011).

Lastly, I created an audit trail by keeping records of the raw data, documenting data reduction, and recording synthesis. Through the use of a reflexive journal, I
rationalized and recorded my processes, while using the journal entries to cross-reference data (Lincoln & Guba, 1985). By documenting my peer debriefing conversations and my daily thoughts and occurrences, I was able to self-reflect and maintain a critical assessment of my procedures (Tobin & Begley, 2004).

**Summary of Qualitative Methods and Findings**

In this study, qualitative data was collected from five data sources including six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, researcher’s handwritten interview notations, and student post artifacts. First cycle and second cycle coding of the first four data sources produced ten categories and three qualitative themes. The themes produced from this study included Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment, Theme II: Peer review engagement fostered appreciative, collaborative community of learners, and Theme III: The structured peer review system transformed student anticipation and anxiety into a focused approach to learning.

COI coding of the fifth data set, student post artifacts from Weeks 4 and 7 of the research term, was conducted separately. During COI coding, a total of 598 codes were applied across 24 student threads. Using the seven *a priori* COI categories and performance indicators (Garrison & Arbaugh, 2007), 349 occurrences of social presence and 249 occurrences of cognitive presence were recorded.

The COI findings of social and cognitive presence across the student post artifacts and the qualitative themes produced from the six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, and the researcher’s handwritten interview notations were further assessed together. Through triangulation, I
corroborated the qualitative themes and the COI findings to test for rigor (Lincoln & Guba, 1984) and to provide an increased assurance to the interpretation of my data (Webb et al., 1966). By converging the qualitative themes with the COI findings, the reliability of my findings was further strengthened (Creswell, 2014). The COI findings confirmed and supported the three themes that were identified through first and second cycle coding. The study participants were able to use the peer review tool kit to experience confidence and empowerment as well as foster a collaborative community of learners through their peer review engagement. Lastly, the students used the structured peer evaluation system to transform excitement and anxiousness into a focused approach to learning with their peers.

**Chapter Summary**

For this study, quantitative and qualitative data were collected in a mixed methods approach. Quantitative data sources included a preterm questionnaire and a postterm questionnaire. During quantitative data analysis, Cronbach’s alpha was calculated for each part of the preterm and postterm questionnaires, offering low and varied internal consistency. Descriptive statistics were calculated for each part of each questionnaire. Although a deviation from normality was not detected in the Shapiro-Wilk test (Shapiro & Wilk, 1965), the Wilcoxon signed rank test was run due to the limited number of study participants. Results from the Wilcoxon signed rank test and the Bonferroni adjustment test produced no statistically significant results.

Inductive analysis was performed on four qualitative data sources, including six postterm questionnaire open-ended questions, observational field notes, one-on-one interviews, and the researcher’s handwritten interview notations. COI deductive analysis
was performed on a fifth set of qualitative data, student post artifacts. The data in this study produced three themes, including Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment, Theme II: Peer review engagement fostered appreciative, collaborative community of learners, and Theme III: The structured peer review system transformed student anticipation and anxiety into a focused approach to learning.
CHAPTER 5
DISCUSSION, IMPLICATIONS, AND LIMITATIONS

This chapter positions the findings of this research study within the existing literature in support of peer review and the intervention of a structured online peer evaluation system, including the integration of an interactive educational technology innovation, a peer review tool kit. The purpose of this action research was to implement and evaluate the impact of a structured online peer evaluation system for GRAD COM Capstone students at UNCM. During the mixed methods approach to research, participants’ thoughts on peer review processes were captured quantitatively before and after the intervention and subsequently analyzed. Data from five qualitative sources was collected and analyzed to further support an informed response to the study’s research questions. Three primary themes emerged from the qualitative data analysis, including Theme I: Comprehensive peer review tool kit promoted student confidence and empowerment, Theme II: Peer review engagement fostered appreciative, collaborative community of learners, and Theme III: The structured peer review system transformed student anticipation and anxiety into a focused approach to learning. This chapter will present the research findings and include (a) discussion, (b) implications, and (c) limitations.

Discussion

To fully understand the results from this study, it is important to situate and interpret the research findings through existing literature on learning theory, the
advantages and disadvantages of peer review, pedagogical strategies for peer review, and peer review tools and methods. More specifically, learning theory for this study included literature regarding the constructivist theory of cognitive apprenticeship, as experienced through scaffolded learning (Brill, 2016). To answer the research questions, the quantitative and qualitative data were combined and considered through a lens of technology integration as a tool for promoting student confidence and empowerment, peer review engagement as a method for fostering a collaborative community of learners, and the use of a structured peer review system for transforming students anticipation and anxiety into a focused approach to learning. The discussion is organized by the two research questions.

**Research Question 1: How Does Using a Structured Peer Evaluation System Impact the Peer Review Process in an Online Graduate Communication Capstone Classroom at UNCM?**

This research question stemmed from the need to address the limited participation and low-quality engagement in routine online peer review activities by GRAD COM Capstone students at UNCM and to determine whether the use of a structured peer evaluation system would offer an impact. During this research study, the use of a structured peer evaluation system prompted students to assume a responsible role during peer review activities, while further encouraging them to exhibit strong levels of social and cognitive presence (Garrison & Arbaugh, 2007). The student post artifacts, displaying student peer review engagement in Week Four and Week Seven, reflected the study participants’ use of the structured peer evaluation system to trigger their active participation. Moreover, the use of the structured peer evaluation system prompted the
students to express themselves socially and to openly share cognitive knowledge with their peers, further expounding upon their posts through the use of links, referrals, and reliable resources. The study participants facilitated a collective approach to peer learning through their use of the structured peer evaluation system.

Peer review is widely recognized and acclaimed as an effective tool for students to experience critical thinking skills (Demirbilek, 2015; McMahon, 2010) and higher order thinking (Ching & Hsu, 2013, 2016) through advanced cognitive activity. During peer review, students analyze, synthesize, and evaluate the work of their peers (Demirbilek, 2015; Li et al., 2010; Lynch et al., 2012) and receive the opportunity to improve their own work through reflection (Man et al., 2018; McMahon, 2010; Phillips, 2016). However, research by Nicol et al. (2014) asserts the failure of higher education entities to provide students with the knowledge, tools, and training to prepare them for peer review participation. Furthermore, research by Cheung and Hew (2004) claims that an unstructured approach to online asynchronous peer review can produce a delay in student engagement. Further sustaining the existence of these issues, Hewitt (2005) emphasized that non-consistent thread growth and inadequate student participation are continuing concerns across online asynchronous educational environments.

In turn, a structured peer evaluation system was implemented for this study. Unlike peer review processes that vary from course to course, a structured and standardized approach was instituted to foster student success through consistency and efficiency (Brutus & Donia, 2010). As in research conducted by Brutus et al. (2013), this organized approach to peer review was introduced to increase student comfort and to heighten student engagement. To design a structured online peer evaluation system,
including an educational technology innovation, I referenced existing literature to align learning theory, peer review tools and resources, confidence building, community building through collaboration, and the transformation of excitement and anxiety into productive learning. Following the intervention of the structured system and an interactive technology innovation, data was collected and analyzed from two qualitative data sources in support of this research question. The findings from the convergence of the observational field notes and the student post artifacts will be shared in the following section. First, students assumed a responsible role in the construction of collaborative learning will be discussed, followed by how the structured system prompted social and cognitive liberation.

**Students assumed a responsible role in the construction of collaborative learning.** In designing the structured peer evaluation system and the supporting interactive educational technology peer review tool kit for this study, I sought to provide students with an understanding of their role in support of knowledge construction through peer review. The goal was to empower students through training, including resources and tools. As opposed to rote learning during which knowledge is simply passed from instructor to student, the learning theory of constructivism (Dewey, 1916, 1938) asserts that knowledge is actively constructed through student experiences (Dewey, 1938; Ertmer & Newby, 2013; Jaramillo, 1996). Likewise, during peer review, knowledge is constructed collaboratively through a shared learning experience with peers (Moneypenny et al., 2018). The structured peer evaluation system was designed to empower students to take on a responsible role during peer assessment as they constructed new meaning during the evaluation of peers’ work and produced an
interpretation and feedback based on their individual experiences, beliefs, and thought patterns (Jaramillo, 1996; Jonassen, 1991; Powell & Kalina, 2009).

In the Week Four and Seven scheduled peer review activities, each of the study participants partook in peer review conscientiously by posting their original work for review, reviewing peers' work, and responding with feedback. Of the seven study participants, all but one student posted original work for review by the Thursday deadline in both weeks. In both Weeks Four and Seven, all but one of the study participants reviewed at least two draft works by their peers, as required. Furthermore, in both weeks, every initial peer review response post provided a depth of more than 100 words. These findings support research conclusions by Dar et al. (2014) which claimed that when students are taught how and what to assess, the process can be simplified, and students’ interest and motivation can be enhanced.

During the scheduled Week Four and Week Seven peer review activities, the students assumed a responsible role through their active engagement in first-hand, participatory learning. As emphasized in research by Clark (2018), during constructivism, a student is in control of his or her own learning, and new knowledge is connected with the student’s existing knowledge. Through hands-on and engaged learning, students collectively navigate peer review within an authentic educational setting (Jaramillo, 1996), such as those contexts that provide the ability to elevate student learning (Biggs, 2011). During the observation of the Capstone study participants’ peer review engagement in both Weeks Four and Seven and the coding of the student post artifacts, it was evident to this researcher that the students had utilized the structured peer evaluation system to prompt their active involvement. These findings support earlier research by
Jaramillo (1996) which asserts that the constructivist learner is not a docile vessel waiting to receive knowledge but one who is strongly involved in the pursuit of his or her learning.

**Structured system prompted social and cognitive liberation.** During this research study, students demonstrated a strong degree of social expression and cognitive freedom as part of their peer review participation. As a part of its theoretical structure, the COI framework identifies, expresses, and quantifies social and cognitive presence in support of online learning communities and their development (Van der Merwe, 2012). The findings from the convergence of the student post artifacts and the observational field notes will be shared in the following section. Social presence will be discussed first, followed by cognitive presence.

**Social presence.** In support of Garrison and Arbaugh’s (2007) established COI categories and presence indicators, the student post artifacts were coded for social and cognitive presence. Social presence was coded 349 times across the 24 student threads contained in the student post artifacts from Week Four and Week Seven peer review activities. Of the 598 occurrences of social and cognitive presence coded across the student post artifacts, social presence was the stronger of the two presences and coded 58% of the time. Social presence included open communication as indicated through risk-free expression, group cohesion to encourage collaboration, and affective expressions through the use of emoticons (Garrison & Arbaugh, 2007).

The observational field notes, through which I recorded my observations of the peer review activities in Weeks Four and Seven, further sustained a strong social presence by the study participants. Nine of the fourteen total initial response posts were
published in a thread where feedback by a peer already existed. Furthermore, follow-up feedback posts often referenced and acknowledged the feedback that had been provided previously by a peer, producing a collaborative effect. As outlined in the COI analytic memos of Table 4.7, the social presence of group cohesion was exhibited within the student post artifacts through agreements, compliments, and the use of encouraging conversation dedicated to cultivating healthy relationships. Often, group cohesion included the quoting or referencing of another student’s work as the conversation continued to evolve within the peer review thread. Over time, this developing conversation became representative of several students working together to produce a resolution.

Of the three categories of social presence coded within the student post artifacts from Weeks Four and Seven, group cohesion was coded for 210 of the 349 occurrences of social presence. This strong existence of group cohesion represented 60% of all social presence recorded across the peer review activity. As demonstrated by the study participants throughout their conversational interchanges, this solid presence of group cohesion validates the existence of student interaction which served to create and foster healthy relationships through care and support:

Skyler: I also loved how for the past and existing communication plans, you utilized videos! This is very impactful and effective for someone like myself who has no real foundation or prior knowledge of the industry!

Salem: I will echo [redacted]’s comments that this may not be as "rough" as you think. Your writing is strong and your narrative follows a
natural flow that paints a picture of the…experience. Your descriptive style is well designed in that creates an image in the readers mind without superfluous adjectives.

In my observational field notes, I recorded a strong level of motivational support placed at the onset of the participants’ peer review feedback. This initial delivery of affirmation and positivity, coded as group cohesion in the student post artifacts, aligned with the feedback sandwich example provided in the structured peer evaluation system’s peer review tool kit. Prior to the delivery of constructive feedback, the study participants positioned social encouragement to inspire and support peers:

Eastyn I have thoroughly enjoyed watching your campaign unfold this term! I absolutely love the integrated strategy you’ve detailed in your report.

Marlo Hats off to you for working on this project from a remote location.

Furthermore, open communication through risk-free expression was coded a total of 123 times across the student post artifacts. As noted in the analytic memo in Table 4.7, open communication offered conversation that took place in an open, uninhibited, and guilt-free manner. Students disclosed comfort in revealing information about themselves and in delivering greetings to peers; they displayed ownership of the comments that they provided. The study participants exhibited open communication in their peer review conversations:

Oakley I also struggle with this, but professor has included some super helpful links for me that has aided with proper titles.
Marlo  I struggled a bit with my organization of those three sections because you have so many ideas in your head it’s hard to classify each one under the ‘right’ section. I had to go back and refresh my knowledge of these concepts.

Lastly, affective expression was coded 16 times across the student post artifacts. As outlined in the analytic memo in Table 4.7, affective expression was demonstrated through the use of emoticons. The study participants utilized emoticons to deliver social presence in support of emotion, agreement, suggestion, and humor:

Skyler  Super minor but as someone not familiar with the area/organization structure, this would make it clearer! 😊

Eastyn  Love the use of the word “suite” here – it almost makes delivery sound like a fun and soothing experience. …almost! 😐

Marlo  Maybe I am biased because I love dogs! 😊

This study’s research findings align with the social constructivist theory of learning as through dialogue, a collaborative culture of learning and student knowledge can be created and shaped through social interaction (Vygotsky, 1962). Furthermore, through the tool of language, cultural activity serves to promote one’s thinking and reasoning (Vygotsky, 1978), allowing students to work collectively to resolve issues. As detailed in the observational field notes and the tally of social presence in the student post artifacts, a social learning environment was established across the peer review activities in this study. These findings align with research by Schunk (2008) which asserts that learning becomes a social endeavor when it takes place in a setting where learners are able to interact with one another and where cognitive growth is stimulated. Boud (2000)
sustains the power of these social interactions as learners are prepared to become skilled and agile within a consistently changing and complex society.

*Cognitive presence.* As part of the structured peer evaluation system, an educational technology component was integrated as an intervention. An interactive peer review tool kit was designed and provided to students during the Capstone course to promote peer review participation, to empower students to engage at a more advanced level, and to encourage their delivery of high-quality feedback. The design of the peer review tool kit received influence from the constructivist theory of cognitive apprenticeship and its six dimensions of modeling, coaching, scaffolding, articulation, reflection, and exploration (Brown & Stefaniak, 2016). Similar to real-world apprenticeship opportunities, cognitive apprenticeship positions students to learn through observation, imitation, and modeling (Collins, 1988; Collins et al., 1987). During cognitive apprenticeship, implied processes are openly shared with students, as they visualize, participate in, and practice these processes with the instructor and their classmates (Collins et al., 1987). This approach aligns with research by Brill (2016) which suggests the need to support peer review through scaffolding and the delivery of abundant resources such as examples and checklists to assist students with effective feedback.

Correspondingly, the student post artifacts, which captured peer review activity from Weeks Four and Seven, offered a strong representation of the study participants’ cognitive presence. Based on Garrison and Arbaugh’s (2007) established COI categories and presence indicators, the student post artifacts were coded for 249 occurrences of cognitive presence. The four categories and supporting indicators of cognitive presence
were demonstrated by a triggering event through a sense of puzzlement, exploration through information exchange, integration by connecting new ideas, and resolution by applying new ideas (Garrison & Arbaugh, 2007).

The most highly coded cognitive presence was the category of exploration, offering 94 occurrences across the student post artifacts. As outlined in the COI analytic memos in Table 4.7, exploration was exhibited through suggestions to peers, brainstorming ideas, and the infusion of possible conclusions. Other occurrences of exploration offered a divergence with the suggestion of a different direction from the one originally pursued:

Skyler
And this may seem like a minor or silly thing or distinction to be making - but I would consider not just targeting woman as your audience?

Salem
Have you considered including some little bio's on families that have benefited from this charity?

Although not as highly represented as the category of exploration, a triggering event was coded 69 times across the student post artifacts from Weeks Four and Seven. As outlined in the analytic memos presented in Table 4.7, triggering events were demonstrated through puzzlement or a sense of curiosity. Furthermore, a triggering event was exhibited by students as they recognized a problem which required additional investigation:

Skyler
This wasn’t entirely clear to me while reading through this draft, but could very easily be reworded or and or added to flow with this great existing draft!
As I was reading your draft, I found that I was searching through the first few paragraphs trying to determine what type of school this campaign would be promoting.

The cognitive presences of integration and resolution were coded 41 and 45 times, respectively. As described in the supporting analytic memos in Table 4.7, integration was displayed across the student post artifacts through the convergence of ideas that had emerged during exploration and the exchange of information. Resolution was coded to denote presence through the application of new ideas in support of real-world scenarios, testing, or as a defense for a solution.

Based on the established COI categories and indicators (Garrison & Arbaugh, 2007), the participants in this study presented a strong level of cognitive presence throughout the Week Four and Week Seven peer review activities. Further sustaining these findings were my recorded observances, noted via the Week Four and Week Seven observational field notes. Instead of responding immediately to peers’ original draft work, I recorded a strong tendency for students to respond after 24 hours. Across both Week Four and Week Seven, only one student responded to an original post within 24 hours. This delay in response was indicative of the strong quality of responses provided by the study participants in taking their time to fully review the work of peers and deliver well-reasoned and well-researched responses.

In my observations of Week Four and Week Seven peer review activity, I noted that the students went above and beyond brief affirmative responses. Moreover, in review of the peer review responses, I noted the provision of links to outside resources, referrals back to prior guidance from the course instructor, and the citing and referencing of valid
sources to sustain their claims. Questions to peers were positioned in a positive and pleasant manner and feedback was framed constructively. Although students provided commentary in diverse ways, including bullet points, concise sentences, and copies of marked work with lengthy reviews, it was apparent that the study participants were aligning their feedback with the best practice approaches that had been shared within the structured peer evaluation system. Even when a distaste for peer review participation was openly disclosed by one of the study participants, the peer review feedback that followed was well-reasoned, research-based, and aligned to the approaches shared in the peer review tool kit. These study findings align with research by McGarrigle (2013) which asserts that during peer review, students receive the opportunity to transition from one who is an inexperienced learner to a more knowledgeable other, as defined through social constructivist theory. During this transition, the participants in this study were empowered to take on a more active and emboldened role as they shared knowledge with their peers. In addition, these findings support Boud’s (2000, 2013) research assertions, which claim that although peer review is utilized for assessment purposes, it fulfills an essential classroom component as students not only learn alongside each other but from one another as well. Through their feedback to peers, the study participants were able to facilitate peer learning through a collaborative approach.

Lastly, with the strong level of cognitive presence identified throughout the student post artifacts, all of the participants in this research study were positioned to experience and benefit from the shared knowledge of their peers. Of the 598 occurrences of COI social and cognitive presence (Garrison & Arbaugh, 2007) coded during this study, approximately 42% of the occurrences were cognitive. In alignment with research
by Topping (1998), peer review and feedback opportunities evoke both reflective and engaged learning, further producing critical and higher order thinking. The study participants utilized the training provided within the structured peer evaluation system to guide their interactions and peer review responses. In agreement with research findings by McKenna and Williams (2017), this near-peer learning opportunity produced positive outcomes for the more advanced students involved in the training as well as the less advanced students who benefitted from their peers’ sharing of additional tips and knowledge.

**Research Question 2: What are the Perceptions of Students Regarding a Structured Peer Evaluation System in Support of Online Asynchronous Peer Review Activity in a Graduate Communication Capstone classroom at UNCM?**

This research question stemmed from wanting to understand if students perceived a structured peer evaluation system as an effective method for supporting online asynchronous peer review activity in the GRAD COM Capstone classroom. Following their engagement with the structured peer evaluation system, the participants in this research study offered positive perceptions of the structured approach. The students relayed an elevated degree of confidence and empowerment through their use of the peer review tool kit. Furthermore, the students recognized the collaborative learning that occurred and the community of learners that emerged through the structured peer evaluation system. The findings from the convergence of two quantitative and three qualitative data sets, including the preterm and postterm quantitative questionnaires, the postterm questionnaire open-ended questions, one-on-one interviews, and the researcher’s handwritten interview notations will be shared in the following section. First,
heightened confidence and empowerment through tool kit innovation will be discussed, followed by collaborative community of learners emerged through peer review participation.

**Heightened confidence and empowerment through tool kit innovation.** Prior research sustains that a plethora of benefits can be gained from students’ participation in peer review, including critical thinking skills, higher order thinking, skill development, a greater understanding of tasks through the receipt of diverse feedback, and an improved quality of submissions (Baker, 2016; Barnard et al., 2015; Demirbilek, 2015; Gikandi & Morrow, 2016; Hogg, 2018; McMahon, 2010; Mulder et al., 2014). However, students are often reluctant to engage in peer review. Frequently, students experience apprehension and intimidation toward peer review as they consider the time commitment and the degree of responsibility required to review and mark the work of peers (Llado et al., 2014; Moneypenny et al., 2018). In addition, students may lack the necessary confidence to participate in peer review as they question their knowledge, skill sets, and ability to review the work of peers properly (Barnard et al., 2015; Fotheringham & Mowat, 2012; Mulder et al., 2014; Nagori & Cooper, 2014; Wang, 2016).

Research sustains that students can host concerns over the ability of their peers to conduct peer review correctly (Man et al., 2018; McMahon, 2010; Mulder et al., 2014; Nagori & Cooper, 2014). In research by Mulder et al. (2014), undergraduate students stressed that inaccurate feedback from inexperienced peers had caused them to back-track and make changes to their work that were unnecessary. In addition, when peer feedback is riddled with poor grammar and deficient writing skills, students can become concerned over the reliability of the feedback that has been received (Alnasser, 2018; Mulder et al.,
2014). Elshami and Abdalla (2017) asserted that some students maintain the belief that peers with more experience provide the most valuable feedback and that feedback received from low-performing peers is incorrect.

Furthermore, students may lack the motivation and drive to participate in peer review, creating a propensity to procrastinate. Students may resist peer review engagement if they consider the practice to be of low value or if they host a general dislike for peer review (Brill, 2016; Wang, 2016). As peer review is considered formative and seldom impacts final grading, students can perceive it as lacking in value (Kearney, 2013; Wang, 2016), impractical, and a waste of their time (Dar et al., 2014). Students may feel that the merit of peer review is limited as the feedback is framed around work that has already been created, and it fails to push beyond the boundaries of students’ current work (Nicol et al., 2014). The degree of student participation in peer review and the quality of feedback provided can provide a strong indication of the learner’s motivation (Ching & Hsu, 2013), as well as their opinions and past experiences with peer review (Man et al., 2018).

As part of the interactive peer review tool kit intervention included in this study, resources and tools were introduced to build student confidence, promote peer review participation, and to empower students to engage at a stronger level through the delivery of higher-quality feedback. The provided resources and tools were founded on the constructivist theory of cognitive apprenticeship, additional learning theory, and the outcomes of prior scholarly research studies. The tool kit embodied the six methods of cognitive apprenticeship in efforts to transform student behavior into authentic practices through the use of activities, resources, and social interactions (Brown et al., 1989). The
tool kit offered instructor-created videos, feedback examples, peer review training, prompts, guiding statements, and questions. In addition, feedback templates, forms, and rubrics were included, as well as activities that involved practice and reflection and independent problem-solving.

Research confirms that rubrics can be shared with students to help guide them through the peer review process and to assist them in producing and delivering feedback that aligns with the critical elements upon which students will ultimately be graded (Baker, 2016; De Grez et al., 2012; Elshami & Abdalla, 2017; Gikandi & Morrow, 2016; Kelly, 2015; Llado et al., 2014; Ng, 2018; Ratminingsih et al., 2017; Sridharan et al., 2018). Furthermore, previous studies sustain that forms and templates can convey the expectations of peer review feedback to students, as part of a structured approach (Baker, 2008, 2016; Dijks et al., 2018; Gielen & De Wever, 2015; McMahon, 2010; Mulder et al., 2014; Tricio et al., 2018). Through the implementation of necessary support systems during the early stages of peer review, students can obtain awareness, understanding, and proficiency in the practice of peer review as they use these scaffolded learning supports to increase expertise until the provisions are no longer needed (Brown & Stefaniak, 2016).

In feedback received through the postterm questionnaire open-ended questions and the one-on-one interviews, as well as notes recorded during the interview by way of the researcher’s handwritten interview notations, students relayed an elevated level of self-confidence and empowerment due to the tool kit intervention. The study participants referenced the structured peer review approach and the reminders that had been
purposefully included in the innovation to address the students’ feelings of inadequacy and doubt and to elevate their confidence levels:

Justice  
In earlier peer review, there was no structure, but this gave you something to fall back on. It gave me more faith. Yeah, I felt more comfortable giving it because there was, there was a backing.

Eastyn  
You know, you never really feel as qualified as an instructor to give feedback to your peers and you just like second guess yourself the entire time and you're like, am I even qualified to do this? It's incredibly easy to feel underqualified, so I appreciated the reminders throughout the toolkit that showed me I was more than capable of helping my peers through a thoughtful review…My biggest takeaway from it…was I guess the encouragement of being able to look at myself as someone competent enough to give peers reviews.

Oakley  
It kind of allayed those fears that you've already put out there…They just, they were my reminders that even if you don't know anything about health care public relations, what you have to say about communications is still valid… So, students are depending on me…They can learn from you basically.

In the one-on-one interview, Oakley was asked if the utilization of the resources and tools in the peer review tool kit offered empowerment and allowed the student to feel more qualified to participate in peer review. Oakley confirmed the impact of the tool kit and stated, “And so I would say that it definitely did. Having something to just kind of
watch and remind you, okay, this is the attitude we're going in...So, even if you're not an expert, here it is."

These converged research study findings support prior research that proclaims the use of proactive training and support to help students understand how to give and receive feedback prior to their participation in actual peer review activities (Alnasser, 2018; Baker, 2016; Dar et al., 2014; McMahon, 2010). Furthermore, these research study findings sustain assertions by Lee (2016) which claim that over time, students can gain greater comfort with peer review as they obtain familiarity with the peer review process. Similarly, the resources and tools in the peer review tool kit were offered to help students assimilate into productive peer review participation.

During this research study, the participants not only conveyed an elevated level of self-confidence due to the resources and tools provided in the peer review tool kit, but they acknowledged a level of respect and confidence for the feedback that they received from peers who had utilized the tool kit as well. Through feedback provided in the one-on-one interviews and in their responses to the postterm questionnaire open-ended questions, the participants discussed peers’ use of the tool kit:

Skyler So, I think it did help people.

Salem I think they were a little more emboldened to give constructive criticism as opposed to platitudes, I like your work, I agree with you. etc. They were specifically looking to give helpful information.

Marlo Yes! I could read between the lines when I received criticism that my peers had read guidelines to provide constructive criticism and
they were trying to be encouraging yet honest about their opinions…Everything I read was so positive…looking around just to see what other people are saying and what I thought too was positive…it made a lot of sense.

Although this study offered a small number of study participants and the Cronbach’s alpha score of the three parts of the preterm and postterm questionnaires offered low and varied consistency, there were some positive takeaways in support of students’ perceptions with respect to peer review. In support of confidence in peers’ ability to provide useful feedback, the study participants provided a Likert scale response to the following statement in Part One of both questionnaires: The feedback my peers give me on my writing for this class will be useful. The mean score of the preterm questionnaire for Q5 (M=4.14) and the mean score of the postterm questionnaire for Q5 (M=4.43) offer positive implications. Following the intervention of the structured peer evaluation and the peer review tool kit innovation, students’ perception of the usefulness of peers’ feedback elevated slightly.

These converged quantitative and qualitative findings align with prior research by Barnard et al. (2015) which asserts that training can be provided to teach students how to deliver constructive feedback and to provide guidance and direction for those students who may be overly critical in their feedback and reviews (McMahon, 2010). Furthermore, research by Kirschner & Erkens (2006) asserts the use of cognitive and mind tools to improve the way learners in an educational environment think and work. These tools are represented through applications, computer programs, and technology that empower students to engage in critical thinking skills and higher-order learning
(Kirschner & Erkens, 2006). In direct alignment, the peer review tool kit in this study provided students with access to a collection of computer-based cognitive tools to increase learning, encourage conversation, and promote peer collaboration. In feedback provided during the one-on-one interviews and through responses to the postterm questionnaire open-ended questions, the study participants confirmed that specific resources and tools within the peer review tool kit helped to empower and support them as they engaged in peer review activities throughout the term:

Skyler  So, you have, you know, like what is a peer review and examples and like I think that was helpful…It made me more knowledgeable.

Eastyn  I really enjoyed the handout that had the diagram of the sandwich to remind us to preface the review with something positive, then offer constructive criticism, and then end on a high note.

Salem  Nothing was confusing, and I could, I could see the point of the different components…and just kind of put it in my pocket, if that makes sense…They added to my knowledge base when I was moving through the process.

Marlo  It’s kinda nice to like get some reinforcement. Also, to provide like substance, you know, and like examples and stuff like that. One point that I really liked…at the very end where it talks specifically about each one of the points for feedback … it’s almost like a list and it says something like, what are the weaknesses? What is
In my researcher’s handwritten interview notations, I recorded study participant comments that alluded specifically to the peer review tool kit design and included the provided resources and tools. In my documentation, I noted that Skyler indicated that the sections that were included in the peer review tool kit seemed correct and appropriate. In my recordings for Justice, I included that the student felt that the resources and tools within the tool kit helped the student zone in on specific parts during the peer review and further allowed Justice to feel more assertive. My handwritten researcher’s notes included references to Eastyn who disclosed being a bit intimidated by peer review but felt that the tool kit made it easier to participate. In addition, Eastyn found all aspects of the tool kit helpful, especially those resources and tools that shared examples of how to structure peer feedback. Both Skyler and Marlo referenced the REPAIR resource within the tool kit as innovative and helpful in providing feedback.

These research study findings sustain prior research results that confirm the opportunity to employ peer review training in support of student needs (Baker, 2016; Barnard et al., 2015; McMahon, 2010; Sridharan et al., 2018; Tricio et al., 2018). Moreover, these findings sustain research by Llado et al. (2014) which endorses the use of unique approaches and training in efforts to clarify peer review tasks and to deliver helpful tools and techniques. Similar to the peer review tool kit innovation that was utilized successfully during this study, prior research confirms that a multitude of opportunities exists to incorporate various peer review tools into the peer-to-peer learning environment (Mulder et al., 2014; O’Connor & McQuigge, 2013).
Collaborative community of learners realized through peer review participation. As a propensity exists for learners to experience isolation in online learning environments, opportunities to foster collaboration among online students become paramount (Conrad & Donaldson, 2004). When students fail to experience interaction and cooperation, both student success and retention can be impacted (Heyman, 2010; Lee & Choi, 2011, Willging & Johnson, 2009). Therefore, the opportunity for collaboration was a vital component of the structured peer evaluation system.

The participants in this study perceived that their peer review interactions evolved into a collaborative community of learners who were invested in supporting one another. During peer review, students have an opportunity to encounter intellectual, meaningful exchanges as they review the work of their peers, ask questions, deliver affirmative remarks, and note areas for needed improvement (Ching & Hsu, 2016; Gikandi & Morrow, 2016). During the one-on-one interview, Oakley noted the team approach to peer review as experienced through the structured system. Oakley stated, “This week we're going to look at these things as a group and help each other get better.”

In feedback shared in response to the postterm questionnaire open-ended questions, Skyler explained how peers provided supporting feedback and how the responses were positively perceived. Skyler stated, “Most explained their reasoning and thinking behind why they were making the suggestions they did, and this made me more confident in accepting and analyzing what they had to say.” Furthermore, in response to the one-on-one interview, Eastyn described the personal learning that occurred through the student’s own interaction with peers and the delivery of feedback. Eastyn explained,
“I know that through giving others peer review, it really did help me reflect on my own work and say, okay well this is something that I should actually do in my project.” By mirroring and practicing the skills that they observe during peer review, students are able to improve upon their work (Llado et al., 2014; Mulder et al., 2014).

During the one-on-one interview, Salem discussed the tool kit and the revelation that peers would be reviewing each other’s work. Salem stated, “The section that talks about making me mindful of an initial draft, knowing someone is going to be reading it was probably my biggest takeaway.” Salem added, “So, I feel like peer review helped me.” In my researcher’s handwritten interview notations, I recorded that Salem revealed that the realization that others would be reviewing work delivered a significant impact on the creation of one’s work on the front end.

In response to the postterm questionnaire open-ended questions, Marlo discussed the camaraderie that emerged and the merit that peer review produced. Marlo stated, “It was very interesting to find out about their projects and to be able to feel that our opinion was valued and useful.” Later, in the one-on-one interview, Marlo expressed feelings of excitement throughout the term due to the opportunity to view the draft work of peers. Marlo expressed an eagerness to compare and explained that in reviewing the work of peers, a realization occurred. During comparison to peers, Marlo saw opportunities to revise individual work and create additional improvements.

As shared in Chapter 4, Oakley described an interaction with a peer who was struggling during the Capstone term and considering the possibility of dropping the course. After their initial peer review interaction, Oakley secured resources and shared with the peer in the form of support. Following the encounter, Oakley explained that the
peer reached out through private email and future conversations ensued. Although the initial interaction began during peer review, future discussions transcended the discussion board environment. Oakley reflected on the peer interaction positively during the one-on-one interview, referring to the dialogue as “great.”

Although interpretations of the preterm and postterm questionnaires should be tentatively considered, based on a limited number of students and low and varied internal consistency outcomes (DeVellis, 2016), an increase in the mean scores across relative questions from preterm to postterm was observed. In support of the study participants’ perception of increased interaction between peers during peer review activities, Likert scale responses were provided to this statement by students in Part Two of both the preterm and postterm questionnaires: Peer review activities increase the interaction between my classmates and me. The mean score of the preterm questionnaire for Q18 ($M=4.57$) and the mean score of the postterm questionnaire for Q18 ($M=4.71$) offer encouraging connotations. Following the intervention of the structured peer evaluation, the mean score for this statement elevated slightly, indicating the study participants’ acknowledgment for the increased interaction that occurred during the Capstone term. Furthermore, students provided Likert scale responses to Q19, in Part Two of both the preterm and postterm questionnaires, which stated: Having a peer’s feedback on a draft allows me to create a better final product. The mean score of the preterm questionnaire for Q19 ($M=4.71$) and the mean score of the postterm questionnaire for Q19 ($M=4.86$) produced a slight elevation from preterm to postterm. This slight growth denotes an increased appreciation for the collaborative feedback that the study participants received across the community of learners within the Capstone classroom. Finally, one of the
statements in Part Two of the preterm and postterm questionnaire was positioned to
gauge students’ feelings regarding the ability for peer review to foster community in an
online learning environment. Study participants provided a Likert scale response to the
following statement, entitled Q25: Peer review increases the sense of community in an
online course. The mean score of the preterm questionnaire for Q25 ($M=4.00$) and the
mean score of the postterm questionnaire for Q25 ($M=4.57$) produced an increase from
preterm to postterm. This increase denotes the study participants’ strong comprehension
of the increase in community building that was experienced through the structured peer
evaluation system.

Lastly, in the review of my researcher’s handwritten interview notations, I noted
that a positive perception of engagement with peers was a common theme across those
entries as well. I recorded that Skyler shared a sense of enjoyment for the engagement
aspect and proclaimed it to be the best part of peer review. In my documentation, I noted
that through the use of the structured system, Oakley felt a responsibility to peers. Oakley
shared that this sense of commitment and connection to classmates prompted the
student’s participation. Oakley embodied the realization that peers were reliant on the
delivery of feedback. Furthermore, I recorded that Marlo felt that the feedback shared
among peers was kind and supportive and that peer review provided a pathway for
receiving good insight from others in the class.

These converged research study findings confirm students’ perceptions of the
collaborative learning that occurred during peer review as part of the structured peer
evaluation system. Furthermore, these study findings align with research by
Moneypenney et al. (2018) which asserts that as students connect and share their
understandings and experiences during peer review, a community of learners evolves. These research findings further sustain research that asserts that as students share experiences with one another and offer feedback and guidance, students can move from the role of timid bystander to one who is enthusiastically involved in a vigorous learning community (Dar et al., 2014; Gikandi & Morrow, 2016; Kearney, 2013).

Implications

This research offers implications for me as an Associate Dean of Communication, for Communication Capstone instructors at UNCM, and for scholarly practitioners and researchers. Three types of implications are considered in the following section and include (a) personal implications, (b) implications for online courses at UNCM, and (c) implications for future research.

Personal Implications

I began my doctoral journey and my pursuit of action research while in the role of a Lead Faculty member for Communication at UNCM. Halfway into my educational venture, I moved into the role of Associate Dean of Communication. While my position evolved within the university’s academic structure, the invaluable opportunity to continue to learn and grow through action research remained steadfast and unchanged. As a result of this research study, I have learned valuable lessons in support of my personal growth. I will discuss these in the following section and include (a) heightened expectations for student peer review participation, (b) vital role of learning theory in designing educational technology, and (c) invaluable experience of becoming an action research practitioner.
Heightened expectations for student peer review participation. Prior to conducting action research, I had strong concerns over the limited participation and low-quality engagement that students provided in peer review activities via the online GRAD COM Capstone learning environment. In my prior role as faculty and currently as dean, I was troubled that students were not reaping the full rewards of peer review through the experience of higher order thinking and the development of critical thinking skills. In addition, I found it troublesome that students were not developing the necessary competencies and skill sets in order to deliver peer feedback in support of future roles in the contemporary workplace. Although UNCM Capstone instructors, much like me, had consistently encouraged students to engage in peer review and had provided individualized guides and support, student involvement had remained inconsistent and feedback was often not of high quality.

To address this dilemma, I embraced action research in support of my doctoral studies and as a proper approach to systematic inquiry (Johnson, 2008; Riel, 2007). For contemporary practitioners, action research provides an opportunity to address research questions and pursue positive local change through dedicated and focused action (Johnson, 2008; Riel, 2007). Through action research, I sought to advance peer review practice, improve understanding of the current peer review practice, and further the present circumstances through which peer review took place (Carr & Kemmis, 1986).

The findings of my research study assert that through the implementation of a structured peer evaluation system, GRAD COM Capstone students were empowered to participate in peer review. Furthermore, through their shared experiences and the delivery of feedback to peers, the students moved from hesitant bystander to one who was actively
engaged in a robust community of learners (Dar et al., 2014; Gikandi & Morrow, 2016; Kearney, 2013). Similar to research by Dar et al. (2014), students in this research study confirmed that through a structured approach, peer review participation allowed them to overcome hesitation to ask questions and prompted them to engage with classmates in a highly social peer review setting. Based on these research study findings, my expectation for student peer review participation has been heightened. I realize that through a structured approach, scaffolded learning, and supportive tools and resources, students can obtain understanding and aptitude and be empowered to actively engage in peer review (Brown & Stefaniak, 2016). Moving forward, I will no longer accept low student participation in peer review and low-quality feedback as the anticipated standard for Capstone students. I will continue to work in a dedicated and spirited manner to empower my students so that they may reap the rewards of peer review engagement.

**Vital role of learning theory in designing educational technology.** Through their participation in the Capstone course, UNCM GRAD COM students possess the opportunity to benefit from peer review as they apply critical thinking skills and engage in higher order thinking. As they analyze, synthesize, and evaluate the work of peers, students host the capacity to demonstrate important skills and abilities through peer review participation and feedback delivery (Li et al., 2010; Lynch et al., 2012). To address the lower participation in peer review and the lower quality feedback provided by students across the Capstone learning environment, a structured peer evaluation system was implemented in support of this research study. An educational technology innovation, a peer review tool kit, was introduced to students as part of the structured intervention.
Although I possess a strong knowledge of communication theory, my knowledge of learning theory was limited prior to pursuing my doctoral degree. During my doctoral studies, I received the opportunity to become better informed of learning theory and the ways in which it can steer and impact research. Guided by Dr. Fatih Ari and my dissertation co-chair Dr. Michael Grant, I examined the opportunities to develop the peer review tool kit with alignment to a theoretical framework.

To design the peer review tool kit, I examined the status of the GRAD COM students as they arrived at the Capstone course. All of the students were similarly equipped with 30-33 credit hours of graduate work and had received comparable training up to this point to prepare them for the Capstone-level tasks. I considered Vygotsky’s (1978) work with students who possessed like mental development and the ability to manage problems individually, up to a certain degree of complexity. Moving forward, I realized that it was vital to design the tool kit innovation so that students of similar status could rise from independent problem-solving at the lower end of the zone of proximal development to a more advanced knowledge level and higher achievement (Vygotsky, 1978). To accomplish this, I provided the scaffolding of resources, tools, and guidance; this support was not only provided by me, as the instructor serving as a more knowledgeable other, but through the student interaction that occurs between peers (Vygotsky, 1978).

In alignment with the social constructivist theory of learning, it was essential to consider the promotion of collaborative exchange when designing the tool kit innovation. Students’ skills and knowledge are sculpted through their cultural interaction (Vygotsky, 1962). Furthermore, when students participate in peer review exchanges, they utilize the
tool of language; this social interaction encourages students to think and reason (Vygotsky, 1978). Therefore, by scaffolding supportive resources and tools for students in support of peer review participation, the Capstone learning environment could become a social setting where learners interact, and their cognitive development is motivated (Schunk, 2008).

In efforts to scaffold student learning and empower students, the design of the peer review tool kit was further guided by the Constructivist theory of cognitive apprenticeship and the aspects of modeling, coaching, scaffolding, articulation, reflection, and exploration (Collins et al., 1987). During the research study, students served as apprentices and utilized the tool kit to experience demonstrations, partial solutions, examples, guiding statements, and more. As students engaged with the tool kit, they were able to envision how the various resources and tools built off of one another while experiencing an elevation in their peer review competency.

Based on the findings of this research study, the students were able to utilize the peer review tool kit innovation to experience increased confidence and peer review empowerment. This was indicated through the 349 occurrences of social presence and the 249 occurrences of cognitive presence that were coded within the student post artifacts from the term’s Week Four and Week Seven peer review activity. Furthermore, the research study results validated that students felt responsible for peer review participation and that their confidence and abilities were elevated through their interaction with the peer review tool kit. By undergirding the tool kit innovation with theory, a learning pathway was created for students to construct knowledge through experience (Dewey, 1938; Ertmer & Newby, 2013; Jaramillo, 1996). Through the educational technology
intervention, students were positioned to move from the lower end of the zone of proximal development (Vygotsky, 1978) to a heightened reality based on individualized experiences, viewpoints, and reasoning (Jonassen, 1991; Jaramillo, 1996; Powell & Kalina, 2009). As I continue to integrate educational technology into my classroom in support of student success, I will remember to research, embrace, and integrate learning theory as a foundational requirement.

**Invaluable experience of becoming an action research practitioner.** Over the past eight years at UNCM, my GRAD COM students have remained a significant area of focus for me. As my aim is to see them succeed within the higher education learning environment, I have consistently pursued new and creative ways to educate, encourage, and engage my students. As an action researcher, I received a unique opportunity to become the link between theoretical research and the instruction that takes place within my classroom (Mertler, 2017).

In conducting action research for this study, I sought to align my work with researchers who had come before me and who had worked diligently to assist their organizations by introducing innovative approaches and implementing cutting-edge concepts and solutions (Kaplan, 1998). Action research was fitting for my research study as I followed the direction of higher education practitioners who, acting as action researchers, identified an issue and sought to address the problem with innovative technology (Wetzel et al., 2014). Similarly, I sought to address the issue of limited peer review participation and low-quality feedback by implementing a structured peer evaluation system and a supporting peer review tool kit. In doing so, I aligned my
research study with the methodical evaluation of a new teaching approach, one of the main focuses of action research (Johnson, 2008).

I found my experience with action research to be both enlightening and invigorating. Without fail, I am a solution-driven person and when an issue arises in my life, I seek to understand the problem and create a positive result. I seek this same approach in the classroom in support of my students. When I see that they are struggling, I act. I look for a way to empower my students and to provide them with a viable resolution. Therefore, the transition to action research seemed like a natural progression for me. Action research provided me with the appropriate vehicle to conduct research in efforts to create improvements within my local environment, with the ability to implement the necessary changes myself (Kemmis et al., 2014).

Action research is uniquely different from analytical and experimental forms of research, due to its action alignment. Although I used research literature to inform my problem of practice and my educational technology innovation, I moved beyond simply identifying a gap in the literature to instigating this research study. Due to the local context of my action research study, I used the literature to create resolutions, while contextualizing my research problem with larger ideas and visions (Beltzer & Ryan, 2013). As the action researcher for my study, I was able to conduct research on my own practice as an insider within the UNCM environment (Buss, 2018; Zambo & Isai, 2013). Furthermore, I was able to actively partake in all aspects of the research process as action research negates the use of an external expert for entering the research environment and recording data (Kemmis et al., 2014).
The ability to systematically work through a problem, propose a solution, execute research, and analyze the results was incredibly fulfilling for me as an instructor, a dean, and as an action researcher. Through action research, I was not only an educator but a participant and an observer in the process as well (Mertler, 2017). I became fully immersed in critical thinking and reflection while experiencing professional growth (Mertler, 2017). Although my career background is not grounded in academia, my work as an action research practitioner made me feel more strongly positioned within the higher education environment, as well as more knowledgeable and more respected.

Above all, action research allowed me to engage fully and use my knowledge, abilities, and creativity (Johnson, 2008) to identify an obstacle and create a solution in support of immediate improvement through local change (McMillan, 2004; Zambo, 2011).

As I move forward, I will look at the learning dilemmas and classroom quandaries that I encounter through a different lens. I will see opportunities to resolve these. As one who has performed action research, I know its value. I have the necessary skills and knowledge to continue to conduct action research as I continue in my role at UNCM. Through a cyclical approach of observance, reflection, and action (Johnson, 2008; Stringer, 2007), I will seek to make positive change within my local environment.

**Implications for Online Courses at the University of North Coast Muscari**

The findings of this research study will be supportive of my fellow professionals within the UNCM environment. I will share my results with stakeholders and include the (a) Liberal Arts Department, (b) GRAD COM Capstone Instructors, and the (c) Learning Science and Outcomes & Assessment Department.
**Liberal Arts Department.** Peer review opportunities are represented within some of the online courses across the various disciplines of the UNCM Liberal Arts Department. These peer review tasks, strategically placed within courses, deliver an opportunity to engage learners in formative assessment as they give and receive feedback (Mulder et al., 2014). As students engage in peer review, advanced mental processes are triggered. Students begin to focus on the assignment standards and grading criteria as they experience reflection during peer review activities (Man et al., 2018; McMahon, 2010). Above all, assessment-style opportunities should position students so that they are better able to handle their next challenge in a stronger manner (Boud, 2000).

Following the study completion, I will share the findings of my research study with the members of the Liberal Arts Department during a weekly online meeting. The results will be shared via a PowerPoint presentation held in Microsoft Teams. As I discuss the results with my fellow deans, it will be important for me to discuss my findings in a manner that will have relevance to my colleagues and the disciplines which they oversee. As an online university, we are consistently working to engage and retain students who are situated in remote locations. As much of the students’ work is conducted asynchronously, it is important to consider opportunities for students to interact and work in a collaborative manner. When students do not experience interaction and collaboration during online learning, their success and retention can suffer (Heyman, 2010; Lee & Choi, 2011, Willging & Johnson, 2009). As there is an inclination for online learners to experience isolation, collaboration is an important aspect to consider to cultivate interaction among students (Conrad & Donaldson, 2004). Research by Lee and Choi (2001) sustains that students who interact with the instructor, the course content,
and learning activities were more likely to complete and remain enrolled in online courses. Therefore, during course development and redevelopment, it becomes essential to consider opportunities for engagement.

As I share the results of my research with my peers, I will stress the positive outcomes in community building and camaraderie that the study participants experienced through their peer review interaction. Furthermore, I will discuss students’ comments regarding attention to detail in their draft work due to their understanding that peers would be reviewing their work, as well as their thoughts on final project improvements based on peer review feedback received. In addition to the critical thinking skills, higher order thinking, and deeper learning that students experience during peer review (Demirbilek, 2015; McMahon, 2010), the results of this research study sustain peer review as a strong option for an interactive, formative task within the online classroom.

As we develop curriculum and seek to create tasks that will prepare students for the contemporary workplace, it will be important to consider the integration of peer review opportunities as new courses are developed and current courses are redeveloped. As asserted by Gikandi and Morrow (2016), during peer review, online higher education students are encouraged to connect their thoughts to broader contexts such as the real-world workplace. As our goal is to prepare students for workplace readiness, peer review tasks provide a viable opportunity for job skill development. During peer review, students utilize research, writing, problem-solving, organization, and teamwork; these skills are vastly transferrable as students graduate and seek employment in professional environments, leadership positions, and as they continue to study and learn in the future.
Graduate Communication Capstone Instructors. As the Capstone instructors across GRAD COM classrooms strive to promote peer review participation each term, it will be paramount for me to provide an online presentation to this group to update them on the results of my research study. These instructors teach the same Capstone course that served as the crux of my research, and they are well versed with the issues surrounding a lack of student peer review participation, as well as the low-quality feedback that is often provided by students. During this session, I will provide a PowerPoint presentation and explain the study results and the implications for our discipline area, specifically the graduate-level Capstone course.

During the presentation, I will describe how the structured peer evaluation system, including the peer review tool kit, transformed the study participants’ feelings of anticipation and anxiety into a more focused and centered approach to learning. This insight will be particularly helpful for the Capstone instructors as students often relay feelings of nervousness, anxiety, and intimidation in support of the delivery and receipt of peer feedback (Demirbilek, 2015; Fotheringham & Mowat, 2012; Lee, 2016; Mulder et al., 2014). Due to a lack of experience with peer review, students can express shyness and strong discomfort (Dar et al., 2014; Elshami & Abdalla, 2017). Furthermore, they may experience high levels of unease as they worry over peers seeing their work and observing their weaknesses (Dar et al., 2014; Llado et al., 2014). At times, the Capstone students have refrained from participating in peer review at all. In turn, I will offer the study participants’ commentary regarding the various resources and tools provided to
them in the peer review tool kit and explain how these scaffolded, support measures helped empower the students and elevate their confidence levels in support of peer review engagement.

As the peer review tool kit was based on learning theory, it will be essential to explain this important foundation to the tool kit design. As we consider integrating the structured peer evaluation system and the peer review tool kit into the Capstone courses moving forward, it will be vital for the instructors to understand this theoretical alignment so that they can support their students with the structure, resources, and tools provided. During the presentation, I will explain how the Constructivist theory of cognitive apprenticeship influenced the design of the peer review tool kit innovation through the concepts of modeling, coaching, scaffolding, articulation, reflection, and exploration (Collins et al., 1987). As part of the cognitive apprenticeship approach, the expert models tasks and provides explanations as to what happens and why (Brown & Stefaniak, 2016; Collins, 1988). Similarly, the resources and tools provided in the tool kit were designed to align with each of the six cognitive apprenticeship methods and scaffold student learning in support of peer review participation. In the peer review tool kit model, the instructor, serving as the expert, coaches and models behaviors for the students, who are functioning as apprentices. Therefore, it will be essential for the Capstone instructors to fully understand their role as the expert in delivering assistance for task completion and empowering students to complete tasks that they would be unable to achieve otherwise (Collins, 1988). While the peer review tool kit will be provided to students, they will remain the expert in their individual classrooms and continue to coach, guide, and mentor the students in support of peer review. During my conversation with the Capstone
instructors, it will be vital for me to explain the ultimate goal of the cognitive apprenticeship approach. As students engage with the resources on their own and escalate their knowledge through a scaffolded approach, the need for the expert decreases (Brown & Stefaniak, 2016; Collins, 1988), and the students become empowered.

Lastly, as the study participants provided feedback in support of the structured peer evaluation system and peer review tool kit design improvements, it will be important to share these remarks with the Capstone instructors as we consider integrating the tool kit in future terms. I will provide each instructor with a link to the peer review tool kit and a listing of the study participants’ suggested improvements based on the research study results. Through the opportunity to provide feedback on the tool kit design, the study participants were able to review the tool kit fully and discuss possible improvements, while building a sense of investment and ownership in the design of peer review collateral (Baker, 2008). As a group, the Capstone instructors and I will discuss the opportunities for tool kit improvement while remaining true to the learning theory that guided the original tool kit design. This will allow us to validate the suggestions of the research study participants and use this feedback to further improve the educational technology innovation for upcoming terms. To promote continuous buy-in and acceptance of the peer review tool kit, it will be important to constantly accept student feedback and consider it fully as we work as a team to continue to hone and improve the peer review collateral (Gielen & De Wever, 2015).

**Learning Science and Outcomes & Assessment Department.** As a follow-up to my research study, I will schedule and hold a meeting with members of UNCM’s Learning Science and Outcomes & Assessment Department. Through a PowerPoint
presentation, I will convey the results of my research study in efforts to validate the importance of placing peer review tasks within GRAD COM classrooms as part of future course design and course redevelopment. In addition, I will discuss the possible integration of the peer review tool kit directly into the Capstone classroom as well as the potential introduction of the peer review tool kit or similar scaffolded resources into earlier GRAD COM classrooms that host peer review tasks.

The feedback from study participants confirmed that the peer review opportunities were beneficial as students were able to learn from others’ perceptions of their work as well as learn from viewing the work of their peers. The study participants noted improvements to their early drafts as well as to their final projects. These findings confirm the value of integrating peer review tasks into course design and further pursuing a structured approach. Furthermore, the research findings offered validation for the structured peer evaluation system that was implemented during this study. As asserted in research by Brutus et al. (2013), a structured approach to peer review provides a standardized system that allows students to train and become more proficient and more comfortable with peer review. As part of the structured approach to peer review, the study participants relayed experiences of both uniformity in feedback and peer review learning effectiveness (Brutus & Donia, 2010).

Based on the research study findings, the Capstone students found the peer review tool kit conducive to their success with peer review. The study participants conveyed that the scaffolded learning opportunities helped them better understand the importance of their peer review participation as they began to realize that others were depending on their feedback. Furthermore, the participants shared that the resources and tools in the
peer review tool kit improved their confidence, made them feel knowledgeable and better equipped to deliver feedback, and helped them consider that their feedback was valuable to others. By sharing these study findings with the Learning Science and Outcomes & Assessment team members, I can convey that the use of proactive training and scaffolded learning support helped Capstone students understand how to give and receive peer review feedback (Alnasser, 2018; Baker, 2016; Dar et al., 2014; McMahon, 2010). As students often experience an initial lack of confidence in support of peer review activities, I can validate that my research study findings further endorse the use of unique strategies and instruction to clarify peer review tasks and to deliver supportive resources and tools for students (Llado et al., 2014). During my conversation, I will suggest the integration of the tool kit into the Capstone learning environment. As students are not intrinsically motivated and may be motivated in differing ways (Hartnett et al., 2011), the integration of the tool kit can serve to promote their collaboration and interaction through peer review.

As shared through student feedback provided in this study, the introduction of the peer review tool kit into classes that occur earlier in the course sequence would allow students to gain knowledge and peer review proficiency at an earlier stage of their graduate journey. In speaking with the Learning Science and Outcomes & Assessment team members, it will be important to convey this study participant feedback as we consider introducing the tool kit at an earlier point in the graduate learning pathway. This early introduction of training can teach students to work collaboratively, assess their peers, and deliver proficient feedback (Sridharan et al., 2018). Furthermore, students’ confidence, competence, and accuracy can continue to evolve as they develop their peer
review abilities and complete multiple reviews (Elshami & Abdalla, 2017; Jeffery et al., 2016).

**Implications for Future Research**

The findings of my research study offer implications for future research. While I am gratified with the research that I completed as a new action research practitioner, there are aspects that I would consider if I were to move forward with a second cycle of research. This would allow me to compare and contrast cycles and determine additional implications for improvement and further research. Furthermore, these suggested implications may prove supportive of online higher education practitioners and researchers who seek to integrate educational technology in support of peer review participation and proficiency. These implications will be discussed in the following section and include (a) intervention placed earlier in the graduate learning pathway, (b) assigned peer review partners, and (c) additional resources in support of overcoming anxiety.

**Intervention placed earlier in the graduate learning pathway.** The intervention in this research study was positioned in the final course of the GRAD COM program at UNCM. The Capstone offers a culminating experience for students as they utilize their prior credit completion to demonstrate proficiency and complete their final project. Due to the consistently low level of student participation in peer review and the low quality of feedback provided, the structured peer evaluation system and supporting peer review tool kit were introduced during the Capstone term.

Based on feedback provided by the study participants, I would like to implement this study at an earlier stage in the GRAD COM learning pathway and research this
placement for impact and student perception. As the Capstone is the twelfth and final course of the program, it could prove beneficial to implement, research, and compare the placement of the structured peer evaluation system and the peer review tool kit innovation in one of the courses offered at the beginning of the students’ academic journey. The GRAD COM program currently offers two gateway courses for new students as they enter the master’s program. Both gateway courses offer a peer review activity, producing the option to integrate the structured approach and the peer review tool kit into either course. I would like to assess the difference in impact and perception between entry-level GRAD COM students and those students who have arrived at the Capstone stage.

In addition, the number of reviews conducted by a peer reviewer has a significant impact on the accuracy of peer review (Jeffery et al., 2016). Furthermore, as students complete numerous peer review assessments, they feel less anxious (Lee, 2016) and their peer assessments begin to align more closely with those conducted by instructors (Dar et al., 2014; Jeffery et al., 2016). Therefore, the placement of the structured peer evaluation system and the peer review tool kit innovation could offer strong implications for students who learn peer review competencies at an early stage of the GRAD COM program and continue to hone and develop these abilities as they move forward during their graduate degree pursuit.

**Assigned peer review partners.** The participants in this research study received an opportunity to freely choose which peers’ work to review during the Week Four and Week Seven peer review activities. Following the study completion, one student noted that this freedom made the process less stressful. Other students suggested that peer
review partners be assigned as a viable option and a study improvement. In addition, the feedback from the research study findings indicated that students approached their selection of peer work for review in different ways. Some students returned to the same student during the second round of peer review in Week Seven. Other students noted that they looked for students who had not yet received feedback, and they posted feedback to those students to ensure that all students received feedback support.

Based on feedback provided by the study participants, I would like to implement this study in a future GRAD COM Capstone course and assign peer review partners. It could prove beneficial to implement, research, and compare the impact of the structured peer evaluation system and the students’ perceptions of the structured peer evaluation when peer review partners are designated by the instructor as opposed to my recent research study where students received the freedom to choose their own peer review recipients.

Prior research sustains that students can be placed into dyads by faculty members (Livsey & Lavender-Stott, 2015) or given the opportunity to choose a partner of choice (Barnard et al., 2015). Pozzi et al. (2016) asserted that students who were placed into dyads were observed to be more enthusiastically engaged than those students who were put into group settings. These research findings suggest that students may feel an increased responsibility when supporting one peer as opposed to the responsibility felt when assigned to a group; when students fail to participate in peer review as part of a dyad arrangement, their absence becomes much more obvious (Pozzi et al., 2016). Therefore, the assignment of a one-on-one peer review partner, as part of a dyad
grouping, could offer strong implications for this research in support of study participants who prefer an assigned peer review arrangement.

**Additional resources in support of overcoming anxiety.** Of the three themes that were established as part of qualitative analysis conducted in this research study, two of the themes aligned strongly to students’ feelings and beliefs surrounding peer review. Theme I included student confidence and empowerment while Theme III incorporated student anticipation and anxiety. As research confirms that students often experience feelings of lower confidence, trepidation, and anxiety surrounding peer review involvement (Demirbilek, 2015; Fotheringham & Mowat, 2012; Lee, 2016; Mulder et al., 2014), these concerns were considered during the creation of the peer review tool kit in efforts to promote student confidence and to deliver empowerment. Even so, study participant feedback, received after the conclusion of the study, suggested the inclusion of additional resources to address student anxiety. Furthermore, study participant feedback recommended the inclusion of video clips or statements from former students with tips and suggestions centered around their positive peer review experiences.

Based on the feedback received, I would like to implement this study in a future GRAD COM Capstone course and develop a new and additional section of the peer review tool kit that is dedicated specifically to confidence-building resources and tools. In addition, this section would include peer testimonials from former students with tips for peer review success, as well as practice exercises to be completed as rehearsal so that students are well-prepared, confident, and ready to engage in peer review participation (Hamer et al., 2015; Nagori & Cooper, 2014).
Due to students’ initial shyness and discomfort surrounding peer review (Dar et al., 2014; Elshami & Abdalla, 2017), it could prove beneficial to implement, research, and compare the results of a structured peer evaluation system with the addition of this newly enhanced peer review tool kit with a section explicitly dedicated to the promotion of self-confidence and the reduction of anxiousness. In alignment with the Constructivist theory of cognitive apprenticeship, these additional resources and tools would be integrated into the existing tool kit through the methods of modeling, coaching, and scaffolding (Brown & Stefaniak, 2016). The new section, based on the theory of cognitive apprenticeship, would serve to change student behaviors into authentic practices through planned activities and social interaction (Brown et al., 1989) while empowering students to mirror and imitate the skills and competencies that they observe (Llado et al., 2014; Mulder et al., 2014).

**Limitations**

This study offered limitations that could be improved upon in future research. These limitations are shared in the following section and include (a) small sample size, (b) lack of internal access to educational technology innovation, and (c) researcher bias.

**Small Sample Size**

Action research provides a process for creating educational improvements by incorporating change within a localized environment (Mertler, 2017). Through my research study, I sought to implement and evaluate the impact of a structured online peer evaluation system for GRAD COM Capstone students at UNCM. Due to the capped number of Capstone students per classroom each term, the resulting number of consenting study participants for my study was limited to seven students. While a limited
number of participants is suitable for qualitative data collection, a larger number of participants is needed to conduct meaningful statistical testing and analysis (Creswell, 2014). Although all seven students participated in every quantitative aspect of the preterm and postterm questionnaires (Part One, Part Two, and Part Three), there were not enough study participants to make strong inferences about the population based on the data collected (Mertler, 2017). Furthermore, the small sample size may have offered an impact on the Cronbach’s alpha outcome for Part Three of both the preterm questionnaire and the postterm questionnaire. As Part Three of both questionnaires offered a negative average covariance among items, the small number of items in this part of each questionnaire, as well as the small sample size, most likely offered an impact on this internal consistency outcome (Nichols, 1999).

**Lack of Internal Access to Educational Technology Innovation**

In support of the structured peer evaluation system implemented during this research study, a supporting peer review tool kit innovation was created and provided to promote student participation and to encourage higher quality feedback. The peer review tool kit was housed externally in Articulate Rise. As with cognitive and mind tools in education, computer programs, technology, and applications empower participants to engage in higher-order thinking and to employ critical thinking skills (Kirschner & Erkens, 2006). Accessible through external environments and computer-based methods, cognitive and mind tools engage students by enabling and extending learning (Jonassen, 1992).

During this study, the participants accessed the peer review tool kit innovation via the Internet, through a link provided in the weekly announcements of Weeks Four and
Seven. Unlike other learning resources housed within the UNCM Capstone course, the tool kit was not located within the internal learning environment. The students clicked a link to launch and display the educational technology innovation on their computer, laptop, tablet, or mobile screens. This was a limitation of the study as the tool kit did not reside directly in the course setting alongside the other Capstone learning resources. By placing the peer review tool kit within the course, students would have received stronger ease of access to the unit. In addition, students who may not have read the weekly announcements with the provided link to the tool kit would have retained easy access to the unit if the tool kit had been housed within the Capstone course LMS structure.

**Researcher Bias**

As a champion for educational technology and the success of my Capstone students, the potential for researcher bias was a limitation of this study. My data collection and analysis may have been influenced by my positionality as an insider, observing my own classroom and students (Herr & Anderson, 2005; Hinchey, 2008). Although this insider perspective provided me with exclusive access to the localized, living environment (Coghlan et al., 2016; Efron & Ravid, 2013), it was imperative that I remained vigilant and constantly aware of my potential for researcher bias.

In efforts to ensure the essential components of rigor and trustworthiness throughout my research study progression (Amankwaa, 2016), I instituted strategic approaches to safeguard the accuracy and reliability of my findings (Creswell, 2014). These dedicated efforts included reflexivity and self-reflection (Mertler, 2017), the consistent monitoring of my emerging assertions (Guba & Lincoln, 1989), and the utilization of triangulation to deliver a view of the research situation from all angles.
The use of rich, thick descriptions, member checking, peer debriefing, an audit trail, and the inclusion of negative data served to further sustain my efforts in support of rigor and trustworthiness (Creswell, 2014, Mertler, 2017).

Lastly, it was important for me to distance my thoughts and experiences from those of the study participants to avoid having my views influence the research analysis (Ismail, 2018; Kanuha, 2000). Before and during the research study, I refrained from sharing my views on the research topic in efforts to limit my influence on the study participants’ responses (Mercer, 2007). Even so, there is the possibility that my presence during the data collection offered an influence on the study participants’ feedback and their willingness to be open and honest in their responses.

**Closing Thoughts**

The enrollment of students in online courses continues to advance as digital technology expands the limits of traditional teaching and learning (Cheng & Chau, 2016). The utilization of technology for learning offers opportunities for students to access and complete their work from any location and at any time (Balaji & Chakrabarti, 2010; Boston, 2010; Isman et al., 2004; Lee & Choi, 2011) while enjoying flexibility, freedom, and convenience (Boston, 2010; Purarjomandlangrudi et al., 2016; Shay & Rees, 2004; Sorensen & Donovan, 2017). Even so, challenges exist for online learners and the universities which provide these educational opportunities. When students feel that collaboration and interaction opportunities are absent from the online environment, both their success and retention can suffer (Heyman, 2010; Lee & Choi, 2011, Willging & Johnson, 2009). Feelings of learner isolation and a lack of student success are more prevalent in online courses; therefore, opportunities for collaboration and student
engagement can be integrated into courses to promote learning (Conrad & Donaldson, 2004). Peer review activities provide an opportunity for students to employ critical thinking skills and higher-order thinking (Demirbilek, 2015; McMahon, 2010) within an engaging, collaborative learning environment (Moneypenny et al., 2018).

At UNCM, students offered limited participation and low-quality engagement in routine online peer review activities across the GRAD COM Capstone course each term. In alignment with assertions by researchers, the Capstone students consistently relayed feelings of anxiety and dread as they contemplated and approached peer review participation (Demirbilek, 2015; Fotheringham & Mowat, 2012; Lee, 2016; Mulder et al., 2014). As part of this research study, a structured peer evaluation system and supporting peer review tool kit were implemented into the online classroom and evaluated in efforts to encourage student participation and to promote the delivery of high-quality feedback. As part of a scaffolded learning approach, helpful resources and tools were provided to the Capstone students through the cognitive apprenticeship methods of modeling, coaching, scaffolding, articulation, reflection, and exploration (Brown & Stefaniak, 2016). As a result of the research study intervention, students experienced elevated levels of confidence, in both themselves and their classmates, as well as feelings of peer review empowerment. During their peer review interaction, a collaborative community of learners emerged, with students noting an appreciation of the feedback received and gratitude for the opportunity to engage with one another. Lastly, through the implementation of the structured peer evaluation system, students transformed their initial fears and anxiety for peer review into a focused approach to learning.
My doctoral journey, my experience as an action researcher, and the findings of this study have been transformational for me. As a strong proponent of online learning and educational technology and as one who possesses dedicated respect for research and theory, I have received the opportunity to creatively combine these aspects in support of student achievement. Moving forward, I will continue to review and relentlessly research opportunities to impact student success within the online learning environment. In striving to empower my students, I have become empowered as well.
REFERENCES


https://doi.org/10.1177/1052562907310489

https://doi.org/10.1177/1469787416654794


http://dx.doi.org/10.1080/03075079.2014.881343


Cheltenham, UK: Edward Elgar Publishing Limited.


https://doi.org/10.1080/713695728


https://doi.org/10.1007/s11423-015-9421-6


https://doi.org/10.3102/0013189X018001032


Psychometrika, 16(3), 297-334.


262

Retrieved from http://books.google.com


https://doi.org/10.1016/j.compedu.2016.02.004

https://doi.org/10.1016/j.compedu.2011.08.003


https://doi.org/10.1007/978-3-642-77222-1_1

https://doi.org/10.1093/sw/45.5.439


Nichols, D. P. (1999). My coefficient a is negative! *Keywords*, (68), 1-2.


Student A. (2017, November 8). *Thoughts on peer review*. Message posted to COM 690 Capstone Week Ten Discussion Board at University of North Coast Muscari website: https://bb.snhu.edu

Student B. (2017, November 7). *Farewell!* Message posted to COM 690 Capstone Week Ten Discussion Board at University of North Coast Muscari website: https://bb.snhu.edu

Student C. (2017, November 4). *Peer collaboration*. Message posted to COM 690 Capstone Week Ten Discussion Board at University of North Coast Muscari website: https://bb.snhu.edu

Student D. (2017, November 12). *Professional reflection*. Message posted to COM 690 Capstone Week Ten Discussion Board at University of North Coast Muscari website: https://bb.snhu.edu


University of North Coast Muscari. (2019b). Online master’s degree MA in communication. Retrieved from https://www.snhu.edu/online-degrees/masters/ma-in-communication


INSTITUTIONAL REVIEW BOARD APPROVALS

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
APPROVAL LETTER for EXEMPT REVIEW

Karen Wilkinson
Salisbury, NC 28144

Re: Pro0001634

Dear Karen Wilkinson:

This is to certify that the research study, Evaluating Impact and Perceived Value of a Structured Online Peer Evaluation System among Graduate Communication Capstone Students through Action Research, was reviewed in accordance with 45 CFR 46.104(d)(1), the study received an exemption from Human Research Subject Regulations on 12/12/2012. No further action or Institutional Review Board (IRB) oversight is required, as long as the study remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research study could result in a reclassification of the study and further review by the IRB.

Because this study was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

All research-related records are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Lisa Johnson at hlajohnson@sc.edu or (803) 777-9510.

Sincerely,

Lisa M. Johnson
ORC Assistant Director and IRB Manager

Figure A.1. University of South Carolina IRB approval letter, page 1.
Figure A.2. University of North Coast Muscari IRB approval letter, page 2.
to implement and evaluate the impact of a structured online peer evaluation system. An initial research question asks, “How does using a structured peer evaluation system impact the peer review process in online Graduate Communication Capstone classrooms?” A second research question seeks to discover, “What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in Graduate Communication Capstone classrooms?”

This study incorporates an interactive innovation that delivers training, tools, rubrics, and more. Data collection offers pre- and posttests, student artifacts, field notes, and interviews from approximately 14 students. Data analysis provides a triangulation mixed methods approach with findings integrated via a convergent process (Mertler, 2017).

References


Objectives and Hypotheses:

The purpose of this action research will be to implement and evaluate the impact of a structured online peer evaluation system for Graduate Communication Capstone students in... The following research questions will guide the current study for this project:

1. How does using a structured peer evaluation system impact the peer review process in online Graduate Communication Capstone classrooms?
2. What are the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity in Graduate Communication Capstone classrooms?
Figure A.4. University of North Coast Muscari IRB approval letter, page 4.
APPENDIX B

GRAD COM 690 – CAPSTONE PEER REVIEW INSTITUTIONAL REVIEW BOARD (IRB) CONSENT FORM

CONSENT TO BE A RESEARCH SUBJECT

Study Title: Evaluating Impact and Perception of a Structured Online Peer Evaluation System among Graduate Communication Capstone Students through Action Research

Principal Investigator: Karen Wilkinson, Associate Dean of Liberal Arts (Communication)

This Informed Consent Form has two parts:
• Information Sheet (to share information about the study with you)
• Certificate of Consent (for your signature if you choose to participate)

You are being given a copy of the full Informed Consent Form.

Part I: Information Sheet

Introduction

You are invited to volunteer for a research study conducted by Karen Wilkinson, the Associate Dean of Liberal Arts for Communication at Southern New Hampshire University. I am an instructor in the Communication program at SNHU and a doctoral student at the University of South Carolina. The purpose of this study is to research how using a structured peer evaluation system impacts the peer review process in online Graduate Communication Capstone classrooms at SNHU. In addition, the study seeks to understand the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity. You are being asked to consent to participate in this study because you will be a Graduate Communication Capstone student during the 20TW3 term. This study is being conducted at SNHU, via the College of Online and Continuing Education, and it will include approximately 14 Capstone students.
The activities, resources, and tools that you experience within the structured peer evaluation system of the Capstone learning environment will be included in this research study during the 20TW3 term (January 20, 2020 – March 29, 2020). If you agree to participate in this research, you will be invited to share your experiences and perceptions regarding the structured peer evaluation system.

**Purpose of the research**

The purpose of this study is to research how using a structured peer evaluation system impacts the peer review process in online Graduate Communication Capstone classrooms at SNHU. In addition, the study seeks to understand the perceptions of students regarding a structured peer evaluation system in support of online asynchronous peer review activity.

**Type of Research Intervention**

This research will involve your participation in a preterm and postterm questionnaire. Each questionnaire will take about 10 minutes to complete. Select students from the course will be asked to participate in a short 20-minute recorded interview following the conclusion of the term. Students will be selected for interview participation based on students’ high or low level of peer review activity, students’ use of the structured peer evaluation system and its tools during the provision of feedback, or students’ discussed lack of appreciation for the value and benefits of peer review. In addition, after the conclusion of the term, the researcher will observe your peer review participation in Weeks Four and Seven of the course. The researcher will observe and record peer review activity based on individual student participation, conversation patterns, student interaction, average number of posts per student, depth of reviewer posts (length), number of peer works reviewed and commented on by each reviewer, and other unique observances that the researcher makes during this observation. In addition, the researcher will use a second observation to observe student peer review activity for social and cognitive presences as evaluated through a community of inquiry (COI) assessment process. COI observations will include the following categories and presence indicators. Social presence will be identified as follows: open communication through risk-free expression, group cohesion through encouraging collaboration, and affective expressions through the use of emoticons. Cognitive presence will be identified as follows: a triggering event through the sense of puzzlement, exploration through information exchange, integration through connecting of ideas, and resolution through the application of new ideas. All data collections by the researcher (including preterm and postterm surveys, interviews, and observations of your work) will take place before and after the active term.

**Participant Selection**

You are being asked to consent to participate in this study because you will be a Graduate Communication Capstone student during the 20TW3 term.
Voluntary Participation

Participation in this research study is voluntary. You are free not to participate by excluding your data or declining to participate in the data collections. Participation or non-participation will have no effect on your grade or your relationship with the instructor in any way. You may also stop participating at any time, for any reason without negative consequences and your grade in the course or relationship with the instructor will not be affected. In the event that you decide to withdraw from this study and have your data excluded from the data analyses, please call or email the principal researcher listed on this form and your data will not be included in the study analyses. Analysis of collected data via surveys, interviews, and observations will take place after the end of the term.

Procedures

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

1. Prior to the beginning of the term, you will be asked to complete and submit a preterm questionnaire regarding your perceptions of peer review.

2. After the conclusion of the Graduate Communication Capstone course for 20TW3, the researcher will observe and document your engagement in the course and peer review classroom activities. The researcher is interested in understanding how a structured peer evaluation system will impact the peer review engagement and activity levels of Graduate Communication Capstone students. Your Week Four and Week Seven peer review activity will be observed and documented after the course has ended. Observations will include field note creation by the researcher as well as COI assessment as outlined in the Type of Research Intervention section above.

3. Following the end of the term, you will be asked to complete and submit a postterm questionnaire.

4. Following the conclusion of the term, select students will be invited to participate in short, one-on-one recorded interviews with the researcher for approximately 20 minutes each. The researcher is interested in learning the perceptions of students regarding the structured peer evaluation system as an educational technology innovation that has been introduced into the Graduate Communication Capstone classrooms at SNHU. If selected and contacted for participation in an interview, you may agree to participate or refrain from participating without negative consequences. Selection of interview participants will be purposeful and based upon the predetermined student selection protocol, designed by the researcher to ensure a range of diverse responses across study participants. The interview participant selection criteria include the following: students who exhibit a high level of peer review activity, students who exhibit a low level of peer review activity, students who have clearly utilized the structured peer evaluation system and its tools during their provision of feedback, or students who openly discuss a low level of appreciation for the value and benefits of peer review.
Duration

The duration of the study (for students) involves twenty total weeks. This includes two weeks prior to the term kick-off (preterm questionnaire issued to consenting students), ten weeks during the active term (students’ engagement in the active Capstone course), and eight weeks after the end of the term with the postterm questionnaire issued to consenting students, observations by the researcher (Week Four and Week Seven peer review activity), and possible participation in a recorded interview opportunity for select students.

Risks

There is the potential for greater than minimal (moderate) concern by students regarding their participation or non-participation in the study or their potential withdrawal from the study. You can refrain from study participation or discontinue participating in the study at any time if you choose to do so without fear of negative consequences, impact to your grades, or impact on your relationship with the instructor. All data collection will take place before and after the term and all data analysis will take place after the term has concluded to assist in minimalizing students’ concerns.

As with normal online course activity, you may tire of filling out two separate surveys or have concern about being audio recorded if chosen for and consenting to an interview opportunity. You may choose not to participate or refrain from being interviewed without fear of negative consequences, impact to your grades, or impact to your relationship with the instructor.

The resources, tools, and activities included in the structured peer evaluation system are intended to be engaging for all students. The researcher foresees no risks to study participants in using those tools beyond those that are normally encountered when completing activities or using the resources provided in an online classroom.

Benefits

You may benefit from the opportunity to learn more about the peer review concept through participation.

Compensation

There will be no costs to you for participating in this study. You will not be paid for participating in this study.
Confidentiality

Participation is confidential. Study information will be kept in a secure location under lock and key. The results of the study may be published or presented at professional meetings, but your identity will not be revealed. Participation is strictly confidential, which means that no one will know what your individual answers are or how they impacted the final study results.

All data will remain confidential and consenting participant identities will be protected through the researcher’s use of pseudonyms and the inclusion of limited details. A list connecting the student name to the pseudonym will be kept in a locked file in the locked office of the researcher. When the study is completed and the data have been analyzed, reported, and published, this list will be destroyed. Participant names will not be used in any report. The use of pseudonyms will be noted in the research methodology.

All interview recordings will be transferred to a password protected external hard drive and stored in a locked file in the locked office of the researcher. No interview recording of the participant will be made public and once data from the interview recordings are collected and analyzed and the study has been published, the original recordings will be destroyed.

Sharing the Results

All information will remain confidential and study participant identities will not be revealed as results are shared. Following the analysis of the study findings, the study results will be shared with the study participants. The results may be shared in learning environments, during departmental meetings at [ ], and with other instructors through [ ]. The results may be shared in university settings, at academic or professional conferences, or published in academic publications or scholarly journals.

Right to Refuse or Withdraw

Participation in this research study is voluntary. You are free not to participate by excluding your data or declining to participate in the data collections. You may also stop participating at any time, for any reason without negative consequences and your grade in the course will not be affected. In the event that you do withdraw from this study, the information you have already provided will be kept in a confidential manner. If you wish to withdraw from the study, please call or email the principal researcher listed on this form and your data will not be included in the study analyses. Analysis of collected data via surveys, interviews, and observations will take place after the conclusion of the term.

Who to Contact

If I have any questions about your participation in this study, contact Principal Research Investigator Karen Wilkinson at [ ] or by email at [ ].
If you have additional questions about the study, you may contact Dr. Michael M. Grant, University of South Carolina Faculty Advisor and Dissertation Chair, at 803-777-6176 or grantmm3@mailbox.sc.edu. 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.

In addition to review and approval by the University of South Carolina IRB, this proposal has been reviewed and approved by the [SNHU COCE IRB], which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the [SNHU IRB], contact [coceirb@snhu.edu].

Part II: Certificate of Consent

I have been invited to participate in a research study to evaluate the impact of a structured peer evaluation system in the online Graduate Communication Capstone classroom at [SNHU]. The study seeks to understand how using a structured peer evaluation system impacts the peer review process and to understand my perceptions of the system in support of online asynchronous peer review activity. I have been given a chance to email the principal researcher (Karen Wilkinson) with questions about this research study.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about the study and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study. I have retained a copy of this form for my own records.

If you wish to participate, you should sign below (electronic or physical signature) and return this form to k.wilkinson@snhu.edu via email. Thank you for your consideration.

__________________________________________  __________________________
Signature of Subject / Participant                   Date

__________________________________________  __________________________
Researcher’s Signature                             Date
APPENDIX C

GRAD COM 690 – CAPSTONE PEER REVIEW PRETERM

QUESTIONNAIRE

Please rate your level of agreement with each of the following statements by using the key outlined below:

- Strongly Agree (SA)
- Agree (A)
- Neither Agree nor Disagree (N)
- Disagree (D)
- Strongly Disagree (SD)

Part One: Feedback - 10 Questions

Usefulness of own feedback
1. The feedback I give my peers on their work for this class will be useful. SA A N D SD

Positive nature of own feedback
2. The feedback I give my peers on their work will likely be too negative or critical [Agreement reverse coded for this item]. SA A N D SD

Validity of own feedback
3. The feedback I give a peer on his/her paper probably will be similar to the feedback that other peers give on the same work.

**Reliability of own feedback**

4. If I had to give feedback several months from now on the same papers for which I will give feedback in this class, I would probably give similar feedback.

**Usefulness of peers’ feedback**

5. The feedback my peers give me on my writing for this class will be useful.

**Positive nature of peers’ feedback**

6. The feedback peers give me on my writing will likely be too negative or critical. [Agreement reverse coded for this item].

**Validity of peers’ feedback**

7. The feedback I get from one peer will be similar to the feedback I get from other peers on the same paper.

**Reliability of peers’ feedback**

8. If my peers gave me feedback several months from now on the same work, they will examine for this class, they would probably give me similar feedback.

**Fairness of peers’ feedback**

9. Peers will give me a fair grade on my writing.
10. I will receive a fair assessment of my work through the peer review given to me by multiple peers.

**Part Two: Attitudes - 17 Questions**

11. Peer review is helpful to my learning.

12. Peer review makes me better understand an assignment’s requirements.

13. Peer review activities can improve my skills in verbal communication.

14. Peer review activities can improve my skills in written communication.

15. Peer review activities motivate me to learn.

16. Peer review activities increase the interaction between my teacher and me.

17. Peer review helps me develop a sense of participation in a course.

18. Peer review activities increase the interaction between my classmates and me.

19. Having a peer’s feedback on a draft allows me to create a better final product.
20. Receiving feedback from my peers can be just as valuable as receiving feedback from my professor. SA A N D SD

21. Submitting a project to my peers can be intimidating. SA A N D SD

22. I think students should not be responsible for making assessments. SA A N D SD

23. Peer review is time-consuming. SA A N D SD

24. My comments given to other classmates are affected by comments given to me. SA A N D SD

25. Peer review increases the sense of community in an online course. SA A N D SD

26. Online peer review activities can be time-saving. SA A N D SD

27. Online course peer review can be as effective as face-to-face course peer review. SA A N D SD

Part Three: Understanding and Action - 3 Questions

28. Peer review activities help me understand what other classmates think. SA A N D SD

29. The teacher should develop criteria (such as a rubric or guide) for students completing peer review. SA A N D SD

30. Students should participate in the development of criteria (such as a guide or a rubric) for peer review. SA A N D SD
APPENDIX D

GRAD COM 690 – CAPSTONE PEER REVIEW: RESEARCHER’S

OBSERVATIONAL FIELD NOTES DOCUMENT

Capstone Course Number: ______________ Course Section: ______________

Instructor: _____________________________________________

Date of Observation: _______________ Day: _________ Term Week: _____________

Beginning Time of Observation: __________ Ending Time of Observation: __________

Observational Field Note Protocol for Research Question 1

- Observation of individual student participation
- Conversation patterns (Do students gravitate toward original posts where response posts are recorded, and conversational activity is already underway or do students gravitate toward original posts where there is no conversation yet recorded?)
- Student interaction (Do students respond to original posts as they are shared [within 24 hours] or is there a lag in the recorded peer review response time?)
- Average number of posts per student
- Depth of reviewer posts (length), based on a 100-word cut-off measuring parameter
- Number of peer works reviewed and commented on by each reviewer
- Unique observances

Researcher Observances and Field Notes:
APPENDIX E

GRAD COM 690 – RESEARCHER’S INTERVIEW SCRIPT AND HANDWRITTEN NOTATION DOCUMENT

Capstone Course Number: _________________ Course Section: _________________

Student Name:____________________________________________________________

Email Address: _____________________________________________________

Additional Contact Information: _____________________________________________

Course Section Instructor: __________________________________________________

Date of Interview: _____________  Day: _____________  Term Week: _____________

Beginning Time of Interview: ___________  Ending Time of Interview: ____________

Interview Conducted:  Skype_____  Phone Call ______  Other _________________

Interview Script

Introduction: Hi, Name. Thank you for your willingness to participate in the interview aspect of this study. Before we get started, I want to once again share that this interview will be recorded. As you have noted that this is acceptable, I will be turning on the recording at this time. If you will please state your first and last name and state the words, “I consent to this recording,” I would appreciate it greatly. Thank you.

As I shared with you when I outreached you for potential participation in this interview, my study seeks to understand how using a structured peer evaluation system can impact the peer review process in online Graduate Communication Capstone classrooms at
as well as learn the perceptions of students regarding the structured peer evaluation system innovation. The aim of this research is to understand if there is value in providing a structured approach to peer review activity within the Graduate Communication Capstone classroom. Our interview today will last approximately 20 minutes during which time I will be asking you about your perceptions of the structured peer evaluation system, your thoughts regarding its design, its impact on your participation in peer review, and its capacity to build confidence in your peer review activity as well as confidence in the feedback that you received from your peers. Lastly, we’ll have some time for you to share any additional thoughts or considerations regarding the structured peer evaluation system in support of the peer review activity that you encountered this term in the Capstone. Do you have any questions before we get started?

Ok, great. Let’s get started.

1) **Initial Perceptions and Design**

What are your initial perceptions regarding the structured peer evaluation system that was provided to assist with peer review activities this term?

*Researcher Notations:*

a. Was the design of the structured peer evaluation system conducive to your participation in peer review activities this term? If so, how? If not, why not?

*Researcher Notations:*
b. Was there anything missing from the structured peer evaluation system design that you would like to see added? If so, what would you like added and why?

*Researcher Notations:*

\[\text{c. How did you decide whether or not to use the resources and tools that were provided in the structured peer evaluation system?}

*Researcher Notations:*

\[\text{d. Were there any resources or tools provided in the structured peer evaluation system that you found to be particularly helpful? If so, which ones were they and why were they helpful?}

*Researcher Notations:*

\[\text{e. Were there any resources or tools in the structured peer evaluation system that you found to be confusing or not helpful? If so, which ones were they and why?}

*Researcher Notations:*

2) **Impact on Participation**

What was the overall impact on your peer review participation if you chose to use the structured peer evaluation system?

*Researcher Notations:*
a. Did the use of the structured peer evaluation system impact your ability to give feedback in any way? Please explain how it did or did not impact your ability to provide feedback for your peers.

*Researcher Notations:*

b. Did the use of the structured peer evaluation system offer an impact on your ability to receive and accept feedback posted to your work by peers? Please explain how it did or did not impact your ability to receive and accept feedback.

*Researcher Notations:*

3) **Confidence Building**

What was the impact of the structured peer evaluation system in building your confidence level in support of peer review participation?

*Researcher Notations:*

a. If you utilized the resources and tools in the structured peer evaluation system, did you feel more confident in your role as the reviewer when reviewing the work of your peers?

*Researcher Notations:*
b. As the reviewee who received peer feedback, did you feel more confident in your peers’ assessment based on their potential use of the resources and tools found within the structured peer evaluation system? Why or why not?

*Researcher Notations:*

4) **Additional Perceptions**

Do you have any additional feedback or perceptions that you would like to share regarding the structured peer evaluation system that was provided in support of the online asynchronous peer review activity in the Capstone experience this term? If so, please feel free to share your thoughts and views.

*Researcher Notations:*

Conclusion: Thank you, Name. I appreciate your willingness to participate in this interview and share your thoughts and views in an open and honest manner. Before we conclude this interview, is there anything else that you would like to add? OK, thank you. That’s it. I sincerely appreciate your time and energy. If I need clarification on any of the topics that we discussed, I will follow up with you at your email address or via the phone number that you provided when you agreed to participate in the interview. Additionally, if you have any questions or concerns after our interview, you may contact me by phone or by email. Thank you and please have a good day.
APPENDIX F

GRAD COM 690 – CAPSTONE PEER REVIEW POSTTERM

QUESTIONNAIRE

Please rate your level of agreement with each of the following statements by using the key outlined below:

- Strongly Agree (SA)
- Agree (A)
- Neither Agree nor Disagree (N)
- Disagree (D)
- Strongly Disagree (SD)

Part One: Feedback - 10 Questions

Usefulness of own feedback
1. The feedback I gave my peers on their work for this class was useful.  SA  A  N  D  SD

Positive nature of own feedback
2. The feedback I gave my peers on their work was too negative or critical [Agreement reverse coded for this item].  SA  A  N  D  SD

Validity of own feedback
3. The feedback I gave a peer on his/her paper probably was similar to the feedback that other peers gave on the same work.

Reliability of own feedback

4. If I had to give feedback several months from now on the same papers for which I gave feedback in this class, I would probably give similar feedback.

Usefulness of peers’ feedback

5. The feedback my peers gave me on my writing for this class was useful.

Positive nature of peers’ feedback

6. The feedback peers gave me on my writing was too negative or critical. [Agreement reverse coded for this item].

Validity of peers’ feedback

7. The feedback I got from one peer was similar to the feedback I got from other peers on the same paper.

Reliability of peers’ feedback

8. If my peers gave me feedback several months from now on the same work they examined for this class, they would probably give me similar feedback.

Fairness of peers’ feedback

9. Peers gave me a fair grade on my writing.
10. I received a fair assessment of my work through the peer review given to me by multiple peers.

**Part Two: Attitudes – 17 Questions**

11. Peer review is helpful to my learning.

12. Peer review makes me better understand an assignment’s requirements.

13. Peer review activities can improve my skills in verbal communication.

14. Peer review activities can improve my skills in written communication.

15. Peer review activities motivate me to learn.

16. Peer review activities increase the interaction between my teacher and me.

17. Peer review helps me develop a sense of participation in a course.

18. Peer review activities increase the interaction between my classmates and me.

19. Having a peer’s feedback on a draft allows me to create a better final product.
20. Receiving feedback from my peers can be just as valuable as receiving feedback from my professor.  

21. Submitting a project to my peers can be intimidating.  

22. I think students should not be responsible for making assessments.  

23. Peer review is time-consuming.  

24. My comments given to other classmates are affected by comments given to me.  

25. Peer review increases the sense of community in an online course.  

26. Online peer review activities can be time-saving.  

27. Online course peer review can be as effective as face-to-face course peer review.  

**Part Three: Understanding and Action - 3 Questions**  

28. Peer review activities help me understand what other classmates think.  

29. The teacher should develop criteria (such as a rubric or guide) for students completing peer review.  

30. Students should participate in the development of criteria (such as a guide or a rubric) for peer review.
Part Four: Open-ended Response Opportunities – 6

Questions

1. What are your perceptions of the structured peer evaluation system that was provided to assist with peer review activities this term?

2. Did you access or use any of the resources or tools provided in the structured peer evaluation system in support of peer review activities? Why or why not?

3. Do you feel that the resources and tools in the structured peer evaluation system empowered you to offer serious and objective peer review feedback for your classmates? Why or why not?

4. Do you feel that the resources and tools in the structured peer evaluation system allowed you to feel more confident in accepting feedback received from your peers? Why or why not?

5. Do you feel that the use of the resources and tools in the structured peer evaluation system promoted a sense of community among peers during peer review activities? Why or why not?

6. What other comments would you like to add about the structured peer evaluation system?